[Why is This Course Important?](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live)

[Hi, this is Paul Randal from SQLSkills.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=0) [com and I'm recording this course for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=2.8) [Pluralsight. This is the SQL Server:](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=5.6000000000000005) [Detecting and Correcting Database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=7.5625)[Corruption course, and you're watching](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=8.8125) [Module 1, the Introduction. So why is this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=10.375) [course important? Well, it's an honest](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=15) [fact that corruption happens all the time,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=16.5) [all the way across the world many times a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=18.25) [day. If you think of the number of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=20.578947368421055) [different SQL Server installations there](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=22.684210526315795) [are, there's probably millions of them and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=24) [corruption happens because of random](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=25.75) [problems with things like I/O subsystems.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=27) [It's really hard to escape corruption. I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=28.736842105263158) [always tell a class that I'm teaching that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=31.31578947368421) [if you haven't yet seen corruption in your](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=34.263157894736864) [DBA career, you've been lucky, because](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=36.5) [you're going to see it at some point. Now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=38) [if you or your company don't believe that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=40.2) [corruption actually happens, go and check](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=41.800000000000026) [out one of the online resources. For](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=43.00000000000004) [instance, the SQL Server Central site,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=44.75) [it's a very popular SQL Server community](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=47) [site. There's a couple of data corruption](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=49.625) [forums there and you'll see people posting](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=51.66666666666667) [every so often about data corruption](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=53.61111111111112) [problems that they're having, asking for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=55.45454545454545) [advice. Corruption does happen. One of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=58.18181818181817) [two biggest issues that I see is that many](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=60.60000000000001) [people don't even realize that they've got](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=62.400000000000034) [corruption until they've had corruption](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=63.800000000000054) [for a while and it's been spreading](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=65.42857142857144) [through the databases. Now that could be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=67.92857142857147) [because they don't know that they have to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=69.76190476190476) [check for corruption or how to check for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=71.28571428571428) [corruption, or they're seeing warning](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=72.8095238095238) [signs, but they're missing them. For](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=74.25) [instance, they're seeing I/O error](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=76.125) [problems occurring and they're not](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=77.6875) [understanding what that is. It's a simple](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=79.33333333333331) [fact that the faster that you realize that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=81.66666666666661) [you've got corruption, the more likely](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=84.26315789473684) [you're going to be able to recover with](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=85.84210526315785) [the minimum of downtime and the minimum of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=87.94736842105253) [data loss. The longer the corruption](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=90.05263157894734) [carries on spreading, the more likely it's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=91.63157894736835) [going to effect say multiple databases or](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=93.4736842105262) [it's going to be harder to recover from.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=95.53846153846153) [The second problem I see is that many](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=98) [people, when they do find that they've got](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=100) [corruption, don't know what to do, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=102) [this could mean that they end up with more](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=103.65217391304348) [data loss and downtime than is necessary](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=105.60869565217394)[if they did have some idea of what to do.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=107.13043478260873) [It could mean that the corruption causes](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=110.09999999999997) [massive amounts of data loss, which could](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=112.54999999999993) [mean monetary losses for the company or](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=115) [maybe even the DBA getting fired. I've](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=116.61538461538458) [seen that actually happen. If one of these](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=118.36842105263158) [things occurs, then it's likely that the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=121.31578947368418) [IT Management of the company is going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=123.8947368421052) [have a lowered perception of SQL Server,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=126.0526315789474) [they're going to think that SQL Server is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=127.52631578947376) [not enterprise ready because maybe SQL](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=129.2941176470588) [Server is not coping with these](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=131.05882352941168) [corruptions, whereas it's really the DBAs](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=132.82352941176455) [job to know that they have to check for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=134.45454545454544) [corruption and to setup SQL Server that it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=136.49999999999991) [can check for corruption automatically and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=138.31818181818167) [to know how to deal with corruption when](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=140.15384615384616) [corruption occurs. We're going to talk a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=143.23076923076925) [lot about this stuff in this particular](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=145.5384615384616) [course. There's also a follow-on course](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=147.69230769230785) [that I'm going to be recording called SQL](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=149.47058823529406) [Server Advanced Corruption Recovery](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=151.82352941176455) [Techniques, and I advise you to watch that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=153) [course as well after you've watched this one.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=0&mode=live&start=161)

[What Can Happen to an Unprepared DBA Confronted by Corruption?](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=1&mode=live)

[What can happen to an unprepared DBA](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=1&mode=live&start=2) [confronted by corruption? Panic. Now this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=1&mode=live&start=5.818181818181817) [is no joke. I've seen this happen plenty](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=1&mode=live&start=8.48) [of times where a DBA that has got no idea](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=1&mode=live&start=10.400000000000002) [what to do when corruption occurs is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=1&mode=live&start=12.800000000000004) [suddenly confronted by corruption and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=1&mode=live&start=14.600000000000001) [told, you've got to fix this, or even](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=1&mode=live&start=16.100000000000005) [you've got to fix this or you're fired. In](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=1&mode=live&start=18.50000000000001) [those kind of situations, if you're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=1&mode=live&start=21.411764705882348) [completely unprepared, one of the human](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=1&mode=live&start=23.52941176470587) [responses is adrenaline starts going, the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=1&mode=live&start=25.64705882352939) [fight of flight response gets going, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=1&mode=live&start=27.66666666666666) [you can panic. You might start doing](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=1&mode=live&start=29.999999999999986) [things like immediately you start to run a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=1&mode=live&start=32.111111111111114) [repair without figuring out what's wrong,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=1&mode=live&start=34.33333333333334) [immediately starting to restore without](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=1&mode=live&start=36) [figuring out the extent of any corruption](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=1&mode=live&start=37.38888888888889) [and what the best options are. And that's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=1&mode=live&start=39.33333333333334) [what I'm going to show you in this course](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=1&mode=live&start=41.38095238095238) [and hopefully you're not going to panic the first time that you see corruption.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=1&mode=live&start=43.09523809523809)

[Things That Many People Try First](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live)

[Things that many people try first. As I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=2) [said on the previous slide, one of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=4.285714285714285) [things that many people will do when](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=6.571428571428569) [they're first confronted with corruption](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=8.588235294117649) [if they're not prepared is panic, and so](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=10.05882352941177) [do something that's not actually going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=12.411764705882364) [help. One of the common things to do is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=14.111111111111107) [try restarting SQL Server. The vast](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=16.1111111111111) [majority of the time it's going to waste](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=17.6) [time and it's going to delay things](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=20.000000000000007) [getting back online because if you power](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=22.100000000000012) [down SQL Server, SQL Server has to start](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=24.090909090909093) [back up again, and then it has to run](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=26.27272727272728) [recovery on all of the databases. What's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=28.72727272727274) [even worse is if you power-cycle the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=30.578947368421055) [physical server, because then the physical](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=32.42105263157895) [server has to startup, it has to go](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=34) [through all its memory testing, it has to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=36.18181818181819) [go through its power on self-test, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=38.363636363636374) [that can take a bunch of time. Now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=40.333333333333336) [although I'm saying not to do that, I have](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=43.00000000000002) [seen three times in my life, and that's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=46.00000000000004) [over thousands of cases of corruption,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=48.631578947368425) [I've seen three times in my life that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=50.5263157894737) [restarting the entire server and the I/O](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=53.0526315789474) [subsystem did cause corruption to go away,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=55.26315789473685) [and that's because there was an I/O](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=57.473684210526336) [subsystem problem where the I/O subsystem](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=59.68421052631582) [was doing what's called stale reads where](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=61.84210526315791) [SQL Server tries to read some data,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=64.42105263157897) [Windows asks the I/O subsystem to read the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=67) [data, and the I/O subsystem gives back a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=69.18181818181813) [cached copy of a page that's not actually](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=71.36363636363626) [the most up-to-date copy of what's on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=73.625) [desk. Restarting the I/O subsystem](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=75.8125) [obviously flushes out those caches and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=77.375) [means that the corruption essentially](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=79.41176470588238) [disappears, but I would not recommend](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=81.17647058823535) [doing this at all. Another thing that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=83.29411764705891) [people do is jump to one of the, what I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=85.30434782608695) [call, last resorts and end up causing data](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=87.91304347826086) [loss without actually figuring out what](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=90) [the corruption is and working through the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=91.71428571428575) [options. An example of this would be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=93.7142857142858)[running repair instead of using backups.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=95.5) [So for instance, knowing that there's some](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=97) [kind of corruption, not bothering to run](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=99.3333333333333) [DBCC CHECKDB to figure out what the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=101.6666666666666) [corruption is and then figure out the best](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=103.83333333333331) [option, and immediately running CHECKDB](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=106.05555555555549) [with the REPAIR\_ALLOW\_DATA\_LOSS option](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=107.44444444444434) [that we're going to talk about later on in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=108.5) [this course, and then actually having data](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=110.75) [loss where using backups could've resulted](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=112.875) [in not having any data loss at all. And](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=115.5) [another thing that I've seen people do is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=119.26315789473684) [shutting down SQL Server and just removing](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=121.36842105263152) [a transaction log thinking that that's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=123.21052631578937) [going to help get rid of the corruption.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=124.63157894736844) [That's actually going to make things an](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=126.31578947368428) [awful lot worse and we're going to talk](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=127.78947368421063) [about transaction log problems in the more](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=130.625) [advanced course. And another thing that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=133.25) [I've seen people do is forcibly detach or](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=135.20000000000005) [drop a damaged database, or one that's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=137.60000000000014) [been marked suspect thinking that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=139.70000000000022) [reattaching the database is going to allow](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=141.6470588235294) [SQL Server to fix the corruption. What's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=144.52941176470583) [actually going to happen is that the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=147.26315789473685) [database will not be attachable and now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=149.1052631578948) [you've made the situation worse. And there](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=150.94736842105274) [is some more advanced techniques you can](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=152.94736842105266) [use to force SQL Server to reattach that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=155.1578947368422) [database and then do the right thing. And](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=157.68421052631595) [again, we'll talk about that more in the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=160.05882352941168) [advanced course. Now a couple of times](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=162.41176470588218) [there I said that I'm going to show you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=164.0416666666667) [how to do these things in the more](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=165.9166666666668) [advanced course. You're not going to have](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=167.58333333333354) [to wait very long for the advanced course,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=168.7142857142857) [it's going to be out on the Pluralsight](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=169.8571428571428) [website within a few weeks of this course that you're watching right now.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=2&mode=live&start=171)

[Real-World Example](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live)

[Real-world example. This is a story from](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=2) [when I was at Microsoft and I was helping](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=4.099999999999999) [our Product Support with their server down](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=6.799999999999997) [queue where customers call in asking for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=8.75) [help when their server is down. Now the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=10.5) [story is as follows: The customer had a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=12.7) [database that was corrupt and it ended up](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=15.499999999999996) [taking literally days and days to be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=18.300000000000004) [brought back online with our help. And the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=20.363636363636367) [customer was a small bank in the United](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=22.545454545454554) [States. They called us up and said hey,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=24.72727272727274) [we've got some corruption and we'd like to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=26.75) [know what to do please. So we said okay,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=28.75) [what kind of backups do you have? And they](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=30.695652173913047) [said well, we don't really want to go](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=32.2608695652174) [there yet. And so we thought that was a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=33.65217391304346) [bit strange, but then we said okay. So we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=35.45833333333335) [helped them take a backup of their corrupt](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=37.33333333333337) [database and we tried running repair on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=39) [the database and it deleted a large amount](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=41.882352941176485) [of data. And so the bank said no, we can't](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=45.176470588235325) [do that. So we said okay, what backups do](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=48.10526315789474) [you have? And they said okay, we have a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=50.47368421052632) [large number of backups, and this was](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=52.75) [really the cause of their problem. They'd](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=54.5) [taken a backup, a full database backup](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=56.333333333333336) [back in January, and this was in April,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=58.666666666666686) [and they had log backups every half an](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=61.33333333333337) [hour until they had hit the corruption. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=64) [they had a large number of backups. So we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=66.66666666666663) [didn't think that was going to go very](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=69.46153846153845) [well and then we said okay, so we can help](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=71.30769230769226) [you get that and the bank turned around](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=73.61538461538453) [and said well, it's actually a bit worse](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=75.52631578947367) [because all the backups are actually](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=77.63157894736835)[stored on tape. So between ourselves we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=79.21052631578937) [thought there was very little chance that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=80.80000000000001) [they were going to be able to recover](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=82.20000000000003) [right up to the point in time because](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=83.80000000000005) [there were so many backups, about 5000](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=86.1875) [different backups. Now, we put together a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=88.375) [script for them and we helped them do the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=90.1904761904762)[restore and miracle of miracles, every](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=92.33333333333337) [single one of those backups, all 5000 of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=93.76190476190482) [those backups restored and none of them](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=96.625) [were corrupt. So they got right back up to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=99.25) [the point that they had corruption without](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=102.05882352941178) [any data loss. Now, the point that they](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=104.11764705882356) [had corruption was three days before. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=106.66666666666664)[they finished restoring on the Friday.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=108.99999999999994) [They'd actually called in to Product](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=111) [Support on the Tuesday. Now while the bank](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=112.89473684210523) [was restoring the data with our help, the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=115.42105263157887) [entire bank was offline. So, none of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=118.05882352941178) [customers could do anything at all. They](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=120.88235294117653) [couldn't take payments, they couldn't get](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=123.1875) [anything out of ATMs, they couldn't pay](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=124.3125) [their mortgages, anything like that. And](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=125.625) [what ended up happening, because the bank](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=127.14285714285717) [was down for such a long time, a large](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=129.14285714285714) [number of customers moved somewhere else](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=131.71428571428564) [and the bank ended up going out of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=133.7857142857143) [business. Now if you think about it, if](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=136.6428571428572) [your bank is down for say a few hours or](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=138.34615384615375) [half a day, you're not going to be very](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=140.26923076923055) [happy, but you're not going to move your](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=142) [business somewhere else because it's a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=143.5999999999999) [real pain to move your bank account to a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=144.79999999999984) [new bank, change all of your direct](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=146.71428571428572) [deposits and who pays you and all that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=148.3809523809524) [kind of stuff. But if your bank is down](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=150.28571428571433) [for 2 or 3 days and you can't do anything,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=152.30434782608688) [now you're not trusting them and you're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=154.47826086956502) [going to take that pain and you're going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=156) [to move. So lessons that the bank learned,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=158.4000000000001) [although they went out of business, was](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=160.80000000000018) [they should have planned a backup strategy](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=162.90000000000003) [that allowed them to do an efficient and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=165.0000000000001) [fast restore. They thought they had a good](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=167.4000000000002) [backup strategy, they had a full backup,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=169.19999999999993) [they were running on the full recovery](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=170.59999999999985) [model, and they were doing log backups](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=172) [every half an hour, which sounds really](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=173.75) [good, until they came to have to do a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=175.5) [restore in a disaster recovery situation.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=177.78947368421055)[They didn't have the right backups and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=179.36842105263165) [they'd never tested that. So, testing the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=181.2105263157896) [disaster recovery strategy was another](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=183.8461538461538) [lesson learned from there. So there's just](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=186.15384615384608) [one example of things that have gone wrong](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=188.85714285714283) [for a real company and ended up with the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=191.14285714285705) [company going out of business. And to be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=193.71428571428555)[honest, this kind of thing happens all the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=195.75) [time. I get Emails from people many times](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=197.75) [a week asking for help with corruption and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=199.59090909090904) [you can see it on the various forums and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=201.4090909090908) [on the #SQLHelp tag on Twitter, people asking for help when things go wrong.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=3&mode=live&start=205)

[Practice Makes Perfect](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live)

[Practice makes perfect. Now of course this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=2) [is true for anything you're doing in life,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=3.8421052631578942) [but especially so if you're recovering](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=5.947368421052634) [from corruption or you're trying to help a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=7.533333333333333) [client recovery from some corruption.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=9.666666666666671) [You've got to make sure that you've](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=11) [practiced. You've got to know what you're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=12.866666666666672) [doing. You've got to know that you've done](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=14.733333333333345) [it before and you know what the expected](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=16.590909090909086) [results are so you can tell when something](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=18.4090909090909) [goes wrong. And most of all, you've got to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=20.357142857142858) [not make it worse. There's absolutely](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=23.571428571428577) [nothing worse than making a mistake while](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=25.352941176470587) [you're trying to do some kind of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=26.58823529411764) [corruption or disaster recovery and that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=27.823529411764696) [leads to more data loss and more downtime](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=29.944444444444446) [than the original problem would. Now even](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=33.05555555555555) [if you've never run consistency checks](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=35.400000000000006) [before, one of the things you're going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=36.60000000000002) [get from this course is some knowledge](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=38.200000000000045) [that's going to allow you to figure out](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=39.81818181818182) [what you should do and also to know when](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=42.00000000000001) [you're out of your depth and when you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=44.45454545454547) [should ask for help from somebody more](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=46.578947368421055) [experienced, maybe posting a question on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=48.42105263157895) [#SQLHelp or going to one of your more](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=50) [senior DBAs who's seen more corruption](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=53.19999999999999) [than you or maybe even calling Microsoft](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=55.59999999999998) [Product Support. If you are able to run](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=58.35294117647059) [consistency checks, figure out what's gone](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=61.17647058823528) [wrong, and recover from the corruption,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=63.294117647058805) [then your colleagues, your team, and your](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=65.1764705882353) [clients, if a client is involved, are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=67.23529411764709) [going to be very, very impressed when you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=69.3) [help recover from that disaster and get](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=71.69999999999997) [rid of the corruption, preferably with as](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=73.79999999999995) [little downtime as possible and no data loss.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=4&mode=live&start=78)

[Root Cause Analysis](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live)

[Root cause analysis. Now rather than](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=2) [repeat myself over and over through the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=3.578947368421052) [course, I'm going to say this once here in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=5.421052631578949) [the Introduction module. It doesn't matter](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=7.999999999999999) [what method you use to recover from](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=10.000000000000002) [corruption, once you've recovered from](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=12.33333333333334) [corruption, you want to find out why the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=13.705882352941174) [corruption happened in the first place so](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=15.588235294117638) [that you can take some steps to avoid the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=17.266666666666666) [problem happening in the future. Now it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=19.666666666666657) [could be that you know what happened, it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=21.46153846153846) [was really obvious. It could be for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=23.3076923076923) [instance that the SAN crashed or there was](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=24.909090909090907) [a power failure at a certain time and when](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=26.72727272727272) [everything came back up, there was some](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=28.77272727272726) [corruption. It could be that you have](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=30.66666666666667) [absolutely no idea what happened. So then](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=32.61111111111112) [what are you going to do? Well some of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=34.434782608695656) [things you can do are as follows: Use your](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=36.608695652173935) [favorite search engine and look for the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=38.56521739130439) [corruption message that you saw. There](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=40.42857142857142) [could be a SQL Server bug, it could be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=42.14285714285713) [something that other people have hit and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=44.714285714285694) [they've posted explanations for and that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=46.20000000000002) [could give you some idea of what to go and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=47.400000000000034) [do. You could try running your I/O](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=49.736842105263165) [subsystem and server memory diagnostics to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=52.31578947368424) [see if some problem pops up from there.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=54.526315789473735) [Have a look in the SQL Server error log](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=56.86956521739131) [and the Windows event log for any kind of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=58.82608695652176) [clues as to what could have gone wrong.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=60.782608695652215) [There might have been RAID controller](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=62.94444444444445) [errors that were being flagged in the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=64.6111111111111) [Windows event log that you didn't know](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=66.47619047619048) [about. There could have been I/O errors](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=68.14285714285717) [being flagged in the SQL Server error log](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=69.80952380952385) [that you didn't realize, and that would](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=71.94736842105262) [point you towards the I/O subsystem as the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=74.15789473684205) [culprit. Look across your entire server](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=76.6842105263157)[including the memory, including any boards](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=79.00000000000003) [that you've installed, including the I/O](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=81.40000000000006) [subsystem, and check that the firmware is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=83.55555555555554) [all up-to-date. That doesn't mean that you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=85.49999999999994) [yourself are going to go and start](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=87.44444444444434) [installing firmware updates, you need to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=89.47058823529413) [involve the people responsible for those](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=91.23529411764709) [pieces of hardware. Especially for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=93) [instance if you go in and install a SAN](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=94.57894736842103) [firmware update that flushes out and 0s](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=97.42105263157887) [all of the SAN settings, you're not going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=99.66666666666666)[to be very popular with your SAN](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=102.33333333333329) [administrator. Have a look and see whether](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=104.66666666666659) [there are any NTFS filter drivers for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=106.89473684210523) [instance from antivirus software or](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=109.10526315789467) [encryption software and see whether any of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=110.6842105263157) [those has caused a problem. And then you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=112.57894736842101) [could always call up Microsoft Customer](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=114.6842105263157) [Support and ask them for help. But](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=116.3) [whatever you do, try to make sure that you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=118.39999999999998) [understand why the corruption happened in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=121.09999999999995) [the first place, because otherwise it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=123.05882352941178)[might just happen again and again and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=125.17647058823535) [again, and the next time you have that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=127.6470588235295) [corruption, you might not be able to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=129.66666666666669) [recovery quite so well with the minimum of downtime and data loss.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=5&mode=live&start=131.33333333333337)

[Why Can I Teach This Course?](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live)

[Why can I teach this course? Well to start](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=2) [with, I spent nine years on the SQL Server](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=4.045454545454544) [Team, the Storage Engine Team specifically](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=6.090909090909092) [at Microsoft from 1999 through 2007 and I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=7.666666666666666) [was a developer before taking on some](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=10.333333333333336) [management roles. Actually before that, I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=12.666666666666673) [worked for DEC, Digital Equipment](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=14.333333333333337)[Corporation, where I was responsible for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=15.666666666666675) [the equivalent of NTFS's check disk](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=17.615384615384617) [functionality for the OpenVMS file system.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=21.307692307692317) [Now back at Microsoft from 2000-2003, I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=25) [was actually responsible, I was the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=27.47058823529411) [developer responsible for all of DBCC](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=29.58823529411763) [including DBCC CHECKDB and the other CHECK](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=31.842105263157897)[commands. As part of that responsibility](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=34.78947368421051) [for SQL Server 2005, I actually rewrote](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=37.315789473684184) [most of the consistency checking and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=40.00000000000001) [repair code and I added all of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=42.00000000000002) [consistency checking capabilities for all](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=44.66666666666671) [the SQL Server 2005 new features and data](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=46.53846153846155) [structures. During that time, I also fixed](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=49.61538461538464) [many hundreds of repair bugs and vastly](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=53) [improved the capabilities of repair. I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=56.5) [also have a huge experience in corruption](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=59.26315789473684) [cases. I've been involved in well over](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=61.10526315789474) [1000 different cases of corruption over](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=62.94736842105264) [the years at Microsoft and since leaving,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=64.75) [and I'm constantly advising people about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=67.375) [corruption problems over Email, people](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=69.625) [send me random questions over Email about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=71.41176470588238) [corruption and on internet forums like on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=73.88235294117653) [SQL Server Central, on Twitter, and of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=76.33333333333333) [course I deal with corruptions that our](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=78.66666666666663) [consulting clients have. So overall, I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=80.99999999999993) [have a huge amount of experience in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=82.83333333333331) [consistency checking technologies in SQL](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=84.77777777777771)[Server, how they work and how to use them,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=86.16666666666657) [and about all the different corruptions](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=88.6363636363636) [that people can see and do see around the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=90.2727272727272) [world. And this knowledge that I've got](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=92.72727272727259) [I'm going to use to help you guys watching](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=94.5) [these two corruption courses on Pluralsight.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=6&mode=live&start=96.75)

[Course Structure](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live)

[Course structure. Now first off,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=2) [everything I'm going to tell you in this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=3.0526315789473673) [course applies to all versions of SQL](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=4.736842105263155) [Server from SQL Server 2005 onward.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=6.315789473684211)[There's a couple of cases where it's SQL](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=8.210526315789474) [Server 2012 specific, and I'll point those](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=10.73684210526316) [out. I'm also assuming that you've got](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=12.9375) [basic knowledge of SQL Server terminology.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=15.125) [You'll know what I'm talking about when I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=17) [say a database or the transaction log or a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=19.666666666666657) [backup. So here's what we're going to talk](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=22.666666666666647)[about. This is obviously module 1, the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=23.93333333333333) [Introduction. In the next module, we're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=24.86666666666666) [going to talk about causes of database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=26.388888888888893) [corruption, which is basically the I/O](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=28.333333333333343) [subsystem, but there are some other things](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=30) [that can cause corruption as well. We'll](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=31.61538461538461) [also talk about what doesn't cause](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=33.31578947368421) [corruption. In module 3, we're going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=35.21052631578949) [talk about how SQL Server can detect page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=37.42105263157897) [corruption when reading pages from disk](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=40.125) [and all the different variations of those.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=42.375) [In module 4, we'll talk about consistency](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=45) [checking, why it's important and how you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=47.21052631578949) [should go about doing it. In module 5,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=49.42105263157897) [we'll talk about DBCC CHECKDB itself and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=52.050000000000004) [all the related DBCC commands and things](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=54.500000000000014) [like their options. In module 6, we're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=56.950000000000024) [going to look at interpreting output of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=58.95238095238096)[DBCC CHECKDB, so when it tells you that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=60.61904761904765) [you've got corruption, what does that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=62.523809523809575) [actually mean? In module 7, we're going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=64.11111111111111) [look at some simple techniques you can use](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=66.33333333333329) [to recovery from corruption using restore](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=68.6) [of backups. And then in module 8, we're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=70.39999999999998) [going to look at some simple techniques](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=72.79999999999995) [you can use to recovery from corruption if](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=74.75) [you don't have backups and you have to use](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=76.75) [repair. Now all of this is going to give](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=79) [you a really good grounding in being able](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=81.25) [to understand consistency checking,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=83.25) [corruption, how corruption occurs, and the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=84.35714285714286) [basics of how to recover from corruption.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=86.50000000000003) [There's obviously an awful lot more](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=89) [advanced stuff that you can learn too, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=89.90000000000003) [I'm going to cover that in the next course](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=91.10000000000008) [I'm going to record for Pluralsight, SQL](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=92.99999999999999) [Server Advanced Corruption Recovery](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=95.33333333333329) [Techniques, which should be available a few weeks after this one goes live.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m1-intro&clip=7&mode=live&start=96.6666666666666)

[Causes of Database Corruption](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=0&mode=live)

[Introduction](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=0&mode=live)

[Hi, this is Paul Randal from SQLSkills.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=0&mode=live&start=0) [com and I'm recording this course for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=0&mode=live&start=2.8) [Pluralsight. This is the SQL Server](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=0&mode=live&start=5.6000000000000005) [Detecting and Correcting Database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=0&mode=live&start=7.5625)[Corruption course and you're watching](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=0&mode=live&start=8.8125) [Module 2: Causes of Database Corruption.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=0&mode=live&start=10.375) [Introduction. As I mentioned in the first](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=0&mode=live&start=14) [module, almost every DBA is going to see](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=0&mode=live&start=16.210526315789473) [corruption at some point in their career,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=0&mode=live&start=18.736842105263143) [so it's really useful to understand the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=0&mode=live&start=20.833333333333336) [different causes of corruption and why](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=0&mode=live&start=22.777777777777786) [it's so inevitable that you're going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=0&mode=live&start=24.444444444444457) [see corruption at some point. In this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=0&mode=live&start=26.111111111111107) [module, we're going to talk about what the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=0&mode=live&start=27.666666666666657) [various causes of corruption are, mostly](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=0&mode=live&start=29.555555555555557) [the I/O subsystem, but there are some](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=0&mode=live&start=31.22222222222223) [other things, what things do not cause](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=0&mode=live&start=33.16666666666668) [corruption and how you can't cause](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=0&mode=live&start=35.33333333333334) [corruption doing things with SQL Server,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=0&mode=live&start=37.33333333333336) [how corruption can propagate to remote](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=0&mode=live&start=39.33333333333337) [servers under ceratin circumstances, but](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=0&mode=live&start=41.5) [mostly it doesn't, and then a phenomenon](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=0&mode=live&start=43.375)[that I call disappearing corruption, what that is, and why you might see it.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=0&mode=live&start=46)

[How Does Corruption Occur? (1)](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live)

[How does corruption occur, part 1. So what](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=2) [is corruption? When a data file page is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=4.285714285714285) [written out to disk, it's deemed to be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=6.571428571428569) [good, and we're going to talk about how](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=8.68181818181818) [SQL Server determines that, so what good](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=10.499999999999993) [actually means in the next module. If it's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=12.09090909090908) [read back in from disk and SQL Server](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=14.142857142857146)[determines that it's no longer good, it's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=16.428571428571434) [bad in other words, then that's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=18.428571428571427) [corruption. Now this can also happen to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=20.200000000000003) [log files as well, portions of a log file](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=22.300000000000008) [can become corrupt. We'll talk about log](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=25) [file corruption in the advanced course.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=27.153846153846146) [What does this though, what is it that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=29) [causes corruption? Almost 99. 99% of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=31.80000000000001) [time it's the I/O subsystem. But what do I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=34.25000000000002) [mean by the I/O subsystem? The I/O](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=37.55555555555554) [subsystem means anything that's underneath](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=40.27777777777774) [SQL Server. So when SQL Server first](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=42.22222222222217) [writes out a page, it's talking to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=44.499999999999986) [Windows, it's asking Windows to go and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=46.599999999999966) [write the page out. Now we're running on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=48.699999999999946) [top of a file system, usually NTFS, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=50.99999999999999) [there can be file system filter drivers](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=53.28571428571427) [that third party products install such as](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=55.416666666666664)[antivirus, defraggers or encryption. And](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=58.333333333333314) [I've seen each of these different file](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=60.375) [system filter drivers cause problems in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=63) [the past. Then the page is going to go out](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=65.25) [across to the SAN, so it goes through all](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=67.52380952380952) [the networking infrastructure, it has to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=69.23809523809523) [go through the SAN controller, the RAID](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=70.53333333333333)[controller, and down to the disk. What all](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=72.39999999999999) [this means, what I'm trying to illustrate](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=74.6) [is, in an I/O subsystem, there's a huge](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=76.69999999999997) [amount of moving parts, some of them are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=79.09999999999995) [actually moving, spinning disks, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=81.49999999999999) [there's lots and lots and lots and lots of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=82.99999999999997) [code. Now anytime that there is code](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=85.69999999999995) [written by humans, there is a potential](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=87.5) [for bugs and things can go wrong. This is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=89.25) [why there are service packs and cumulative](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=91.61538461538461) [updates for SQL Server. This is why there](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=93.76923076923076) [are firmware updates for all of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=96) [various bits of your hardware. Bottom line](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=97.75) [is, most of the time it's the I/O](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=101) [subsystem that causes corruption in SQL Server databases.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=1&mode=live&start=109)

[How Does Corruption Occur? (2)](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live)

[How does corruption occur, part 2. Now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=1) [anytime that you look at disk drives,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=3.0999999999999996) [there's going to be a figure quoted, which](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=5.199999999999998) [is the MTBF, or the mean time between](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=7.526315789473685) [failure. And all kinds of different](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=9.631578947368425) [studies have been done on how long it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=11.21052631578948) [takes for disks to fail on average. And](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=13.428571428571432) [what I've seen by searching online is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=15.714285714285724) [figures of around 1. 5 million hours for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=17.71428571428572) [MTBF. Now you might be thinking wow, how](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=20.041666666666675) [can my disks fail if it's 1. 5 million](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=22.375000000000018) [hours, that's like 100 years, 200 years,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=25) [something like that. But, look at the end](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=27.333333333333325) [of that sentence. As long as the operating](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=29.999999999999982) [environment is ideal, all these different](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=32.842105263157904) [things that we have in our data centers,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=35.0526315789474) [in our offices where the servers are,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=38) [dust, high/low temperatures, vibrations](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=40.05882352941178) [being turned on and off are not ideal,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=41.235294117647086) [which means that you're not going to get](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=43.69565217391305) [the 1. 5 million hours MTBF, which is why](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=46.47826086956523) [we see drives failing. Now, it's a mean.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=49.60869565217394) [What that means is there's a standard](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=52.14285714285714) [bell-curve of failure times, half of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=54.14285714285713) [disks out there are going to fail before](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=56.142857142857125) [1. 5 million hours and half afterwards.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=58.47058823529413)[Again, as long it's ideal. Somebody, that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=60.52941176470591) [means, is going to get the low end of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=62.400000000000006) [curve, and that might end up being you.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=64.40000000000003) [Now talking about drives failing, I'm sure](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=66) [we've all seen drives fail in laptops for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=67.9444444444444) [instance that we're lugging around, but](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=70.16666666666657) [what about servers. Well we have a 42U](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=72.14285714285714) [rack here at SQLSkills and since 2008 when](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=75.19047619047618) [we put that rack in with servers and a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=78.23809523809521) [whole bunch of Dell MD3000i iSCSI drives,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=81.66666666666666) [we've seen 4 of those drives fail, just](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=84.33333333333331) [random failures. So out of about 30](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=87.26315789473684) [drives, we've had 4 drives fail in the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=89.10526315789468) [last 4 years. The same thing can happen to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=91.21052631578937) [you. Drive failures can cause corruption,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=93.66666666666663) [drive failures can cause parts of your](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=95.33333333333326) [database to go offline. Now here's an](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=97.3) [interesting story. I once heard Jim Gray,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=99.39999999999998)[who used to run the Research Group at](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=101.49999999999996) [Microsoft, he likened a disk head in a 15K](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=103.99999999999999) [disk spinning around to a 747 flying a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=106.99999999999994) [quarter of an inch above the ground at 500](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=109.66666666666657) [miles an hour, which just seems](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=112.13333333333333) [incredible. The kind of tolerances](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=113.73333333333332) [involved, if anything happens, if the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=115.11111111111109) [slightest bit of wind, the slightest bit](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=116.77777777777771) [of movement in the joystick of the pilot](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=118.72222222222211) [of that 747, and the 747 is going to crash](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=120.75) [and it's not going to go well. Well the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=123.25) [same kind of thing is for a disk head in a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=125.4) [spinning disk. It's floating essentially](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=127.60000000000004) [on a little cushion of air a couple of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=128.78947368421055) [microns thick above a very fast spinning](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=131.1578947368422)[surface, so anytime you get any kind of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=133) [vibration, anytime the disk gets bounced](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=135.22222222222217) [or knocked or anything, you're going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=136.8888888888888) [get a disk head crash. And when a disk](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=138.62500000000003) [head crash occurs, you are going to lose a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=140.5000000000001) [bunch of data because the disk head is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=142.3750000000002) [going to mess up the surface of the disk.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=144.4285714285714) [All these different things can contribute](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=147) [to you not getting the advertised MTBF for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=148.66666666666663) [your disks because you don't have an ideal](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=150.8888888888888) [operating environment and when disks fail, as I said, corruption can occur.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=2&mode=live&start=156)

[How Does Corruption Occur? (3)](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live)

[How does corruption occur, part 3. So I've](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=2) [said already that 99. 99% of corruptions](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=4.399999999999999) [that are out there are caused by the I/O](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=6.499999999999997) [subsystem with all its various bits of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=8.76190476190476) [hardware and software, but what if it's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=10.095238095238088) [not the I/O subsystem. What are the other](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=11.428571428571416) [things that can cause corruption in your](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=13.923076923076925)[environment? Well the first one is memory](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=16.615384615384617) [corruption. SQL Server data file pages are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=18.5) [stored in the buffer pool in memory, which](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=20.25) [is a big block of memory, a cache](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=22.333333333333332) [basically, and so the memory chips that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=24.99999999999999) [are used to actually store that data](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=27.333333333333314) [inside the server could go wrong. If a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=29.636363636363633) [memory chip goes bad, it could cause some](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=32.181818181818166) [portion of the data held in memory to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=34.72727272727273) [become corrupt. That page could then be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=37.09090909090909) [written out to disk and read back in again](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=39.00000000000001) [and it would look like it was okay until](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=41.45454545454547) [you run a DBCC CHECKDB and that could](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=43.590909090909086) [detect the kind of corruption that was](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=45.4090909090909) [caused. Something else that could cause](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=47) [corruption of data in memory is what's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=49.333333333333314) [called a scribbler where some process](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=52.055555555555515) [running the server has access through some](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=54.38095238095238) [kind of bug to SQL Server's buffer pool](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=57.04761904761904) [and manages in some way to corrupt the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=60.095238095238074) [memory that's used to store a data file](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=63.10526315789475) [page. There could also be SQL Server bugs.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=66.05263157894737) [I used to run the Access Methods](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=69) [Development Team in the SQL Server Storage](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=70.84210526315785) [Engine at Microsoft, and just before we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=72.6842105263157) [were about to ship SQL Server 2005, I had](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=74.57142857142858) [one of my developers look through the SQL](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=77.14285714285721) [Server 2000 bug database to see how many](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=79.42857142857154) [bugs there had been that had caused](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=82.25) [customer reported corruption. And the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=84.875) [number, you might be surprised, was 50, 50](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=86.54545454545453) [bugs in the 5 years between SQL Server](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=88.72727272727266) [2000 and SQL Server 2005 that had caused](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=90.90909090909079) [corruption on customer systems. SQL Server](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=93.33333333333331) [is a very big product and there's millions](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=95.33333333333329) [of lines and code, and as I said earlier,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=98) [anywhere that there's code, there's the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=100.25) [scope for human error and for bugs to be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=101.75) [there. So occasionally, a lot less now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=104.05263157894734) [than there were before, occasionally there](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=105.89473684210519) [are bugs in SQL Server and any other](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=107.4736842105262) [relational database management system,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=109.875) [it's not just SQL Server, occasionally](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=111.125) [there are bugs in SQL Server that can](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=113) [cause corruption, and then human error.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=115.85714285714289) [Now, what I mean by that is somebody doing](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=118) [something that they shouldn't. For](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=120.76923076923076) [instance, somebody trying to go and edit a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=122.26315789473684) [database, take the database offline and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=124.36842105263152)[mess around with the data files. It could](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=125.94736842105253) [also be something like deleting a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=128.33333333333331) [transaction log and then restarting the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=130.33333333333337) [database so active transactions don't get](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=132.33333333333343) [a chance to roll back, causing data](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=135) [corruption. So there's a bunch of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=138.5) [different things apart from the I/O](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=140.11111111111114) [subsystem that can cause corruption, but generally, it's the I/O subsystem.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=3&mode=live&start=141.4444444444445)

[Increase Protection Using RAID](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live)

[Increase protection using RAID. One of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=2) [things that you can do to guard against](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=4.333333333333334) [drive failures causing you problems is to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=6.999999999999998) [use a RAID level. Now RAID stands for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=9.263157894736842) [redundant array of independent or](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=11.789473684210527) [inexpensive disks. And there are different](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=13.36842105263158) [levels of RAID that you can give different](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=15.866666666666667) [amounts of redundancy. I'm not going to go](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=19.599999999999987) [through every single RAID level that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=21.681818181818183) [exists, but I'm going to talk about four](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=22.500000000000004) [of the most common ones. RAID-0 where you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=23.590909090909097) [have a bunch of disks and you just stripe](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=25.66666666666666) [across all the disks. This provides you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=28.66666666666665) [absolutely no protection because if any](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=30.631578947368418) [one of the disks is the RAID array fails,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=31.894736842105253) [you've lost your entire RAID array. The](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=33.789473684210506) [next one is RAID-5, and this is extremely](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=36.11764705882352) [common to see. The way that RAID-5 works](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=38.94117647058822)[is that each stripe has some parity](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=41.38888888888889) [information and successive stripes, the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=43.33333333333334) [parity is stored on different disks. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=44.722222222222236) [you can lose one of the disks in the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=46.30434782608697)[RAID-5 array and you don't lose the entire](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=48.26086956521742) [array. However, the performance is going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=50) [to be vastly degraded while that drive has](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=52.000000000000014) [failed. Using the other drives, you can](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=54.6666666666667) [reconstitute, or I should say the RAID](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=56.764705882352956) [array controller can reconstitute what was](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=58.82352941176474) [on the missing drive and you don't lose](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=60.47619047619048) [any data. Usually you can't lose more than](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=62.38095238095241) [one drive though in a RAID-5 array. The](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=64.28571428571433) [next one is RAID-1, which is mirroring.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=66.30434782608695) [You have a couple of drives and one is an](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=68.13043478260869) [exact copy of the other. You lose one](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=70.7391304347826) [drive, you haven't lost the RAID array.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=72.49999999999996) [One of the RAID levels that provides the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=74) [best protection against drive failures is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=76.22222222222217) [what's called RAID-10, or RAID 1+0 where](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=77.8888888888888) [you create a bunch of RAID-1 mirror sets](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=80.10526315789473) [and then you strike across the mirror](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=83.05263157894733)[sets. You can lose one or more drives from](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=85.63157894736835) [each of the mirror sets as long as there's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=87.73913043478262) [one drive remaining in each mirror set and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=89.69565217391307) [you haven't lost the entire RAID-10 array.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=91.92307692307693) [This provides the ultimate. Now it can be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=95.1538461538462) [a little bit hard to understand what all](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=97.80000000000001) [these different RAID levels mean without](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=99.40000000000003)[some pictures, so here's a link to the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=100.60000000000005) [Wikipedia entry for RAID levels, which](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=102.79999999999998) [describes all the RAID levels and will](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=104.59999999999997) [help you to understand them all. For the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=106.69999999999995) [ultimate in redundancy, you really want to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=108.84210526315785) [try and push for RAID-10. If you just ask](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=110.6842105263157) [your storage admin for an amount of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=113) [storage, they're likely to give you RAID-5](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=114.75) [because it uses the fewest number of disks](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=116.5) [to give you the capacity that you need,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=118.89473684210523) [but also with some redundancy. Always try](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=121.42105263157887) [to ask for RAID-10. If you ask for RAID-5,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=123.71428571428572) [you'll get RAID-5. If you ask for RAID-10,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=126.92857142857147) [all they can do is say no, we're only](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=129.0526315789474) [going to give you RAID-5. You don't get](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=130.94736842105272) [what you don't ask for. Now talking about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=132.90000000000003) [RAID levels, this also applies to solid](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=135.30000000000013) [state drives, SSDs as well. If you have a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=137.4000000000002)[single SSD card, that's RAID-0, there's no](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=140.625) [redundancy there. Now you might think,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=143.25) [well my SSD actually presents two drives](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=145.0526315789474) [under the covers even though it's one](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=146.89473684210535) [card. Nope, that's still just one single](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=148.7368421052633) [point of failure. What you really need to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=150.80000000000007) [do is have multiple SSDs and do at least](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=153.20000000000016) [RAID-1 with them to provide redundancy if](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=155.80000000000004) [one of your SSDs fails. You might say](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=157.6666666666668) [well, I've only got tempdb on my SSD, so](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=159.81818181818184) [it doesn't matter if the SSD fails because](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=162.27272727272737) [that just effects tempdb. My answer to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=164.4545454545456) [that is well, SQL Server will shut down if](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=166.4285714285714) [tempdb is not available, so you need to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=168.9999999999999) [protect tempdb just as you do your other databases.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=4&mode=live&start=172)

[What Does NOT Cause Corruption](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live)

[What does not cause corruption? So far](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live&start=2) [we've talked about what can cause](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live&start=3.999999999999999) [corruption. I want to give you some](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live&start=5.714285714285713) [examples of things that don't cause](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live&start=7.384615384615385) [corruption. There's all kinds of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live&start=8.769230769230766) [misconceptions that have sprung up over](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live&start=10.111111111111114) [the years of things that can cause](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live&start=11.777777777777786) [corruption. So corruptions are not going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live&start=13.722222222222236) [to be caused by anything you can do with](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live&start=15.500000000000004) [your application, anything you can do in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live&start=18.20000000000001) [SQL Server as long as you're using](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live&start=20.352941176470587) [supported and documented commands,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live&start=22.823529411764696) [interrupting a long running operation,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live&start=24.235294117647044) [such as a database shrink or an index](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live&start=26) [rebuild or some long-running update for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live&start=28.666666666666657)[instance. And shutting down SQL Server is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live&start=30.66666666666665) [not going to cause corruptions unless](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live&start=32.66666666666667) [there's something else going on underneath](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live&start=34.33333333333334) [SQL Server. SQL Server is designed to be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live&start=36) [able to shut down. In fact, it's designed](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live&start=38.18181818181819) [to be able to crash and come back up. This](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live&start=40.363636363636374) [is why we have a transaction log, this is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live&start=42.888888888888886) [why we have crash recovery. So none of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live&start=44.88888888888888) [these things you can do with SQL Server](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live&start=46.88235294117648) [are going to cause you corruption. You](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live&start=49.235294117647086) [might be unfortunate and in a very rare](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live&start=51.22222222222222) [case you may hit a bug in SQL Server.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live&start=52.99999999999999) [Remember I said there have been bugs in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live&start=55) [SQL Server that have caused customer](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live&start=56.77777777777777)[corruption, and you may unfortunately hit](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live&start=58.1111111111111) [one, but it's very, very unlikely because](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live&start=59.55555555555556) [not many people hit these bugs when they](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live&start=61.50000000000001) [occur and they are usually very hard to hit when they do happen.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=5&mode=live&start=63.722222222222236)

[Corruption Propagation to Remote Servers](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live)

[Corruption propagation to remote servers.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=2) [None of the redundancy technologies that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=3.5625) [SQL Server has are going to propagate data](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=5.4375) [file corruptions that are caused by the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=7.999999999999999) [I/O subsystem. So things like database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=10.333333333333336) [mirroring, log shipping, transaction](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=12.142857142857146) [replication or availability groups in 2012](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=13.285714285714292)[onwards. Why is that the case? Well these](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=15) [technologies are all sending log records,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=17.800000000000008) [or log blocks, or in the case of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=19.900000000000016) [replication, actions that are based on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=22.727272727272727) [harvested log records. They're not sending](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=24.909090909090907) [data file pages from disk, so if the I/O](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=27.050000000000004) [subsystem corrupts a page on disk, these](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=30.200000000000017) [technologies are not going to ship that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=32.65000000000003) [corruption to a remote I/O subsystem. Now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=34.79999999999998) [saying that, it is possible to have what I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=36.89999999999996) [call second order corruption propagated.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=39.736842105263165) [This is where some kind of corruption done](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=41.578947368421076) [by the I/O subsystem is not detected on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=44.526315789473735) [the local server, that page is read in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=47.04347826086956) [from disk, and a value from that page,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=49.13043478260869) [which is corrupt, is used to then](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=51.217391304347814) [calculate another value, which is going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=53.14285714285714) [be stored locally. Now the log record that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=55.14285714285713)[stores that value, which was generated](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=57.75000000000001) [from a corrupt value is going to be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=59.850000000000016) [harvested by one of these redundancy](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=62.65000000000003) [technologies and then sent across to the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=64.42857142857143) [remote server. So the second order effect](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=66.42857142857147) [of that initial corruption, the corrupt](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=68.49999999999999) [value, is going to be sent across to the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=70.29999999999997) [remote server, but that's pretty rare to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=73) [have happen and I haven't seen one of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=75.09999999999998) [those for quite a while. You probably](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=77.49999999999996) [classify backup and restore as a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=79.52631578947367) [redundancy technology as well, but as](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=81.10526315789468) [we're going to see in module 4, using](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=82.6842105263157) [backup options, you're going to be able to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=84.94736842105262) [make backup detect when there's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=87.47368421052626)[corruption, and that's going to prevent](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=89.05263157894728) [propagating that corruption to a remote](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=91.05882352941178) [server, even if the backup itself gets](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=93.17647058823535) [corrupted. As long as you use the correct](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=95.6470588235295) [options when you're backing up and when](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=97.47368421052636) [you're restoring, you're going to be able](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=98.94736842105272) [to prevent corruption being restored on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=100.72727272727272) [your remote server. Now we've talked about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=102.90909090909088) [SQL Server redundancy technologies,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=105.33333333333331) [there's also SAN replication, which is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=106.66666666666663) [reasonably common, and that's also](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=108.6666666666666) [probably not going to propagate](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=110.19999999999999) [corruption. Why? Because it's not](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=111.69999999999997) [replicating things on disk, it's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=113.64705882352939) [replicating changed disk blocks as they](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=115.70588235294113) [are being written to disk, not things that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=118.17647058823522) [are being read from disk. As long as the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=120.71428571428575) [corruption happens once the data is on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=123.28571428571438) [disk, it's not going to be replicated by](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=125.27777777777777) [SAN replication, unless you have that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=127.49999999999994) [second order corruption effect that I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=129.16666666666657) [talked about earlier on. The only time](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=130.78947368421055) [that something like SAN replication is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=132.6315789473685) [going to propagate some corruption is if](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=134.2105263157896) [the data file page that's being written](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=136.55555555555554) [out is corrupted underneath SQL Server and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=139.27777777777774)[before the point in your SAN](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=142) [infrastructure where the I/O splits and is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=144.21052631578954) [sent across to the remote server. That's extremely uncommon though.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=6&mode=live&start=146.78947368421066)

[Disappearing Corruption](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live)

[Disappearing corruption. This is a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=2) [phenomenon that I've had several Emails](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=3.5625) [about from people over the years](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=5.4375) [questioning whether DBCC CHECKDB has got](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=7.375) [something wrong. Here's a description of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=9.625) [the phenomenon as it usually happens.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=11.875) [First off, some kind of automated job that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=14.058823529411766)[does consistency checks fails during the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=16.88235294117647) [night. In other words, it finds some](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=19) [corruption. The DBA comes in in the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=20.55555555555555) [morning, runs another consistency check,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=22.1111111111111) [but finds that there's no corruption. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=23.294117647058822) [of course the DBA questions whether the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=25.35294117647058) [consistency checking job that failed](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=27.411764705882337) [during the night was actually correct.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=29.199999999999996) [Here's what's happening under the covers.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=31.599999999999987) [The first corruption that was reported is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=34) [actually corruption. So the corruption is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=35.647058823529406) [found on some pages allocated to an index](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=37.058823529411754) [for instance. Now then after the automatic](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=39.64705882352942) [job that runs consistency checks runs,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=42.529411764705905) [some kind of index maintenance job runs.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=45) [The index that was corrupt gets rebuilt](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=47.79999999999999) [and when an index is rebuilt, that builds](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=50.59999999999998) [a new index structure with new data file](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=53.63636363636364) [pages and then has to go and deallocate](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=56.1818181818182) [the old index pages. That means that when](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=58.72727272727276) [a second consistency check runs, it's not](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=61.26315789473685) [going to find the corruption that was in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=63.473684210526336) [the original index, because that index has](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=66) [been rebuilt. This is because that second](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=68.05882352941178) [consistency check is actually reading](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=70.11764705882356) [different data file pages from the first](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=71.58823529411765) [one, because the corrupt pages that were](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=73.64705882352943) [allocated to the index have been](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=75.70588235294122) [de-allocated, there's now a new index](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=78.05882352941174) [structure with new data file pages. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=80.52941176470583) [those initially corrupt pages are no](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=83.44444444444444) [longer part of the allocated set of pages](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=86.1111111111111) [in the database. And consistency checks](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=89.66666666666664) [are only going to read the data file pages](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=91.75) [that are allocated at that time to tables](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=94) [and indexes in the database. So it looks](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=96) [like the corruption disappeared, but they](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=99.20000000000005) [didn't. Those pages, if they were still](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=101.60000000000008) [allocated to the database, would indeed](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=103.66666666666663) [still be corrupt, but the consistency](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=105.33333333333326) [checks don't read them because they're not](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=107) [really part of the database anymore.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=109.69230769230771) [Bottom line, at the time that the initial](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=112)[consistency checking job failed, there was](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=115.11111111111109) [corruption in the database. And so you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=117.4444444444444) [want to do some root cause analysis to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=119.5217391304348) [figure out what caused that corruption to be there in the first place.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=7&mode=live&start=120.91304347826092)

[Summary](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=8&mode=live)

[Summary. In this module we've talked about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=8&mode=live&start=2) [the causes of corruption and the vast](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=8&mode=live&start=3.9444444444444438) [majority of corruptions are caused by](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=8&mode=live&start=5.8888888888888875) [problems in the I/O subsystem. The I/O](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=8&mode=live&start=7.75) [subsystem, remember, is anything](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=8&mode=live&start=10.375) [underneath SQL Server, all kinds of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=8&mode=live&start=11.875) [hardware and all kinds of software.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=8&mode=live&start=13.833333333333336) [Remember there are some other causes of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=8&mode=live&start=15.500000000000007) [corruption, which could be SQL Server bugs](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=8&mode=live&start=17.444444444444457) [or bad memory chips or memory scribblers,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=8&mode=live&start=19.750000000000007) [something like that, but these are pretty](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=8&mode=live&start=22.200000000000017) [rare. We talked about how corruptions very](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=8&mode=live&start=24.650000000000027) [rarely propagate to remote servers because](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=8&mode=live&start=26.999999999999993) [SQL Server redundancy technologies are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=8&mode=live&start=28.999999999999986) [shipping log records, not data file pages](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=8&mode=live&start=30.75) [that have corrupted by the I/O subsystem.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=8&mode=live&start=33.375) [We also mentioned the fact that you can](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=8&mode=live&start=36) [increase the resiliency of your I/O](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=8&mode=live&start=39.111111111111086) [subsystem against drive failures by using](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=8&mode=live&start=41.4444444444444) [a good RAID level. In the next module,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=8&mode=live&start=43.66666666666667) [we're going to talk about I/O errors, what](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=8&mode=live&start=46.33333333333336) [the different kinds of I/O errors are and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=8&mode=live&start=49.00000000000004) [how SQL Server can detect corruptions, in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=8&mode=live&start=51.190476190476204) [other words can detect that an I/O error](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=8&mode=live&start=52.85714285714289) [has occurred while it's reading pages from disk.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m2-causes&clip=8&mode=live&start=54.761904761904816)

[Detecting Page Corruption](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=0&mode=live)

[Introduction](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=0&mode=live)

[Hi, this is Paul Randal from SQLskills.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=0&mode=live&start=0) [com and I'm recording this course for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=0&mode=live&start=2.8) [Pluralsight. This is the SQL Server](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=0&mode=live&start=5.6000000000000005) [Detecting and Correcting Database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=0&mode=live&start=7.875)[Corruption course and you're watching](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=0&mode=live&start=9.375) [Module 3: Detecting Page Corruption. SQL](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=0&mode=live&start=11.25) [Server has a bunch of mechanisms built](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=0&mode=live&start=15.210526315789474) [into it that allows it to automatically](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=0&mode=live&start=16.684210526315788) [detect when a problem occurs when it's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=0&mode=live&start=18.157894736842096) [reading a page from disk, whether that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=0&mode=live&start=19.75) [page is corrupt for instance or the I/O](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=0&mode=live&start=21.5) [just fails. It also has mechanisms that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=0&mode=live&start=23.5) [allow it to tell you when problems have](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=0&mode=live&start=25.315789473684212) [occurred rather than just detecting them.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=0&mode=live&start=27.421052631578952) [And that's what we're going to talk about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=0&mode=live&start=29) [in this module. We're going to cover](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=0&mode=live&start=31.22222222222223) [torn-page detection, page checksums and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=0&mode=live&start=33.16666666666668) [how these two are different, the various](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=0&mode=live&start=34.44444444444444) [different kinds of I/O errors and how](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=0&mode=live&start=35.99999999999999) [they're going to appear to you, and then how you can monitor for I/O errors.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=0&mode=live&start=37.55555555555554)

[Page Protection Options](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=1&mode=live)

[Page protection options. SQL Server has a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=1&mode=live&start=2) [way of allowing data file pages to be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=1&mode=live&start=4.099999999999999) [what's called protected on disk. It's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=1&mode=live&start=6.499999999999997) [actually a real misnomer because what it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=1&mode=live&start=8.238095238095237) [really means is that it allows SQL Server](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=1&mode=live&start=9.904761904761898) [to detect when a page has become](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=1&mode=live&start=11.809523809523796) [corrupted. It's not that the page is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=1&mode=live&start=13.5) [protected at all, the I/O subsystem](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=1&mode=live&start=15.25) [doesn't say oh, that page is protected,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=1&mode=live&start=16.75) [I'm not going to corrupt that one, it's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=1&mode=live&start=18.454545454545453) [simply a way of SQL Server being able to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=1&mode=live&start=20.272727272727266) [tell that the I/O subsystem has corrupted](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=1&mode=live&start=22.318181818181806) [a page. You can turn on page protection](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=1&mode=live&start=24.400000000000006) [options or change the one you have using](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=1&mode=live&start=27.200000000000017) [ALTER DATABASE SET PAGE\_VERIFY, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=1&mode=live&start=30) [whatever the option is. And I'm going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=1&mode=live&start=31.315789473684212) [show you an example of this in a demo.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=1&mode=live&start=33.42105263157895) [There's three different options that you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=1&mode=live&start=35.71428571428572) [can use. The first one is NONE, and I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=1&mode=live&start=37.14285714285717) [really don't recommend that you do that,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=1&mode=live&start=39.285714285714334) [TORN\_PAGE DETECTION, and CHECKSUM. And](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=1&mode=live&start=41.33333333333334) [we're going to talk about what these two](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=1&mode=live&start=43.00000000000002) [different options mean and how SQL Server](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=1&mode=live&start=45.66666666666671) [is using them. No matter which of the two](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=1&mode=live&start=47.428571428571445) [options you choose, it's all done by the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=1&mode=live&start=49.57142857142861) [buffer pool, and this is also known as the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=1&mode=live&start=51.470588235294116) [buffer manager or the buffer cache. It's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=1&mode=live&start=53.58823529411764) [the block of memory where SQL Server keeps the in-memory copies of data file pages.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=1&mode=live&start=56)

[Torn-Page Detection (1)](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live)

[Torn-page detection, part 1. If you think](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=2) [about it, every 8 KB data file page is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=5.150000000000001) [really 16 contiguous 512-byte disk blocks,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=9.200000000000001) [and for a page to be properly written out](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=11.608695652173914) [to disk, all 16 of those disk blocks have](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=14.347826086956527) [to be written out correctly. It's possible](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=17.08695652173914) [of course for a page to not be completely](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=19.33333333333333)[written out. For instance, if a power](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=22.333333333333318) [failure occurs and a disk doesn't have](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=24.66666666666666) [enough backup to be able to finish writing](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=26.999999999999986) [out all 16 of those disk blocks. When this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=29.666666666666643) [occurs, it's called a torn page. Now SQL](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=32.857142857142854) [Server has a mechanism that allows it to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=35.58823529411765) [detect when a torn page has occurred. The](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=37.94117647058826) [way that it does it is as follows: It](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=40.26086956521739) [takes 2-bits from each disk sector and it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=42.60869565217391) [stores them together in a 4-byte value in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=44.69565217391303) [the page header. Now the page header is a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=47.10526315789475) [32-byte metadata structure that's stored](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=50.42105263157899) [at the top of every data file page and it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=52.2631578947369) [has all kinds of different things in it,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=55.086956521739125) [including the page ID and the set of torn](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=57.17391304347825) [bits. Once it's taken those 2-bits and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=59.47619047619048) [stored them up in the page header, it then](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=61.14285714285717) [writes an alternating bit pattern across](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=63.285714285714334) [the sectors. So for instance, it's going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=64.99999999999999) [to put 01 in the first sector, 10 in the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=67.33333333333329) [second, 01 in the third, and so on and so](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=70.66666666666657) [on. The bit pattern is going to flip each](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=73.15999999999995) [time the page is written to disk. So for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=75.31999999999991) [instance, the first time the page is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=77.58823529411765) [written to disk, it'll go 01, 10, 01. The](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=79.64705882352943) [second time it will go 10, 01, 10, 01, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=82.34615384615384) [so on. And this allows SQL Server to be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=85.80769230769224) [able to detect if a page was not](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=88.92307692307679) [completely written out. Because what'll](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=91.55555555555554) [happen is it'll be reading through the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=92.9444444444444)[sectors and it'll find 01, 10, 01, 01](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=94.8888888888888) [where say only the first 3 sectors were](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=97.55555555555554) [written, but not the following sectors.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=100.66666666666663) [And I've got a picture on the next slide](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=103) [that's going to show you how this works.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=105.11764705882352) [Now this is all very well for detecting](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=107) [when a torn page occurs, but it doesn't](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=108.90476190476193) [allow SQL Server to detect when a problem](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=110.80952380952385) [has occurred or a corruption has occurred](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=113.07142857142858) [within a disk sector. This is why page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=115.57142857142861) [checksums were invented. But first off in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=117.95238095238096)[the next recording, let's have a look at](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=119.61904761904765) [how torn- page detection works graphically.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=2&mode=live&start=121.52380952380958)

[Torn-Page Detection (2)](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=3&mode=live)

[Torn-page detection, part 2. This is a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=3&mode=live&start=2) [graphical representation of what I was](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=3&mode=live&start=3.9444444444444438) [talking about on the previous slide. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=3&mode=live&start=5.61111111111111) [every data file page is 16 contiguous](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=3&mode=live&start=7.888888888888889) [512-byte blocks and the way that the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=3&mode=live&start=11.000000000000002) [torn-page detection works is it creates an](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=3&mode=live&start=14.111111111111114) [alternating bit pattern on every one of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=3&mode=live&start=16.666666666666664) [those sectors, 01, 10, 01, 10, and so on.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=3&mode=live&start=18.99999999999999) [Now imagine that we're going to overwrite](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=3&mode=live&start=22) [this pattern with a new version of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=3&mode=live&start=24.100000000000005) [page, but while doing so, a torn page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=3&mode=live&start=26.50000000000001)[occurs. So, instead of having 10, 01, 10,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=3&mode=live&start=29.250000000000004) [01 and so on, what's resulting on the disk](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=3&mode=live&start=32.58333333333334) [is that only the first 2 disk blocks got](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=3&mode=live&start=36.33333333333332) [written out. So the buffer pool can detect](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=3&mode=live&start=39.36363636363637) [that when it reads the page in from disk](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=3&mode=live&start=41.545454545454554) [next and it will throw an I/O error as](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=3&mode=live&start=44) [we're going to talk about in a few more slides.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=3&mode=live&start=53)

[Page Checksums (1)](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live)

[Page checksums, part 1. Now I mentioned](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=2) [when I was talking about torn-page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=4.058823529411764) [detection, the torn-page detection cannot](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=5.823529411764704) [detect problems that occur in the middle](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=7.315789473684211) [of disk blocks. That's what page checksums](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=9.526315789473685) [do, and they were introduced in SQL Server](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=11.73684210526316) [2005 and it's a checksum per page. Any](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=14.399999999999999) [database that you created on SQL Server](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=17.200000000000003) [2005 onward has page checksums enabled by](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=19.650000000000013) [default apart from tempdb. Tempdb didn't](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=22.47058823529411) [get page checksums until SQL Server 2008.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=24.941176470588218) [So if you have a server that you've](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=27.666666666666664) [upgraded in place from SQL Server 2005 to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=30.33333333333332) [a version after SQL Server 2005, you must](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=32.999999999999986) [make sure that you manually go and enable](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=35.99999999999999) [page checksums for tempdb using the ALTER](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=39.19999999999998) [DATABASE code that I showed you a few](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=42) [slides back. Now page checksums are also](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=43.904761904761926) [done by the buffer pool, just like torn](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=45.57142857142861) [page detection. And the way that it works](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=47.631578947368425) [is as follows: There's a 4-byte value](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=50.157894736842124) [that's calculated for the per-page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=52.36842105263161) [checksum and it's a very simple per-page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=53.89999999999999) [checksum, which then gets stored up in the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=55.99999999999997)[page header and it's the very last thing](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=58.39999999999995) [that SQL Server does when it's going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=60.5) [write a page out to disk. When a page is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=62.5) [read back in from disk, the very first](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=64.72727272727275) [thing that SQL Server does is it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=66.18181818181824) [recalculates the page checksum and it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=67.45454545454555) [tests to see whether the calculated](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=68.99999999999999) [checksum is the same as the one that's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=70.99999999999996) [stored on the page. If the answer is yes,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=73.66666666666659) [there's no problem. If the answer is no,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=76.25) [SQL Server knows that something underneath](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=78.25) [it has corrupted the page. Now if you've](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=79.75) [upgraded databases from before SQL Server](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=82.7222222222222) [2005, you're going to have to go and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=85.05555555555551) [enable page checksums using ALTER](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=87.75) [DATABASE. The problem is that when you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=89) [switch it on, it doesn't actually do](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=90.75) [anything because a page checksum is only](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=92.66666666666666) [written to the page when the page is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=94.99999999999996) [written out to disk. So just doing a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=97.66666666666659) [backup and restore for instance or running](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=100.14285714285717) [a DBCC CHECKDB is not going to cause page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=102.14285714285721) [checksums to be put on the databases where](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=104.71428571428584) [you've had to go and switch on page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=107.1875) [checksums. You're going to have to do](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=109.6875) [something like manually force all pages to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=111.6) [be read. Now there's no simple way to do](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=113.46666666666665) [that. You could try doing index rebuilds](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=116.00000000000004) [of all your indexes, you could try](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=118.00000000000009)[updating all the values to be the same](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=120) [value, but depending on which version of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=121.52380952380952) [SQL Server you're on, that might not do](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=122.85714285714285) [anything. Basically the easiest thing is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=124.70588235294119) [just let your regular index maintenance](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=126.82352941176475) [rebuild indexes as it goes and eventually](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=128.9411764705883) [most of the database will have page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=131.33333333333337) [checksums put on it. Now one of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=133.66666666666677) [questions I get asked is if I turn on page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=135.83333333333337) [checksums, does that get rid of any torn](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=137.9166666666668) [page detection that I've had from SQL](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=139.58333333333354)[Server 2000 for instance. The answer is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=141.81818181818187) [no. A page knows whether it is torn page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=144.3636363636365) [detection protected or whether it is page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=147.63636363636385) [checksum protected, and any torn page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=150.21052631578954) [detection on the page will not get erased](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=152.42105263157907) [until the page is read into memory,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=155.38888888888889) [changed, and then written back out with a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=158.1111111111111) [page checksum. Now having page checksums](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=161.22222222222217) [enabled is really a negligible overhead](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=162.8888888888889) [because as I said, it's a very simple](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=164.22222222222229) [checksum algorithm. It's not a CRC-based](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=166) [checksum that you might find in a network](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=168.11764705882348) [stack for instance, and it's only](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=170.94117647058812) [error-detecting, it doesn't correct any errors, so it can be very, very simple.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=4&mode=live&start=175)

[Page Checksums (2)](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live)

[Page checksums, part 2. Another thing that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=2) [page checksums is good for is its proof,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=4.210526315789474) [or the smoking gun, that the problem is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=6.736842105263159) [not due to SQL Server because it proves](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=9.333333333333336) [that something underneath SQL Server](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=12.000000000000007) [corrupted the page. This is really useful](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=13.666666666666677) [if you're stuck in the middle of a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=15.894736842105264) [hardware vendor versus Microsoft argument](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=18.421052631578934) [about what caused the corruption. I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=20) [remember back when I was at Microsoft, a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=21.66666666666667) [high profile corruption case involving a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=23.8888888888889) [large bank on SQL Server 2000 where I was](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=25.799999999999997) [involved from the Microsoft side and we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=29.399999999999984) [were disputing with the hardware vendor](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=32.199999999999974)[whether it was a problem caused by the I/O](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=34) [subsystem and we could tell from the bit](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=36.25) [pattern of the corruption that it looked](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=38.2) [like it was the I/O subsystem, but we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=39.60000000000002) [didn't have any proof. And I remember](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=41.200000000000045) [being on the phone on a con call with the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=42.84) [client CIO and some of their VPs and some](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=45.640000000000015) [of the hardware vendor people as well](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=48.160000000000025) [saying look, I know we can't prove it, but](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=50.09090909090909) [if you upgrade to SQL Server 2005 and run](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=52.545454545454554) [on the same hardware, we can enable page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=55) [checksums and we can see whether the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=56.68421052631578) [problem definitively is the hardware or](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=58.15789473684209) [whether as the hardware vendor says, it's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=59.57142857142857) [a problem inside SQL Server. And we helped](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=61.57142857142856) [the customer upgrade to SQL Server 2005](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=63.857142857142854) [and they stayed on that same hardware and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=65.85714285714289) [within a week of running on 2005 with page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=68.14285714285722) [checksums enabled, it started to pop page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=71.21052631578945) [checksum problems and indeed it was the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=73.78947368421048) [hardware. So that was a good proof point](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=76.36842105263158) [for page checksums. Now when are page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=79.31578947368418) [checksums actually checked? Well whenever](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=81.8947368421052) [a page is read normally through the buffer](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=83.52631578947367)[pool. That means also whenever the page is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=85.63157894736835) [read during consistency checks because](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=87.73684210526304) [consistency checks use the buffer pool to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=89.5) [do all their page reads. Now BACKUP does](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=92.125) [not use the buffer pool to do its page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=94.65217391304348) [reads, it opens its own channels to the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=96.60869565217394) [data and log files and just reads them](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=98.34782608695656)[directly. However, as we're going to see](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=100.25) [in the next module, when you use BACKUP](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=102) [WITH CHECKSUM, that's going to test that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=104) [the page checksums are valid before the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=106.21052631578944) [page is included in the backup. Now also](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=108.42105263157887) [if you've created a backup by using WITH](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=111.10526315789473) [CHECKSUM, whenever the pages are read from](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=114.05263157894733) [the backup, whether you're verifying the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=116.63157894736835) [contents of the backup or whether you're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=118.5625) [actually performing a restore, it's going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=120.75) [to check the contents of the backup and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=122.5) [it's going to go and recalculate those](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=124.5) [page checksums and make sure that they're valid. More on that in the next module.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=5&mode=live&start=126.25)

[Demo: Checking and Setting Page Protection](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live)

[In this demo, I want to demonstrate page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=1) [protection options. So the first thing I'm](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=3) [going to do is cleanup any old databases](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=4.75) [that I've got lying around and then I'm](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=6.857142857142857) [going to create a database for us to play](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=9.142857142857144) [with. So a very simple database called](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=11.714285714285722) [Company. Now, we can have a look and see](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=14.400000000000002)[what the page protection setting is for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=17.999999999999996) [that database by looking in sys.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=20.666666666666664) [databases. There's two fields, there's a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=22.666666666666657) [numeric field, which gives us what the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=24.66666666666665) [page option is, and there's also a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=27.28571428571428) [descriptive field. So we're going to go](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=30.28571428571427) [ahead and execute that, and we see that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=33.28571428571427) [it's set to page checksums. We can also](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=36.5) [have a look in Object Explorer and see](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=39.5) [what's going on too. So if we connect up](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=42.5) [to our instance and we're running SQL](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=45.08695652173914) [Server 2012 SP1, but this is the same in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=46.608695652173935) [all versions back to 2005, we look at our](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=48.56521739130439) [Company database, we'll go down to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=52.81818181818183) [Properties, and then if we go to Options](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=56.09090909090911)[and scroll down a bit, we can see that the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=60.45454545454548) [Page Verify option is set to checksum. And](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=63.25) [we can also change it here. So let's say](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=65.25) [change it to TORN\_PAGE\_DETECTION, which is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=67.5) [not what I recommend but just for the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=69) [purposes of the demo. Hit OK. And then if](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=71.5) [we go back over here, if we check again](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=74.875) [using our little sys. databases query, we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=78.25) [can see that now we're set to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=81.77777777777779) [TORN\_PAGE\_DETECTION, but we don't want](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=85.66666666666669) [that. So let's set it back to page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=88.44444444444447) [checksums. You always want your databases](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=91.44999999999996) [to be set to page checksums because that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=93.54999999999993) [provides a more comprehensive test of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=96.4375)[whether something has corrupted the page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=99.0625) [underneath SQL Server. Now one thing I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=101.6875) [didn't mention in the slides is that new](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=104) [databases that you create inherit the page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=106) [protection option from model. So let's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=107.75) [change model to be TORN\_PAGE\_DETECTION and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=111.15789473684212) [then if we go and create that database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=114.94736842105267) [again, so let's drop it first and then](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=120) [recreate it, we should find that our](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=124.19047619047615) [database is now set to TORN\_PAGE\_](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=127.85714285714278) [DETECTION like so, because it inherited](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=131) [the setting from model. Now, I just did](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=133.09999999999997) [that to show you the inheritance, I do not](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=135.89999999999992) [recommend that you change the setting of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=138.90000000000003) [model from anything apart from checksum so](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=141.0000000000001) [that all your new databases have it set to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=143.1000000000002) [checksum. So let's go ahead and just make](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=146.18181818181824) [sure that we correct what we change there.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=149.09090909090924) [So there's a very quick demo of changing](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=152) [and setting page protection options and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=154.4000000000001) [how you can figure out using sys.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=156.20000000000016)[databases or Object Explorer what the setting is set to.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=6&mode=live&start=158.9090909090909)

[I/O Errors](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live)

[I/O errors. What we're talking about here](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=1.5) [are the I/O errors that SQL Server will](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=3.25) [raise to tell you that it's detected a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=5.25) [problem. There's actually three different](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=7.499999999999999) [kinds of I/O errors. The first one is 823.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=9.166666666666668) [This is what I call a hard I/O error. You](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=11.95833333333333) [can think of it as SQL Server asking](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=14.874999999999991) [Windows to read some data from disk and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=17.20833333333333) [Windows coming back to SQL Server and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=20.125) [saying no. An 824 is a soft I/O error.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=22.75) [This is where SQL Server asks Windows to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=25.409090909090914) [read some data from disk, Windows gives](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=27.5909090909091) [the data back, and SQL Server detects that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=29.5) [there's a problem with the data that it's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=32.44736842105264) [been given back. There's also another one](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=35.394736842105296) [called 825, which is a read-retry error,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=37.34210526315789) [and I've got a whole slide dedicated to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=38.8157894736842) [that a little bit later on. So 823 and 824](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=40.5) [are the ones that you're most likely to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=43.131578947368425) [see. Now these are both severity 24](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=45.236842105263165) [errors, it's the highest severity of any](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=47.21428571428571) [error that you can get and it means that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=49.2142857142857)[your connection is going to be broken.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=51.73809523809524) [Anytime an 823 or an 824 occurs, it's also](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=53.404761904761926) [going to be logged in the suspect\_pages](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=55.547619047619094) [table that was added to MSDB in SQL Server](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=57.64285714285714) [2005 and this lists all of the problems](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=61.071428571428555) [that have occurred so far in terms of 823s](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=64.11904761904759) [and 824s, and you can use that as input](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=66.58695652173913)[into what are called single page restore](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=68.93478260869564) [operations. Now I always like to make the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=70.8157894736842) [joke that just like the backup history](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=73.34210526315785) [tables in MSDB, your suspect\_pages table](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=75.55263157894728) [also has to be manually cleared out every](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=77.44736842105262) [so often, but if your MSDB fills up](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=79.97368421052626) [because your suspect\_pages table fills up,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=82.5) [you've got other problems. Apart from](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=85.5) [being written to the suspect\_pages table](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=88.02631578947367) [and to your connection, anytime an 823 or](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=89.60526315789468) [an 824 occurs, it's also going to be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=91.71052631578937) [written out to the SQL Server error log](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=97.5) [and also into the Windows Application event log.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=7&mode=live&start=105.5)

[I/O Error Example](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=8&mode=live)

[I/O error example. Here's an example of an](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=8&mode=live&start=1.5) [824 error message, and you can see that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=8&mode=live&start=3.7857142857142847) [it's nice and long and descriptive. There](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=8&mode=live&start=6.071428571428569) [used to only be in SQL Server 2000 one I/0](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=8&mode=live&start=8.1) [error, which was 823, and its message](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=8&mode=live&start=11.100000000000007) [would be something like, we found a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=8&mode=live&start=13.200000000000012) [problem at hexadecimal offset in file,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=8&mode=live&start=15.264705882352946) [please see your system administrator. And](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=8&mode=live&start=17.029411764705884) [you're sitting there thinking, well that's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=8&mode=live&start=18.73076923076923) [me, what do I do now? These messages are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=8&mode=live&start=20.11538461538461) [an awful lot better that were added in SQL](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=8&mode=live&start=22.299999999999997) [Server 2005 onwards. It actually tells you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=8&mode=live&start=24.69999999999999) [what was wrong, we got an incorrect page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=8&mode=live&start=26.763157894736835) [checksum that tells you the expected value](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=8&mode=live&start=29.289473684210506) [and the actual value. It actually tells](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=8&mode=live&start=31.5) [you the page ID, which is really useful,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=8&mode=live&start=33.25) [rather than just the hexadecimal offset.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=8&mode=live&start=35.25) [It tells you which database ID it was in,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=8&mode=live&start=36.785714285714285) [it tells you the file that the problem](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=8&mode=live&start=39.35714285714285) [occurred in, and then it goes on and says,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=8&mode=live&start=41.642857142857125) [look down here, this is a severe error](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=8&mode=live&start=43.763157894736835) [condition that threatens database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=8&mode=live&start=45.447368421052616) [integrity and must be corrected](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=8&mode=live&start=46.289473684210506) [immediately. Go run a CHECKDB. So it gives](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=8&mode=live&start=47.83333333333334) [you some more prescriptive guidance about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=8&mode=live&start=50.50000000000003) [what to do than earlier versions of SQL Server.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=8&mode=live&start=52.5)

[Demo: I/O Error](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live)

[In this demo, I'm going to show you what a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=2) [live I/O error looks like. Now this is a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=4.000000000000002) [setup script, and as it says here, this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=5.761904761904763) [setup script is going to use an](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=7.285714285714288) [undocumented command called DBCC WRITEPAGE](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=8.61904761904762) [and that's going to allow me to cause some](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=10.000000000000002) [corruption in a SQL Server database. These](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=13.000000000000007)[undocumented commands I explain in the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=15.416666666666666) [advanced course in module 3. So first off](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=17.91666666666667) [what I'm going to do is get rid of any old](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=21.199999999999996) [databases that I had lying around. And](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=25.59999999999998) [then I'm going to create a database called](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=28.466666666666665) [Company that we're going to use. Go into](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=32.19999999999999) [the Company database, create a very simple](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=36.04761904761905) [table, and then insert 10 rows, it's going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=39.71428571428573) [to use 10 pages in the table. And then](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=43.90476190476193) [what we're going to use is this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=47.57894736842106) [undocumented command called DBCC IND, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=49.78947368421055) [that's going to allow me to list all the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=51.68421052631582) [pages in the table, so I'm going to pick](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=53.27999999999997) [one of them and I'm going to cause a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=54.71999999999994)[corruption on it. So I'm going to pick a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=56.42857142857143) [random page, page 294. So I change this to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=60.285714285714306) [be 1, 294, and then I'm going to run DBCC](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=64.04545454545453) [WRITEPAGE and that's going to overwrite](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=68.1363636363636) [the first couple of bytes in that page on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=70.59090909090904) [disk. And then I'm just going to get rid](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=74.47826086956525) [of any places that might have errors in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=78.39130434782615)[them so I can show you a clean error log.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=81.625) [It's obviously very contrived. Okay, so](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=84.75) [then I'm going to go over to my demo](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=86.66666666666666) [script. And my demo script says if you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=89.66666666666661) [pick up that one first, it says go run the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=92.33333333333324) [setup script. We've already done that. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=95.36363636363633) [how about just running a query that is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=97.2727272727272) [going to trip over this I/O error. And we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=99.45454545454533) [get an 824. And we see the 824 is just](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=104.57692307692312) [like the one I showed you on the slides,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=111.11538461538473) [but it shows us the problem. So this is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=117)[what we expected in terms of our page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=120.75000000000004) [checksum and this is what we got. So those](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=124.08333333333341) [are different and the buffer pool](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=127.38095238095238) [recognized that as it read the page into](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=128.52380952380955) [memory and it threw the 824 error. It](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=130.04761904761918) [closed our connection, see down at the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=131.90000000000003) [bottom it says disconnected there and it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=134.0000000000001) [tells us which page ID it was, it was the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=136.1000000000002) [page that we just corrupted. Now we can](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=140.2083333333334) [also see that error shown in the error](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=143.87500000000014) [log. So if we go to Management, SQL Server](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=147.54166666666688) [Logs, double-click the Current one, we'll](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=153.20000000000005) [be able to see this 824. So if we sort it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=157.10000000000008) [this way there we go, there's our 824 and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=163.2) [that's the same message that we saw there](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=167.15999999999997) [in our output. And we can also go and look](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=170.67999999999995) [in the Application event log. So I've got](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=173.90909090909096) [the Event Viewer up here from](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=176.0909090909092)[Administrative Tools. If we look in our](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=177.7272727272729) [Windows Logs and we look in the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=180.28571428571428) [Application log, there's the error right](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=182.95238095238093) [there and it's exactly the same message.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=185.2380952380952) [So if we go back into Management Studio,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=188.5) [we can also look in the suspect\_pages](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=192.5) [table in MSDB. Let's get rid of that like](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=196) [so. And this has one entry for each page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=200.0909090909092) [that problems have been detected on. And](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=204.18181818181841) [the event\_type is all documented in books](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=207.00000000000003) [online, so we can see that just a few](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=209.33333333333343) [minutes ago there it came across the 824](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=212.3333333333335) [and the number of times that's been hit,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=215.00000000000006) [1. So if I go run it again, trigger the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=217.6666666666668) [error again, same 824. Go back and look in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=223.0869565217391) [MSDB suspect\_pages and we see now the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=228.1739130434782) [error count has gone up to 2. So a very](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=231.43478260869563) [simple demo just showing you what an I/O](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=233.60869565217376)[error actually looks like and you'll be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=235.34782608695627) [able to see them in the error log, you'll](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=236.5454545454545) [be able to see them in the Windows](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=237.77272727272714) [Application event log, you actually get](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=238.86363636363615) [the connection broken, and you can also](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=240.84210526315795) [look after the fact in the suspect\_pages table in MSDB.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=9&mode=live&start=243.42105263157907)

[Read-Retry and Error 825](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live)

[Read-retry and error 825. Now read-retry](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=1) [was actually present in SQL Server 2000](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=3.2941176470588234) [for a few limited circumstances, but it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=5.9705882352941195) [was actually added in big time in SQL](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=8.823529411764707) [Server 2005 for data file pages. What](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=12.35294117647059) [read-retry means is that any I/O error](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=15.285714285714286) [that's detected by the buffer pool is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=17.285714285714285) [going to cause the read to be retried](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=19.285714285714278) [automatically up to four times. So if](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=22.111111111111114) [after five attempts, the initial attempt](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=26.000000000000014) [plus four retries, the I/O error still](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=29.333333333333357) [persists, you will see the 824 or 823. If](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=32.63636363636363) [one of the retries succeeds, and I've got](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=36.31818181818179) [it in quotes there, if it succeeds, then](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=39.590909090909044) [you're not going to see an I/O error. The](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=41.86666666666666) [only thing that's going to happen is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=44.1764705882353) [you'll see an 825 error in the error log.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=45.411764705882376) [Now the 825 error has this format, so it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=47) [tells you which offset and which file, it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=49.04545454545454) [tells you how many times it had to be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=50.86363636363635) [retried and so on and so on. But, the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=53.076923076923066) [really bad thing about an 825 is that it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=55.499999999999964) [is a severity 10 informational message](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=57.92307692307686) [only. So unless you are scraping through](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=59.75) [the error log looking for problems, you're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=62.375) [not going to see it. So one of the things](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=65) [that I recommend is that all SQL Servers](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=67.6086956521739) [out there have an agent alert 4825, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=69.69565217391303) [I'm going to talk about agent alerts in a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=71.8181818181818) [few more slides so that you know when a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=74.2727272727272) [read-retry occurred. In other words, you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=76.72727272727259) [know when SQL Server had to retry a read](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=78.66666666666664) [to get it to success because really what](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=81.6666666666666) [an 825 is, is I call it an early warning](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=84.27272727272727) [sign of impending doom because it means](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=86.99999999999993) [that your I/O subsystem is returning](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=88.90909090909079) [incorrect data to SQL Server in a kind of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=90.47619047619048) [transient manner and that SQL Server is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=92.61904761904765) [having to do read-retry. Next time you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=94.28571428571433) [might not be so lucky and it might be that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=96.14285714285717) [you actually get a persistent hard error](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=99.00000000000009) [somewhere in your I/O subsystem. This is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=101) [all fully documented of course and there's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=102.84210526315785) [a KB article that you can read a little](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=104.6842105263157) [bit more about it at that link there on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=107.33333333333331) [the screen. Although read-retry is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=110.33333333333327) [actually a good thing in that you don't](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=111.7894736842105) [immediately get the 823 or 824, which](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=113.89473684210519)[causes problems for some applications,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=115.73684210526304) [it's not a good thing because SQL Server](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=117.33333333333331) [doesn't go out of its way to tell you, the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=119.99999999999994) [DBA, that a read-retry was required. You](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=124) [have to know to put an alert or to be watching for error 825.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=10&mode=live&start=131)

[Automatic Page Repair](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live)

[Automatic page repair. The two features](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=1.5) [database mirroring and availability groups](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=3.5000000000000004) [have a feature called automatic page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=5.166666666666666) [repair that allows some corruptions to be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=7.26923076923077) [automatically repaired where possible. And](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=9.961538461538465) [this works for some of the 824 and 823](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=11.772727272727273) [errors, and sometimes an 829 error as well](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=14.227272727272734)[that's saying that a particular page is in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=16.40909090909092) [the middle of being restored. Now, these](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=18.83333333333333) [errors are queried by anything that's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=21.166666666666654) [going to go and read the pages, so either](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=23.166666666666647) [a regular query or a consistency check.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=26.166666666666657) [What happens is the corrupt pages on the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=28.5) [principal or the mirror or the primary or](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=30.60526315789474)[secondary replicas can be repaired, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=32.71052631578948) [the mechanism is that whichever instance](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=34.735294117647065) [hit the corrupt page asks the partner](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=37.205882352941195) [instance for their copy of the page at the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=40.08823529411768) [right time. And if successful, the page is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=43.86842105263156) [successfully repaired underneath. There](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=47.23684210526312) [are a few page types that it doesn't work](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=48.71739130434783) [for like file header pages and boot pages](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=50.67391304347828) [and some of the allocation bit maps for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=52.4130434782609) [the entire database, but most pages can be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=54.88461538461538) [automatic-page repaired. Now the repairs](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=58.57692307692306) [are asynchronous, you're not going to be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=60.25) [able to use that corrupt page until it's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=62) [been fixed. And anytime that an automatic](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=64) [page repair is triggered, the page that is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=66.60526315789473) [being repaired is marked as 829, so a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=69.97368421052629) [subsequent query or use of the page is not](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=73.08333333333334) [going to trigger over and over and over,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=75.70833333333339) [lots and lots of automatic page repairs.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=78.04166666666676) [Now although this is a cool feature, it is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=80.04545454545453) [meant just as a kind of band-aid to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=82.49999999999993) [prevent you having immediate downtime. It](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=84.68181818181806) [makes use of the technology that you're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=86.625) [using database mirroring or availability](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=89.25) [groups to prevent you having to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=91.125)[immediately do something about it, but](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=93.34210526315788) [it's not a substitute for having proper](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=95.55263157894733) [alerting to make sure that you know when](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=98.13157894736835) [high severity errors actually occur and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=100.34210526315785) [doing something to make sure they don't](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=101.92105263157886) [happen again. And again, we're going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=103.6875) [talk about alerts in a few more slides.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=105) [You can read more about automatic page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=106.5) [repair in the Books Online section at that bit. ly link there.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=11&mode=live&start=113.13157894736841)

[Memory Corruption](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live)

[Memory corruption. Now, as part of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=2) [internals of the buffer pool, it's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=4.470588235294118) [periodically going to validate any page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=6.588235294117645) [checksums that are on pages that have not](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=8.705882352941178) [changed since they are read into memory.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=11.529411764705888) [Anytime one of these validations fails,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=14) [you'll get an 832 error, not to be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=16.454545454545453) [confused with 823, which is an I/O error.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=19.727272727272734) [And here's what an 832 error looks like.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=23) [It tells you the page that was damaged and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=24.818181818181813) [it tells you from which file the page was](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=26.863636363636353)[from. Now anytime you see an 832 error,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=29.33333333333333) [that's either you've got a corruption](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=31.999999999999986) [caused by bad memory chips, which is the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=34) [usual case, or some kind of scribbler that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=36.42857142857142) [I talked about earlier on in the course.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=38.7142857142857) [Now if you're using SQL Server 2012 on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=41) [Windows Server 2012 and your server has](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=43.39999999999998) [ECC memory, then that combination of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=45.49999999999996) [software can detect when a memory chip has](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=47.40909090909091) [gone bad and SQL Server can actually](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=50.68181818181816) [reread a broken page from disk. If that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=53.545454545454504) [page had not been changed in the buffer](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=56.45454545454545) [pool since it was read in and Windows](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=58.272727272727266) [Server 2012 detects that that portion of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=60.09090909090908) [memory has been corrupted by a bad memory](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=61.833333333333336) [chip, SQL Server will automatically reread](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=64.05555555555556) [that page into memory. It can't do so](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=65.72222222222219) [obviously for pages that have been changed](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=68.00000000000004) [since they were read in from disk and then](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=70.00000000000009) [corrupted it in memory that Windows has](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=72.6) [noticed, because then you'd lose the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=74.69999999999997) [change that has been made. And my](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=76.49999999999996) [colleague Glenn Berry at SQLskills has](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=78.47619047619048) [blogged about this and you can see his blog post there at that bit. ly link.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=12&mode=live&start=79.90476190476193)

[Monitoring for I/O Errors](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live)

[Monitoring for I/O errors. There's no](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=2) [point in setting up page checksums if](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=3.7647058823529402) [you're not actually noticing when problems](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=5.823529411764704) [are occurring. Now you could just be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=7.555555555555555) [looking through the error log yourself,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=9.500000000000004) [but that manual kind of operation is very](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=11.166666666666675) [time consuming and it's prone to being](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=13.052631578947372) [forgotten, and it's prone actually to you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=14.526315789473692) [missing something in the error log. It's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=16) [much, much better to use some kind of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=17.94444444444445) [automated monitoring process so that when](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=20.16666666666668) [a problem occurs, you're notified without](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=21.75) [you having to go and do something to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=23.25) [figure out that a problem has occurred. A](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=25.25) [variant of different things you can do to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=27.388888888888893) [automate the margin process, probably the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=29.61111111111112) [easiest thing you can do is use SQL Server](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=31.25) [itself. SQL Agent has an alerting](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=33.5) [mechanism where you can define alerts. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=35) [for instance you could say whenever an 824](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=36.857142857142854) [error occurs, I would like you to send an](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=39.14285714285713) [Email to this Email address. If you're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=41.714285714285694) [using Microsoft SCOM, System Center](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=44.25) [Operations Manager, it can monitor for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=46.125) [problems as well and alert you. And most](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=48.388888888888886) [third party monitoring tools also include](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=51.49999999999997) [built-in alerting too. Whichever mechanism](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=53.833333333333286) [you're using, I'd like you to go and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=55.58823529411765) [create alerts for every severity,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=57.94117647058826) [individual severity, 19, 20, 21, 22, 23,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=59.41176470588239) [and 24, and also put one on error #825.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=62.14285714285715) [Anything else you're interested in going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=66.00000000000003) [wrong as well, create an alert for that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=68.57142857142861) [too. Glenn Berry of SQLskills, he has a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=71.09999999999998) [very comprehensive blog post and a very](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=73.49999999999996) [detailed Transact-SQL script that will go](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=75.52631578947367) [and create agent alerts for you at that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=77.10526315789468) [bit. ly link. So I recommend you go ahead](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=79.21052631578937) [and read his blog post and use that script](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=81.30434782608697) [in your servers to go and create agent](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=83.26086956521742) [alerts if you don't have any other](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=85) [monitoring process in place. You can also](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=86.40000000000002) [look in books online under SQL Server](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=87.80000000000004) [Agent, and that has some information about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=89.25) [how you can go and create alerts as well](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=91) [using the graphical interface. But](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=93.25) [whatever you do, do make sure that you put](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=94.84210526315789) [some kind of automated alerting process on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=98.6315789473684) [things like 823 and 824 on high severity errors.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=13&mode=live&start=101.57894736842101)

[Summary](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=14&mode=live)

[Summary. In this module, we've talked](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=14&mode=live&start=1.5) [about page protection options and we've](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=14&mode=live&start=3.2647058823529407) [talked about how SQL Server can detect](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=14&mode=live&start=5.029411764705881) [corruptions that happen at the page level.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=14&mode=live&start=7.026315789473685) [It's extremely important that you make use](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=14&mode=live&start=8.868421052631582) [of SQL Server's built-in mechanism for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=14&mode=live&start=10.71052631578948) [doing this by turning on page checksums.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=14&mode=live&start=12.333333333333336) [If you've upgraded, go and check all your](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=14&mode=live&start=14.277777777777786) [databases using the demo that I showed you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=14&mode=live&start=16.5) [and make sure they're not set to torn-page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=14&mode=live&start=18.85294117647058) [detection. If they are, change them to use](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=14&mode=live&start=21.20588235294116) [page checksums. Remember that page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=14&mode=live&start=23.600000000000005) [checksums are on by default for any](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=14&mode=live&start=25.10000000000001) [databases created on SQL Server 2005 or](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=14&mode=live&start=27.200000000000014)[onward, except tempdb, which is on for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=14&mode=live&start=30.125) [2008 and onward. So if you've upgraded](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=14&mode=live&start=33.1875) [from a 2005 instance, go make sure that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=14&mode=live&start=35.64285714285714) [your tempdb has page checksums turned on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=14&mode=live&start=37.928571428571416) [as well. Remember back to what I said](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=14&mode=live&start=39.92857142857141) [right in the introduction. The sooner you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=14&mode=live&start=41.763157894736835) [know you have corruption, the more likely](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=14&mode=live&start=43.23684210526314)[you can recover with minimal downtime and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=14&mode=live&start=44.86363636363637) [minimal data loss. So don't just turn on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=14&mode=live&start=47.409090909090935) [page checksums, also make sure you've got](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=14&mode=live&start=49.61111111111111) [some kind of alerting mechanism that's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=14&mode=live&start=51.16666666666666) [going to tell you as soon as some kind of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=14&mode=live&start=52.5) [corruption is detected. Now in the next](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=14&mode=live&start=55.576923076923066) [module, we're going to talk about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=14&mode=live&start=57.5)[consistency checking. We're also going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=14&mode=live&start=59) [talk about how to use backup checksums and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=14&mode=live&start=60.55263157894737) [a lot of frequently asked questions around consistency checking methodologies.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m3-page&clip=14&mode=live&start=62.65789473684211)

[Consistency Checking](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=0&mode=live)

[Introduction](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=0&mode=live)

[Hi, this is Paul Randal from SQKskills.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=0&mode=live&start=0) [com and I'm recording this course for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=0&mode=live&start=3.033333333333334) [Pluralsight. This is the SQL Server:](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=0&mode=live&start=6.066666666666669) [Detecting and Correcting Database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=0&mode=live&start=8.21875)[Corruption course, and you're watching](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=0&mode=live&start=9.59375) [Module 4: Consistency Checking.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=0&mode=live&start=11.3125) [Introduction. Now we've talked about how](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=0&mode=live&start=14) [SQL Server can automatically discover](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=0&mode=live&start=16.142857142857146) [corruption through page protection](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=0&mode=live&start=17.928571428571434) [options, but that only works if the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=0&mode=live&start=19.294117647058822) [corrupt pages are going to be read from](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=0&mode=live&start=21.35294117647058) [disk. There could be parts of a database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=0&mode=live&start=23.70588235294116) [that are very rarely used and are corrupt](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=0&mode=live&start=25.590909090909086) [on disk and you're not going to know that.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=0&mode=live&start=27.4090909090909) [So there is a method you can use to force](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=0&mode=live&start=29.545454545454547) [all the allocated pages in the database to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=0&mode=live&start=32.27272727272728) [be used, and that's consistency checking.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=0&mode=live&start=34.45454545454547) [So you need to run regular consistency](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=0&mode=live&start=36.176470588235304) [checking to help SQL Server detect that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=0&mode=live&start=38.235294117647086) [corruption is there, because remember, the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=0&mode=live&start=40.3125) [sooner you detect corruption, the more](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=0&mode=live&start=42.1875) [likely you can recover with the minimum of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=0&mode=live&start=44.0625)[downtime and data loss. So in this module,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=0&mode=live&start=46.31578947368421) [we're going to talk about consistency](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=0&mode=live&start=48.42105263157895) [checking using backup checksums and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=0&mode=live&start=50) [frequently asked questions about both of these.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=0&mode=live&start=55)

[Consistency Checks](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=1&mode=live)

[Consistency checks. So the word](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=1&mode=live&start=1.5) [consistency means that something is as it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=1&mode=live&start=3.166666666666667) [is supposed or defined to be. And here's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=1&mode=live&start=5.499999999999999) [an example. If there's two pages in a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=1&mode=live&start=8.1) [clustered index down at the bottom at the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=1&mode=live&start=10.500000000000005) [leaf level, so data page X points to data](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=1&mode=live&start=12.900000000000011) [page Y as being the next page in the leaf](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=1&mode=live&start=15.541666666666663) [level of clustered index, page Y should](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=1&mode=live&start=18.45833333333334) [exist, it should be part of that clustered](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=1&mode=live&start=20.5) [index, it should be at the leaf level, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=1&mode=live&start=21.954545454545467) [it should have the correct key values on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=1&mode=live&start=23.59090909090912) [it, that means it's consistent. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=1&mode=live&start=25.499999999999996) [consistency checking in the context of SQL](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=1&mode=live&start=27.49999999999999) [Server means you're running some kind of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=1&mode=live&start=29.833333333333314) [process that validates the consistency of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=1&mode=live&start=32.03846153846153) [the database. And usually this means](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=1&mode=live&start=33.88461538461537) [you're running DBCC CHECKDB. Now we're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=1&mode=live&start=35.611111111111114) [going to talk about DBCC CHECKDB and all](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=1&mode=live&start=37.277777777777786)[the other related DBCC CHECK commands in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=1&mode=live&start=39.5) [the next module. Now consistency checking](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=1&mode=live&start=41.97058823529411) [itself is also known as integrity](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=1&mode=live&start=44.08823529411763) [checking, and you'll see both terms used](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=1&mode=live&start=46.5) [interchangeably throughout the literature](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=1&mode=live&start=50) [on SQL Server. There are a bunch of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=1&mode=live&start=52) [important questions and frequently asked](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=1&mode=live&start=54.83333333333333)[questions about consistency checking, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=1&mode=live&start=56.16666666666666) [we're going to talk about them as part of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=1&mode=live&start=57.5) [this module. How often do you run](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=1&mode=live&start=59.39473684210525) [consistency checks, which databases are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=1&mode=live&start=60.86842105263156) [you supposed to use, and why not just use](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=1&mode=live&start=62.21428571428571) [backup checksums instead? I'm going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=1&mode=live&start=65.42857142857142) [give you the answers to these and more in the rest of this module.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=1&mode=live&start=69.5)

[Which Databases Should Be Checked?](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live)

[Which databases should be checked?](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=2) [Basically all of them. You should run](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=3.333333333333333) [consistency checks regularly on all your](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=5.199999999999999) [databases, and that includes read-only](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=7.125) [databases because just because a file is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=9) [read-only doesn't mean that the I/O](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=11.625) [subsystem can't corrupt it. Now I'm not](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=13.17647058823529) [just talking about user databases, you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=14.823529411764696) [should also include your system databases](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=16.375) [as well. Master, it contains information](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=18.625) [about all the other databases, it also](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=20.875)[contains users, logins, and server scoped](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=23.454545454545453) [objects. If it's corrupt it can cause an](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=25.636363636363633) [instance to fail to start. Now there's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=27.842105263157897) [also the resource database, which is kind](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=29.684210526315795) [of like a DLL called mssqlsystemresource,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=31.77777777777778) [and whatever you run DBCC CHECKDB on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=34.11111111111109) [master, it automatically runs it on the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=36.83333333333329) [resource database as well. Msdb, because](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=39.47368421052633) [that contains all your SQL Agent jobs and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=41.68421052631582) [schedules, alerts, backup history, and a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=44.63157894736848) [bunch more stuff. Model, as that's the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=46.5625) [database that's copied essentially when](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=48.75) [you create new databases. Tempdb, as](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=50.411764705882355) [corruptions in it can cause an instance to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=52.882352941176485) [shut down. Now, if you're using the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=56.176470588235325) [Maintenance Plan Wizard to create a job to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=58.38888888888889) [check integrity, tempdb is going to be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=60.61111111111112) [excluded so you need to have something](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=62.705882352941174) [that manually runs a consistency check on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=65.1764705882353) [tempdb. And then replication distribution](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=67.64705882352946) [databases are also system databases, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=69.42857142857144) [you want to consistency check those to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=71.57142857142861) [make sure that you don't have replication](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=74.09090909090908) [problems. So once again, which databases](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=76.6363636363636) [should be checked? Every single one of them.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=2&mode=live&start=82)

[How to Run Consistency Checks?](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=3&mode=live)

[How to run consistency checks. You've](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=3&mode=live&start=2) [basically got three options for running](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=3&mode=live&start=4.142857142857143) [consistency checks. The first one is just](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=3&mode=live&start=6.285714285714284) [to do it manually, the second one is to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=3&mode=live&start=8.304347826086957) [create your own script using SQL Agent to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=3&mode=live&start=10.652173913043473) [run consistency checks on a regular basis,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=3&mode=live&start=12.739130434782599) [and the third one is to automate it using](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=3&mode=live&start=14.800000000000004) [a SQL Server Maintenance Plan. Now I'm](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=3&mode=live&start=17.50000000000001) [going to do a demo in a second of using](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=3&mode=live&start=19.43478260869565) [SQL Agent to create an automatic script,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=3&mode=live&start=21.608695652173893) [but SQL Server Maintenance Plans are going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=3&mode=live&start=23.130434782608663) [to be demonstrated in detail in the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=3&mode=live&start=24.789473684210527) [upcoming course that we're going to have](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=3&mode=live&start=26.631578947368425) [on Pluralsight called SQL Server](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=3&mode=live&start=28.473684210526322) [Maintenance Plans. In the next module,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=3&mode=live&start=29.9375) [we'll talk about exactly what DBCC](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=3&mode=live&start=31.8125) [commands to use for which kind of checks](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=3&mode=live&start=33.6875) [you're going to do, but my demo is just](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=3&mode=live&start=35.666666666666686) [going to run DBCC CHECKDB. Another option](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=3&mode=live&start=37.80952380952385) [you might consider is to use Ola](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=3&mode=live&start=39.727272727272734) [Hallengren scripts. These are free,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=3&mode=live&start=42.2727272727273) [they're extremely widely used, we have](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=3&mode=live&start=43.75) [them running on our clients and they're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=3&mode=live&start=45.25) [very easy to use. It's a set of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=3&mode=live&start=47) [maintenance scripts that runs consistency](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=3&mode=live&start=49.71428571428572) [checks, index fragmentation removal,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=3&mode=live&start=51.857142857142875) [statistics updates, and backups. I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=3&mode=live&start=53.5714285714286) [strongly recommend that you check those](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=3&mode=live&start=54.888888888888886) [out if you don't already have some kind of automated database maintenance setup.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=3&mode=live&start=56.222222222222214)

[Demo: SQL Agent Job to Run Consistency Checks](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live)

[In this demo, I'm going to show you how to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=2) [setup a consistency check SQL Agent job.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=4.352941176470589) [So I'm going to connect up to my instance](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=6) [in Object Explorer first of all. And then](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=9.600000000000003) [go down to SQL Server Agent and I've](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=12.705882352941178) [already got an operator setup called Paul.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=15.529411764705888) [So I'm going to go to Jobs and do New Job](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=18) [and this is going to be for consistency](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=23.739130434782595) [checking the Company database and I'm](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=27.913043478260846) [going to have it enabled and the category](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=30.842105263157897) [I'm going to say Database Maintenance and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=34.210526315789465) [then Schedules. I'm going to create a New](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=37.15789473684208) [Schedule and this is for Consistency](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=41.60000000000001) [Checking of Company. It's Recurring, it's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=45.20000000000002) [Enabled. I'm going to try and do it Daily,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=48.08) [so every 1 day and I'm going to do it at 2](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=51.31999999999999) [o'clock in the morning. So 2 o'clock in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=55.639999999999986) [the morning starting today I'm going to be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=58.947368421052616) [running my consistency check. And then my](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=62.31578947368418) [Steps, I'm going to add a new step and the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=65.77272727272728) [Step name is Company DBCC CHECKDB, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=71.68181818181822) [it's Transact-SQL, and I'm going to be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=75.81818181818187) [running, it doesn't matter where I run it,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=79.61904761904759) [I'm going to run DBCC CHECKDB Company WITH](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=83.80952380952374) [NO\_INFOMSGS, and I'm going to talk all](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=88) [about what check commands there are and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=90.09999999999998) [what options in the next module. So that's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=92.19999999999996) [where I'm going to run. And then](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=95) [Notifications. I'm going to say I want to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=98.5) [email Paul when the job fails. And let's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=102.5) [actually write to the Windows Application](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=106.04999999999998)[event log when the job fails as well so](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=108.14999999999995) [that we know what's going on. And that's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=111.2999999999999) [it. So very simply there I created a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=114.52631578947367) [consistency checking job that's going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=117.89473684210523) [go out every day at 2 o'clock in the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=120.27777777777777) [morning and run CHECKDB on my company](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=122.77777777777771) [database. It's enabled, I'm going to only](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=124.72222222222211) [be told when something goes wrong, it's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=126.57894736842101) [that simple to do regular consistency checks.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=4&mode=live&start=128.42105263157887)

[Demo: Viewing SQL Agent Job History](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live)

[In this demo, I'm going to show you how](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=0) [you can look at the job history of Agent](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=2.454545454545454) [jobs that you've created to run](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=4.9090909090909065) [consistency checks. So what I'm going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=6.5) [do is I've already changed the Agent job](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=8.25) [that we created in the previous demo to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=10.25) [run every 30 seconds all the way through](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=12.333333333333337) [the day. And what I'm going to do is I'm](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=14.466666666666677) [going to show you how to look at the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=16.28) [history and then I'm going to use these](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=17.720000000000002) [undocumented commands, DBCC WRITEPAGE to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=19) [go and cause some corruption in the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=20.5625) [company database and we'll see the job](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=22.75) [history show a failed Agent job. So first](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=25.421052631578945) [off, let's go and look at our job. So if](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=29.210526315789465) [we click on Jobs, right-click and say Job](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=33.78260869565217) [History, View History, we can see all the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=36.91304347826086) [Agent jobs that have run. So you can see,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=40.04347826086955) [this is obviously a contrived example, but](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=43) [we can see our Company Consistency Check](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=44.75) [is succeeding every time it's running. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=46.5) [now let's go and create some corruption.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=49.5) [So I'm going to go in and create a table](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=53) [and then I'm going to pick a page from](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=57.79999999999997) [using DBCC IND and let's pick page 293.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=62.11999999999994) [I'm going to change this to 1 and this to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=66.04347826086956) [293, and I'll show you the rest of that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=71.26086956521738) [command there. Go ahead and run this and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=75.95652173913041) [now we've created some corruption in our](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=79.57142857142858) [database. And then if we go back to our](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=82.5714285714286) [Job History, wow immediately, we were just](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=85.66666666666663) [lucky there and it ran straightaway after](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=87.99999999999993) [we caused that corruption. And what we can](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=90.33333333333333) [see there is the job failed. So if we open](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=92.99999999999996) [it up, we look and see which Step ID it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=96.03703703703701) [was that failed, Step ID 1, and we can see](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=98.62962962962953) [that's the CHECKDB of our database. And](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=101.22222222222206) [then if we want to see what actually](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=103.63636363636363) [failed, what the results were, we can look](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=106.90909090909088)[down here and there's the output of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=110.18181818181813) [CHECKDB command that failed, and we're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=112.71428571428575) [going to look more at output of CHECKDB in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=114.4285714285715) [module 6. This is really cool because now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=117) [you can go back and find out exactly when](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=119.5454545454545) [the first time that your SQL Agent job](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=122.40909090909082) [discovered there was corruption. It could](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=124.94736842105262) [have been for instance that the operator](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=126.84210526315785) [who was emailed didn't get the email or](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=129.05263157894734) [was ignoring the email for some reason,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=130.95238095238102) [but now you've got a job history that shows you exactly what was going on.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=5&mode=live&start=132.28571428571445)

[How Often Should Consistency Checks Be Run?](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live)

[How often should consistency checks be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=2) [run? Well the answer is kind of it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=3.5999999999999996) [depends. It depends on a bunch of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=5.7333333333333325) [different things. For instance, how stable](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=7.5) [is the I/O subsystem? If you know that the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=9) [I/O subsystem has problems, you're going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=11.315789473684212) [to want to be running consistency checks](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=12.894736842105267) [more frequently than if you know that your](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=14.736842105263165) [I/O subsystem is very stable. Backup](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=17.33333333333333) [strategy. If you have a very comprehensive](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=19.235294117647058) [backup strategy that you've tested well,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=20.882352941176464) [you might not want to run consistency](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=22.294117647058812) [checks quite so often. What kind of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=24.555555555555557) [downtime is acceptable if corruption](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=27.277777777777782) [occurs, what kind of data loss is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=29.22222222222223) [acceptable if corruption occurs, how](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=31.25) [quickly do you have to need to know that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=32.5) [corruption is there to be able to recover](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=34.75) [within your acceptable downtime and data](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=37.79999999999999) [loss requirements? This is a really](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=40.19999999999998) [important one, running consistency checks](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=42.05263157894737) [takes a lot of resources, a bunch of extra](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=43.36842105263158) [I/O and a bunch of CPU. So is there a time](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=45.736842105263165) [window during the day or a weekend for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=48.5) [instance when the system is not going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=50.5) [be compromised in terms of workload](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=52.8) [throughput where you can run consistency](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=55.19999999999999) [checks. What kind of system is it? A](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=57.59999999999998) [production system you're going to want to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=59.75) [consistency check more often than say a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=61.5) [test system. I always like to say run](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=63.333333333333336) [consistency checks at least once a week,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=65.99999999999997) [more frequently if you can, but at least](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=68.33333333333327) [once a week. Once every two weeks or once](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=70.8181818181818) [every month just feels like it's not](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=73.2727272727272) [enough for the frequency of corruptions](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=75.18181818181806) [that I see occurring around the world. Now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=76.89999999999999) [here's a couple of examples for you.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=79.23809523809524) [Imagine you have the situation where you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=80.90476190476193) [have no backups at all and you have](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=82.57142857142861) [corruptions happening all the time and you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=84.63157894736841) [have a 0 downtime and data loss service](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=86.84210526315785) [level agreement, kind of nonsensical](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=89.36842105263149) [situation. But in that case, you're going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=90.7894736842105) [to want to know about corruption as soon](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=92.63157894736835) [as possible because the only option you're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=94.73684210526304) [going to have to recover from corruption](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=96.89473684210523) [is to run repair, and repair usually](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=99.10526315789467) [causes data loss. So the sooner you know,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=101.28571428571429) [the least data gets deleted. In that case,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=103.57142857142863) [we're going to be running CHECKDB over and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=105.8181818181818) [over and over again, almost in kind of a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=107.99999999999993) [tight loop. At the other end of the scale,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=110.45454545454533) [maybe you've got a very large database and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=112.90909090909086) [you've got a very, very well worked-out,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=115.090909090909) [well-tested disaster recovery strategy,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=117) [you have very low downtime data loss](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=118.25) [tolerance, but you know that you can](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=120.4375) [recover within that downtime and data loss](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=122.625) [tolerance, you've also got say synchronous](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=124.8125) [database mirroring or synchronous](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=126.6875) [availability group setup, making sure that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=127.8) [you've got a really up-to-date copy of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=129.40000000000006) [database to minimize data loss. In that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=131.66666666666669) [case, you might not want to run CHECKDB](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=134.00000000000009) [quite so often, or consistency checks](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=136.66666666666683) [quite so often, so maybe once a week will](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=138.53333333333336) [be fine for you. It really just does](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=140.93333333333348) [depend on your situation. Bottom line](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=142.90909090909088) [though is run them as often as you can and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=144.2727272727272) [run them to whatever frequency gives you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=146.5454545454544) [peace of mind that your databases are not suffering from corruption problems.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=6&mode=live&start=152)

[Can You Ever Get a Guarantee?](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live)

[Can you ever get a guarantee? Well the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=2) [short answer is no. No matter how often](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=4) [you run consistency checks, you're not](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=6) [going to get a guarantee that your](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=7.588235294117647) [database is free of corruption at all](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=9.647058823529415) [times. Here's an analogy. Imagine that the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=11.705882352941185) [Seattle Police Department has a Traffic](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=14.625) [Control Division and Officer Paul works](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=17.25) [for the Traffic Control Division. He has a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=19.363636363636367) [very boring job, he sits in a control room](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=20.818181818181834) [and he has a monitor in front of him. He](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=22.454545454545485)[presses a button and he looks at a camera](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=24.999999999999993) [at an intersection in Seattle. He presses](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=27.571428571428555) [a button and it moves to a different](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=29.4) [intersection. His job is to look at each](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=30.999999999999993) [intersection for 10 seconds and work out](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=32.599999999999994) [when a crash occurs and to notify all the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=34.66666666666668) [rest of the police. So Officer Paul comes](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=37.6666666666667) [to work in the morning and sits down and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=39.888888888888886) [starts looking through the intersections.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=41.88888888888888) [So he looks at intersection #1 for 10](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=43) [seconds, presses the button to go to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=45.35294117647061)[intersection #2. Immediately there's a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=47.41176470588239) [crash at intersection #1, just by chance.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=49.199999999999996) [Now, given the way that Officer Paul](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=52) [works, the button pushing is not going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=53.99999999999999) [cycle back around to the first](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=56.28571428571427) [intersection again for quite a while, so](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=58) [until the next time that Officer Paul](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=59.94444444444445) [looks at intersection #1, he's not going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=61.8888888888889) [to know that there's been a crash. And](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=63.75) [this is the same thing that consistency](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=65.75) [checking is doing because what DBCC](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=67.5) [CHECKDB is doing is it's just reading a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=69.63636363636363) [few pages at a time, it cannot read all](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=72.90909090909088) [the database pages at the same time. So it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=76.59090909090904) [reads a page and it processes it, it reads](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=78.73913043478262) [a page and it processes it. After that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=80.69565217391307) [page has been read, it may immediately](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=82.73684210526315) [become corrupt on disk, just by chance,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=85.31578947368418) [and the corruption on disk is not going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=87.8947368421052) [be noticed until the next time you run](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=90.41176470588235) [consistency checks again. So all that a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=92.29411764705881) [consistency check is telling you is that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=93.86956521739131) [at the time that all the pages were read,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=95.39130434782611) [over the time it took to run that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=97.34782608695656) [consistency check, there were no problems.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=99.74999999999997) [This is why you have to run regular](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=101.84999999999994)[consistency checks because you cannot get a guarantee.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=7&mode=live&start=104.64999999999989)

[How to Consistency Check a VLDB?](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live)

[How to consistency check a VLDB. Now by](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=2) [VLDB I mean a very large database.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=4.666666666666667) [Consistency checking a very large](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=7) [database, maybe multilevel terabytes, can](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=8.470588235294118) [take many, many hours, and it could be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=9.941176470588239) [that the maintenance window that you have](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=12.333333333333334) [where you can afford the extra resources](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=14.666666666666671)[necessary to run consistency checking](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=17.000000000000004) [isn't big enough. So you might want to try](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=18.77777777777778) [and do something to offload the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=22.277777777777782) [consistency checks somewhere else, or work](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=24.611111111111118) [around the fact that consistency checking](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=26.66666666666666) [takes a long time. You've basically got](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=28.666666666666654) [four options for reducing the runtime of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=30.999999999999996) [consistency checks. And the first one I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=33.333333333333336) [don't recommend, which is don't run any](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=35.13636363636363) [checks, but I see lots of people doing](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=36.72727272727272) [this when they run up against the problem](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=38.54545454545453) [of a maintenance window where they can't](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=40.41176470588235) [fit in a CHECKDB. You could use DBCC](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=42.058823529411754) [CHECKDB options to reduce the time and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=44.176470588235304) [resources necessary for running the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=46.235294117647086) [consistency check, and I'm going to talk](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=47.70588235294122) [about those in module 5. Another thing you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=49.36363636363636) [could do is you could break up the checks](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=51.18181818181817) [over time using some of the other DBCC](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=53.25) [CHECK commands. And again, I'm going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=55.25) [talk about those in module 5 too. The one](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=57) [I'm going to talk about in this module is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=59.42857142857142) [how to use another system, another](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=61.999999999999986) [complete SQL Server instance on another](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=63.714285714285694) [server to run the consistency checks on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=65.76470588235297)[your database, thus completely removing](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=68.23529411764713) [the workload of running consistency checks from your main production system.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=8&mode=live&start=70)

[Consistency Checks Using Another Server (1)](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=9&mode=live)

[Consistency checking using another server,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=9&mode=live&start=2) [part 1. Using this method, you can](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=9&mode=live&start=3.5625) [completely remove all the extra resources](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=9&mode=live&start=5.75) [necessary to run the consistency checking](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=9&mode=live&start=7.76923076923077) [workload on your production server. Here's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=9&mode=live&start=10.07692307692308) [how you do it. First off, take a backup of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=9&mode=live&start=12.3) [the database from the production server](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=9&mode=live&start=15.300000000000008) [using backup checksums that we're going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=9&mode=live&start=17.100000000000012) [talk about in a few more slides, restore](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=9&mode=live&start=18.799999999999997) [the database on the other server making](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=9&mode=live&start=20.39999999999999) [sure that you're checking the backup](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=9&mode=live&start=21.799999999999986) [checksums, then run the consistency checks](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=9&mode=live&start=23.470588235294112) [on that restored copy of the database.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=9&mode=live&start=25.235294117647047) [Absolutely no workload extra on your](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=9&mode=live&start=27.375) [production server because you have to take](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=9&mode=live&start=29.625) [backups anyway. Now, what do you do if](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=9&mode=live&start=32.25) [corruption is found? There's a little bit](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=9&mode=live&start=34.875) [of a problem. Is it the I/O subsystem on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=9&mode=live&start=37.0625) [this server that's caused the problem, is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=9&mode=live&start=39.20000000000002) [it the backup file that has corruption in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=9&mode=live&start=40.60000000000004) [it or is it the database on the production](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=9&mode=live&start=42.4)[server that actually has corruption? If](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=9&mode=live&start=45.999999999999986) [corruption is found using this method,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=9&mode=live&start=48.25) [which should be very rare, it actually](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=9&mode=live&start=49.75) [forces you to go back and run consistency](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=9&mode=live&start=51.5) [checks on the production server to figure](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=9&mode=live&start=53.55555555555556) [out exactly what the problem is and where](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=9&mode=live&start=55.50000000000001) [the problem is. However, as I said, it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=9&mode=live&start=57.722222222222236) [should be rare. The vast majority of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=9&mode=live&start=60.21052631578949) [time, you've completely offloaded the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=9&mode=live&start=62.736842105263186) [consistency checking workload from your production server.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=9&mode=live&start=65)

[Consistency Checks Using Another Server (2)](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=10&mode=live)

[Consistency checking using another server,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=10&mode=live&start=2) [part 2. Now one thing that I've seen](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=10&mode=live&start=3.470588235294117) [people advocate is running consistency](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=10&mode=live&start=5.823529411764704) [checks on say a mirror database or on the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=10&mode=live&start=7.3) [secondary replica of an availability group](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=10&mode=live&start=10.000000000000004) [as a way of being able to consistency](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=10&mode=live&start=11.800000000000008) [check the mirroring principal database or](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=10&mode=live&start=14.600000000000001) [the availability group primary replica.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=10&mode=live&start=17) [This is just not valid. The reason it's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=10&mode=live&start=19) [not valid is that these various servers](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=10&mode=live&start=21.52631578947367) [are using different I/O subsystems and as](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=10&mode=live&start=23.736842105263133) [we talked about earlier on, corruptions to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=10&mode=live&start=26.071428571428573) [not propagate between servers. So as an](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=10&mode=live&start=28.571428571428577) [example, if you run consistency checks on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=10&mode=live&start=30.900000000000002) [a database snapshot of your mirror](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=10&mode=live&start=32.99999999999999) [database and it finds that there's no](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=10&mode=live&start=34.799999999999976) [corruption, that does not imply anything](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=10&mode=live&start=36.666666666666664) [at all about the state of the principal](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=10&mode=live&start=37.99999999999999)[database, which is running on a different](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=10&mode=live&start=39.777777777777764) [server using a different I/O subsystem.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=10&mode=live&start=42.000000000000014) [Consistency checking should ideally be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=10&mode=live&start=44) [performed on all copies of a database that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=10&mode=live&start=45.38888888888889) [you're using for any kind of workload. Now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=10&mode=live&start=47.61111111111112) [this is especially true if you're using](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=10&mode=live&start=50.05882352941176) [availability groups and you're using a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=10&mode=live&start=52.52941176470587) [secondary replica to offload your full](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=10&mode=live&start=54.64705882352939) [backups from the primary replica. You want](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=10&mode=live&start=56.57894736842106) [to make sure that the primary replica](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=10&mode=live&start=58.78947368421055) [doesn't have any corruption. You also want](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=10&mode=live&start=61) [to make sure that that secondary replica](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=10&mode=live&start=62.55555555555555) [that you're using to take your full backups doesn't have corruption either.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=10&mode=live&start=64.1111111111111)

[Backup Checksums](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live)

[Backup checksums. The way you use backup](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live&start=2) [checksums is to use the WITH CHECKSUM](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live&start=3.9444444444444438) [option when you're performing a backup.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live&start=5.8888888888888875) [What this is going to do is several](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live&start=7.545454545454545) [things. Firstly, as all the pages are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live&start=9.72727272727273) [being read from the database, it's going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live&start=11.636363636363644) [to validate their page checksums. And if](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live&start=13.399999999999999) [it finds a problem, it's going to stop the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live&start=14.799999999999994) [backup and tell you. It also calculates a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live&start=16.599999999999987) [checksum over the entire backup itself and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live&start=18.894736842105253) [records it in the backup header. Backup](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live&start=21.105263157894715) [checksums have negligible performance](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live&start=23.294117647058822) [impact. Compare it to the I/Os that you're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live&start=24.470588235294112) [doing, the extra CPU is just basically](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live&start=26.823529411764692) [nothing. This gives you some peace of mind](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live&start=28.900000000000002) [that there are no I/O errors present in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live&start=31.300000000000008) [the database when you took the backup. I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live&start=33.699999999999996) [absolutely always recommend that you use](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live&start=36.47058823529411) [checksum when you're doing backups from](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live&start=38.58823529411763) [2005 onwards. It also allows you to verify](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live&start=40.94736842105263) [the integrity of the backup using the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live&start=44.73684210526315) [RESTORE VERIFYONLY and then use the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live&start=48.052631578947356) [checksum option. This gives you some piece](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live&start=49.90909090909091) [of mind that at that point there are no](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live&start=51.49999999999999) [I/O errors present in the backup because](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live&start=53.54545454545453) [backups are susceptible to I/O subsystem](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live&start=55.47058823529413) [corruption, just like any other data](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live&start=57.235294117647086) [files. There's no reason that backups are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live&start=59) [going to be excluded from random I/O](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live&start=62.0625) [subsystem corruption. The other thing that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live&start=65.125) [backup checksums allow is for the page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live&start=67.11111111111109) [checksums to be checked during the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live&start=69.05555555555549) [restore, and the restore will fail if it comes across a bad page checksum.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=11&mode=live&start=70.72222222222211)

[Demo: Backup Checksums](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live)

[In this demo, I want to show you backup](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=1.5) [checksums. So once again, I'm going to use](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=3.974999999999999) [the undocumented DBCC WRITEPAGE and DBCC](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=6.175000000000002) [IND commands to cause some corruption, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=7.75) [I'll talk about those in the advanced](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=9.5) [course. So this is the setup script and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=11.25) [first off I'm going to get rid of any](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=13.93478260869565) [databases that I've got left lying around.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=17.06521739130435) [There's a second one to get rid of. And](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=19.5) [then I'm going to create a database called](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=22.77272727272727) [Company, I'm going to go in and create](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=25.681818181818176) [some data in it, I'm going to create](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=28.849999999999998) [another database called Company2, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=32.449999999999996) [we're going to create some corruption in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=34.70000000000001)[Company2. So I'm going to use DBCC IND to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=38.21428571428571) [find what pages there are, and let's pick](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=43.35714285714283) [289. And we'll change our DBCC WRITEPAGE](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=47.92857142857139) [command to corrupt page 289 as so. And](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=52.65384615384616) [then do some cleanup. Okay, now we're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=57.973684210526315) [ready for the demo. So switching over to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=61.28947368421052) [the demo script. First off, I'm going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=65.07894736842104) [create a backup of both databases and what](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=68.4047619047619) [we're going to see is that Company2 we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=71.45238095238093) [know has a corruption in it now. However,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=74.5) [if I just do a regular backup, there's no](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=78.10000000000002) [checking of anything that goes on, so the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=82.15000000000005) [corrupt pages get pulled up into the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=85.50000000000003) [backup no problem. Now what about if I use](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=88.30000000000007) [WITH CHECKSUM, so the Company database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=92.34210526315789) [using WITH CHECKSUM no problem, the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=95.18421052631578) [Company2 database with the corruption that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=98.02631578947367) [we caused, it fails. It says hey, we found](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=101.65789473684212) [a corruption in Company2. mdf. So this is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=107.34210526315795) [cool, this is the default behavior and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=111.02941176470587) [this is what we want to happen. We want a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=112.2647058823529) [backup to fail using WITH CHECKSUM if we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=114.57142857142858) [had a problem. Now we can force it to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=117.42857142857147) [occur using WITH CONTINUE\_AFTER\_ERROR, we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=120.29999999999998)[can force the backup to happen and in some](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=121.79999999999997) [of the more advanced stuff that I talk](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=124.5) [about in the following course, I'll go](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=127.4473684210526) [into using corrupt backups. But I can](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=130.0263157894737) [force that backup to happen using WITH](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=132.91176470588235) [CHECKSUM and using WITH](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=136.20588235294116) [CONTINUE\_AFTER\_ERROR, like so. Now and it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=138.08823529411762) [tells me BACKUP WITH CONTINUE\_AFTER\_ERROR](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=140.625) [successfully generated a backup of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=142.5) [damaged database. Refer to the error log](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=144.75) [for more information. Now you might think](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=146.75) [well, why don't I just remove the checksum](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=148.5) [and create the backup. Well that's not](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=150.5) [very useful. I would want to know that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=152.16666666666669) [this backup that I have has some damage in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=154.0714285714286) [it, and I can look and see in the backup](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=156.60526315789477) [header that this database is damaged. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=160.28947368421066) [if I scroll across, I will see one of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=163.16666666666666) [fields here. I have BackupChecksums and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=169.83333333333323) [IsDamaged, but I want to know that this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=173.83333333333317) [backup contains a database that has](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=178.3461538461538) [corruption in it. Now what about the error](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=181.11538461538453) [log? If I connect up to my instance, go to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=185) [Management, Error Logs, look at the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=190) [Current error log, what we can see is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=193)[here's our original backup finding a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=200.1315789473684) [problem, failing the backup and here we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=205.8157894736842) [forced it to continue. But we can see that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=211.83333333333334) [whenever a backup fails, we're going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=214.83333333333343) [get error messages in our error log, which](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=217.16666666666683) [is great. Now what about backup integrity?](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=221.40909090909088) [Well you can use RESTORE VERIFYONLY](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=226.5)[without the checksum option, it says it's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=230.35714285714283) [valid. The original Company2 backup we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=234.8571428571428) [took without checksums, it says it's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=237.5833333333333) [valid. And what about the Company backup](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=240.08333333333323) [with checksums, valid, and Company2 with](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=243.97368421052624) [checksums, the one we had to force? The](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=247.4473684210525) [backup set was written with](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=251.6875)[CONTINUE\_AFTER\_ERROR, so it knows it's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=252.625) [damaged, it doesn't even bother looking](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=253.5625) [through it. Now one thing you could do](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=254.83333333333334) [yourself is you could take this demo and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=257.49999999999994) [you could take one of those backups, maybe](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=260.16666666666646) [open it up with a hex editor, write some](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=262.71739130434776) [rubbish in there, and save it again, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=265.4565217391302)[then try rerunning the verification and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=267.8913043478257) [see if it finds a problem. What about now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=270.8529411764705) [using VERIFYONLY WITH CHECKSUM? We can't](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=276.1470588235291) [on that first backup because we didn't do](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=279.21428571428567) [a backup with checksum. See, it doesn't](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=282.0714285714283) [contain checksum information. We'll get](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=284.8125) [the same problem for this one, same thing.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=287) [Now, for our original Company backup, no](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=290.5) [problem. Company2, the one we forced,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=295.02941176470574) [doesn't even bother looking through, it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=298.9117647058821) [knows we forced it so it says this is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=302.375) [damaged. Now what about restoring? So if I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=306.3125) [restore my initial Company backup, that's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=310.50000000000006) [going to work, my initial Company2 backup](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=314.50000000000017) [without checksums, that's going to work](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=319.16666666666697) [too no problem, even though we know that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=321.4411764705883) [this Company2 database is corrupt. This](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=323.32352941176487)[backup was not taken using backup](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=324.92105263157896) [checksums. And then the backups that we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=327.4473684210527) [took using checksums, the first one of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=330.39473684210543) [uncorrupt database, of course that works,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=333.49999999999994) [and then the one with the corruption in it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=335.49999999999983) [that we had to force. As we're doing the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=338.49999999999966) [restore, it says no, you've got a problem,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=341.9545454545456) [and it tells us which page it is. Cool](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=345.2272727272731) [stuff. But we can also force it. What](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=349.1666666666667) [about first just removing the checksum?](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=354.50000000000017) [Nope, it's always going to tell us that we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=358.5) [have that problem. We can force a corrupt](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=361.0714285714285) [backup to be restored, and this is one of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=363.3571428571427) [the more advanced techniques that I'm](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=365.49999999999994) [going to mention and talk about in the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=366.6999999999999) [advanced class, but it's a logical](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=368.2999999999998) [conclusion of this demo so I just want to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=369.75) [show you. So if we do WITH](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=372)[CONTINUE\_AFTER\_ERROR, it's going to allow](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=375) [us to restore that corrupt backup, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=377.5) [this is the only warning that we get, the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=381) [database is not marked as corrupt in any](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=384.89999999999986) [way. So if you're going to do this, be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=388.0999999999997) [extremely careful. This is why I have this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=390.0999999999999) [in the advanced class. But there's just an](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=391.6999999999998)[illustration of backup checksums and what](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=393.70000000000005) [it allows us to detect in terms of page checksum failures.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=12&mode=live&start=395.5000000000001)

[Backups Checksums vs. Consistency Checks](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=13&mode=live)

[Backups checksums versus consistency](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=13&mode=live&start=2) [checks. I've seen some people recommending](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=13&mode=live&start=3.5999999999999996) [using backup checksums as a replacement](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=13&mode=live&start=6.000000000000001) [for consistency checks, especially in the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=13&mode=live&start=8.428571428571429) [case where the consistency checking](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=13&mode=live&start=11.000000000000002) [workload cannot be run on the production](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=13&mode=live&start=13.142857142857146) [server. This is not valid. Even though](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=13&mode=live&start=15.578947368421053)[backup checksums are going to find](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=13&mode=live&start=17.789473684210517) [problems caused by the I/O subsystem, what](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=13&mode=live&start=19.68421052631577) [about if the page was corrupt in memory](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=13&mode=live&start=21.999999999999993) [and before it was written to disk. Here's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=13&mode=live&start=24.66666666666665) [an example. A page is in memory, gets](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=13&mode=live&start=27.266666666666666) [corrupted by a bad memory chip. The page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=13&mode=live&start=29.39999999999999) [is then written out to disk by the buffer](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=13&mode=live&start=31.454545454545453)[pool. The buffer pool doesn't know that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=13&mode=live&start=33.49999999999999) [the page is already corrupt so it puts a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=13&mode=live&start=35.09090909090908) [valid page checksum on the page and writes](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=13&mode=live&start=37.47058823529413) [it out to disk. The page has got a valid](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=13&mode=live&start=39.82352941176474) [checksum, but the contents are corrupt. A](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=13&mode=live&start=43.000000000000014) [backup checksum is going to say, well that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=13&mode=live&start=45.26315789473684) [checksum's fine, it doesn't know that the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=13&mode=live&start=47.36842105263158) [contents are corrupt. The only thing](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=13&mode=live&start=49.21052631578948) [that's going to be able to detect the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=13&mode=live&start=50.78947368421053) [corrupt contents of the page are consistency checks using DBCC.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=13&mode=live&start=52.89473684210527)

[Consistency Checking Survey (1)](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live)

[Consistency checking survey, part 1. So if](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=2) [you follow my blog you'll know that every](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=3.5750000000000006) [so often I run surveys and then I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=5.374999999999998) [editorialize the results. And one of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=7.357142857142857) [surveys that I ran recently was on what](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=9.35714285714286) [method do you use to run consistency](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=11.642857142857151) [checks on your production database. And](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=13.452380952380949) [you can see that I had a large number of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=14.880952380952372) [responses, 422 responses, and most of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=17.261904761904745) [responses are run CHECKDB with no options](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=19.97058823529411) [on the production database. You can also](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=22.85294117647057) [see that the next couple of options are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=25.400000000000002) [use with physical only on the production](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=27.800000000000008) [database, and that's one of the options](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=29.900000000000013) [you can use to make the consistency check](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=31.928571428571423) [run faster that we'll talk about in the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=34.2142857142857) [next module, and then what we've just](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=36.5) [talked about is running CHECKDB on a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=38.49999999999999)[restored copy of a backup on another](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=40.499999999999986) [server, 11%. I'm actually surprised. I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=42.5) [thought more people would do that. Now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=44.500000000000014) [look at all these. This one running](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=46.86842105263158) [CHECKDB on a database snapshot of a mirror](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=49.44736842105266) [is not valid. This one using backup](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=52.39473684210532) [checksums is not valid. This one running](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=54.76315789473685) [CHECKDB on a log shipping secondary or AG](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=56.973684210526336) [secondary is invalid. And nor is this one,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=59.5) [running CHECKDB on a SAN copy. That's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=62.928571428571445) [because these four options here that I've](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=65.875) [just highlighted are not running](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=68.5) [consistency checks on the main I/O](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=70.375) [subsystem or the production system. So it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=72.33333333333331) [doesn't tell you anything about the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=74.27777777777771) [consistency or lack thereof on the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=75.94444444444434) [production system. These two, spreading](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=78.75) [out consistency checking over several days](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=81.5625) [using CHECKFILEGROUP or CHECKTABLE, I'm](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=84.9375) [going to talk about in the next module](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=86.61111111111109) [where we talk about the different CHECK](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=88.83333333333326) [commands that exist apart from DBCC](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=90.875) [CHECKDB. This one down here you might be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=93.125) [wondering. This is where if there isn't](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=96.125) [enough space on your drive to be able to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=98.1363636363636) [run DBCC CHECKDB, you can create your own](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=100.590909090909) [database snapshot and run CHECKDB on the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=102.9) [database snapshot. And again, that's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=105.70000000000005) [something we're going to talk about in the next module.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=14&mode=live&start=109.5)

[Consistency Checking Survey (2)](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=15&mode=live)

[Consistency checking survey, part 2. This](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=15&mode=live&start=2) [is another survey that I ran recently on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=15&mode=live&start=4.0625) [my blog. How often do you run consistency](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=15&mode=live&start=6.8125) [checks regardless of how you actually run](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=15&mode=live&start=9.214285714285717) [them? Now, there are two valid answers](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=15&mode=live&start=11.214285714285722) [here, well three valid answers actually.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=15&mode=live&start=13.500000000000004) [Weekly, daily or more frequently than](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=15&mode=live&start=15.5) [daily. And you can see that most people](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=15&mode=live&start=17.16666666666667) [are running either weekly or daily, but](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=15&mode=live&start=19.3888888888889) [look at some of these answers that other](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=15&mode=live&start=21.357142857142854) [people have checked. What are consistency](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=15&mode=live&start=23.64285714285713) [checks, or never. Only when corruption is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=15&mode=live&start=25.333333333333336) [detected in some other way, only during an](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=15&mode=live&start=27.277777777777786) [upgrade or a migration, regularly, but](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=15&mode=live&start=29.5) [less than monthly or only after performing](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=15&mode=live&start=31.833333333333336) [a restore or after failover. These are not](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=15&mode=live&start=34.555555555555536) [valid. In fact monthly here as well. These](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=15&mode=live&start=37.357142857142854) [are not valid. This is not frequent enough](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=15&mode=live&start=39.64285714285713) [in my mind to be giving you a decent peace](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=15&mode=live&start=41.86363636363637) [of mind that you don't have corruption in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=15&mode=live&start=44.5909090909091) [your database. Now for whatever reason,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=15&mode=live&start=46.970588235294116)[you're maybe not running consistency](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=15&mode=live&start=49.79411764705881) [checks like these guys here, I would go](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=15&mode=live&start=52.14705882352939) [back and have a look and explore why](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=15&mode=live&start=55.10000000000001) [you're not running consistency checks,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=15&mode=live&start=56.70000000000003) [because in this module I've given you a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=15&mode=live&start=57.700000000000045) [bunch of ideas for how to go about running](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=15&mode=live&start=59.45238095238096) [consistency checks if you can't afford to run them on your production system.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=15&mode=live&start=61.59523809523813)

[Summary](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=16&mode=live)

[Summary. In this module we talked about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=16&mode=live&start=2) [consistency checking and regular](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=16&mode=live&start=4.333333333333334) [consistency checking is really necessary](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=16&mode=live&start=5.666666666666666) [in conjunction with using page checksums](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=16&mode=live&start=7.583333333333333) [on all of your databases. If you can't use](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=16&mode=live&start=11.083333333333336) [the production server to run consistency](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=16&mode=live&start=14.76190476190476) [checks, one of the cool things you can do](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=16&mode=live&start=15.904761904761898) [is make use of another server by doing a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=16&mode=live&start=17.619047619047606) [backup, copy, restore, and run consistency](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=16&mode=live&start=20.333333333333325) [checks on another server apart from your](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=16&mode=live&start=22.333333333333318) [production server. Whenever you're taking](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=16&mode=live&start=24.705882352941174) [backups, make sure you always use the WITH](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=16&mode=live&start=26.47058823529411) [CHECKSUM option. And this is not an](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=16&mode=live&start=29.294117647058805) [alternative, remember, to running regular](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=16&mode=live&start=31.875) [consistency checks, and I explained why.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=16&mode=live&start=33.75) [In the next module, we're going to talk](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=16&mode=live&start=36) [about DBCC CHECKDB that you've heard me](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=16&mode=live&start=37.81818181818181) [say a few times now and related DBCC CHECK](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=16&mode=live&start=39.4090909090909) [commands. We're also going to talk a bit about what DBCC CHECKDB does.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m4-consistency&clip=16&mode=live&start=43)

[DBCC CHECKDB and Related Commands](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live)

[Introduction](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live)

[Hi, this is Paul Randal from SQLskills.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=0) [com and I'm recording this course for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=2.8) [Pluralsight. This is the SQL Server:](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=5.6000000000000005) [Detecting and Correcting Database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=7.875)[Corruption course, and you're watching](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=9.375) [Module 5: DBCC CHECKDB and Related](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=11.25) [Commands. Introduction. Most of the time](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=16) [when you're going to be running](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=18.111111111111107) [consistency checks you're going to be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=19.444444444444436) [running DBCC CHECKDB because that's the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=20.777777777777764) [main consistency checking command, or](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=22.388888888888893) [maybe you're going to be running one of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=23.777777777777786) [the kind of subsidiary DBCC commands that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=26) [has a subset of the overall consistency](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=28.47058823529411) [checking functionality that there is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=30.941176470588218) [inside DBCC CHECKDB. Just at the start of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=32.54545454545455) [this module, I'd like to give a link to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=34.727272727272734) [the Books Online for DBCC in general at](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=37.181818181818194) [that bit. ly link there to save me having](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=39.30434782608695) [to reference it all the way through the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=41.65217391304347) [deck. Now that we've discussed consistency](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=43.739130434782595) [checking in the previous module, in this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=45.17647058823529) [module we're going to actually look at the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=46.823529411764696) [DBCC commands themselves. We'll start off](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=48.833333333333336) [with an overview of the main command, DBCC](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=50.50000000000001)[CHECKDB, and then we'll look at the other](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=52.722222222222236) [commands that implement subsets of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=55.47058823529411) [checks that CHECKDB does. We'll talk about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=57.58823529411763) [what consistency checks CHECKDB actually](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=60.00000000000001) [does. We'll talk about the different](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=61.666666666666686) [options that you have for the various](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=63.05263157894736) [CHECK commands and how they change the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=64.52631578947368) [behavior of those commands, some of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=66) [problems that can crop up when you're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=68.05882352941178) [running consistency checks using DBCC](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=70.11764705882356) [CHECKDB, and then we'll look at how you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=71.57142857142858) [can break up consistency checks over time](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=73.85714285714292) [to be more efficient with your database maintenance windows.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=0&mode=live&start=75.85714285714296)

[DBCC CHECKDB (1)](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live)

[DBCC CHECKDB, part 1. Just before we start](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=2) [this slide I'm going to say that some of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=3.8181818181818166) [the time you're going to hear me just](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=5.863636363636364) [saying CHECKDB rather than DBCC CHECKDB,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=7.9230769230769225) [they're kind of interchangeable. Now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=9.769230769230772) [CHECKDB is the main consistency checking](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=11.277777777777779) [command, it's what most people use when](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=12.94444444444445) [they're going to run consistency checks on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=14.8888888888889) [a database. And it's going to run all the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=16.833333333333336) [consistency checks that there are inside](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=19.333333333333343) [SQL Server against a single database. Now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=21) [there is an exception to that. When you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=22.61538461538461) [run CHECKDB against the master database,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=24.736842105263158) [it also goes out and checks the resource](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=26.94736842105263) [database as well. It's really, really](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=29.89473684210526) [simple to run CHECKDB, you can either just](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=31.599999999999998) [do DBCC CHECKDB and then the name of your](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=33.20000000000001) [database, you don't even have to have the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=35) [quotes around the name of the database, or](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=37) [you can change context to the database you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=39) [want to run consistency checks on and just](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=41.599999999999994) [do DBCC CHECKDB. CHECKDB is really the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=44.79999999999998) [only way to force all allocated pages in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=46.94117647058823) [the database to be read. Now you might say](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=48.823529411764696) [what about if I'm doing a backup, doesn't](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=51.09090909090909) [that force all the pages to be read as](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=53.27272727272728) [well? Well yes, but if you're following](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=55.72727272727274) [best practices and using the checksum](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=57.66666666666667) [option, the backup's going to stop when it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=59.33333333333334) [comes across a corruption. The idea behind](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=61.5) [CHECKDB is it reads everything in the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=63.25)[database as long as there isn't some kind](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=65) [of corruption that forces CHECKDB to stop,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=67.11111111111109) [and we'll talk about that later on. It](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=69.05555555555549) [reads everything in the database and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=71.38461538461539) [interprets what's wrong with the pages. In](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=73.69230769230771) [other words, it kind of eats corruptions](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=76.21052631578948) [as it goes along, and corruptions](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=77.68421052631584) [hopefully don't force it to have to stop.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=78.94736842105272) [And this is cool because it forces all the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=80.8181818181818) [page checksums that you have on the pages](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=83.2727272727272) [in your database to be checked. Now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=85.45454545454533)[there's a bunch of different options that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=87.49999999999999) [you can use for CHECKDB and the other](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=89.59999999999997) [CHECK commands and we're going to cover](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=92) [those in a few more slides. And that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=93.61538461538458) [changes some of the behavior of how](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=95.47619047619048) [CHECKDB runs, how long it takes to run,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=97.14285714285717) [what things it checks, and so on. One of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=99.0476190476191) [the things you'll notice about CHECKDB is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=101.875) [it's extremely resource intensive. It uses](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=104.5) [a bunch of your CPU, it uses a lot of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=106.6086956521739) [memory, and of course it drives an awful](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=109.65217391304344) [lot of I/O. And this is why some people](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=112.08695652173907) [have problems being able to run](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=114.33333333333337) [consistency checks on their production](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=115.66666666666674) [systems, because of the extra resource](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=116.77777777777789) [workload or the time that it takes to run](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=118.66666666666664) [with those extra resources. In Enterprise](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=121.6666666666666) [Edition, CHECKDB is going to run in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=123.5) [parallel when it can, which means that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=125.25) [it's going to use even more resources. And](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=127) [sometimes you want to disable that and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=129) [have it run single threaded, and you can](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=130.75) [do that using the documented trace flag](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=132.75) [2528. Now when you use that trace flag,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=134.80000000000007) [it's going to turn off parallelism, so](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=137.20000000000016) [it's going to use less resources, but that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=139.1818181818182) [means it's going to take longer to run, so you've got a tradeoff there.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=1&mode=live&start=140.63636363636368)

[DBCC CHECKDB (2)](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live)

[DBCC CHECKDB, part 2. CHECKDB has evolved](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=2) [quite a lot over the years and since SQL](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=4.166666666666665) [Server 2000, you can run it online. In](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=6.952380952380949) [fact, it runs online by default, which](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=9.174999999999999) [means it doesn't take any blocking locks](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=10.749999999999996) [that can interrupt your workload. SQL](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=12.324999999999994) [Server 6. 5 and 7. 0, it used to use](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=14.043478260869565) [locking all the time, which used to cause](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=17.52173913043479) [big problems. Now there's also been](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=20.304347826086975) [performance work done on multiple versions](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=22.17647058823529) [and so the performance and the scalability](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=23.941176470588225) [increases from version to version to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=26) [version as you upgrade. Back in SQL Server](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=28.210526315789473) [2005 when I rewrote most of the CHECKDB](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=31.157894736842103) [code, there were a bunch of new features](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=33.652173913043484) [that were put in, and some of them are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=35.39130434782611) [worth mentioning here. Firstly there's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=37.34782608695656) [progress reporting. If you look in the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=38.85714285714286)[percent\_complete column in the DMV sys.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=41.857142857142875) [dm\_exact\_requests, CHECKDB will actually](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=44.4375) [tell you which phase of its consistency](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=46.1875) [checks it's in and what percentage of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=49.25) [way through it is. You can read more about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=52.27272727272728) [that in the books online for DBCC that I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=55.13636363636366) [gave you the bit. ly link for at the start](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=58)[of this module. Data purity checks, so](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=60.60869565217391) [back in SQL Server 2004 and before it was](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=62.43478260869564) [possible to import invalid data into SQL](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=65.16666666666666) [Server. From SQL Server 2005 onwards, for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=67.88888888888886) [databases created on SQL Server 2005,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=70.61111111111106) [CHECKDB is going to run what are called](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=72.57894736842103) [data purity checks making sure that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=75.10526315789467) [columns values are within the data type](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=77) [boundaries for that particular data type.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=80.76923076923073) [And then there's the last known good time,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=84) [which is the date and time that DBCC](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=86.52631578947364) [CHECKDB last completed successfully for a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=89.05263157894728) [database without finding any corruptions.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=90.70588235294117) [That's stored in the boot page of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=91.88235294117646) [database, page 9 in file #1, and in a few](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=93.76470588235293) [more recordings I'll show you a demo of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=95.95652173913045) [how you can look at that. One other cool](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=97.69565217391307) [thing is that compared to SQL Server 2000,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=99.94736842105262) [there's no longer any possibility of false](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=102.47368421052626) [failures where CHECKDB reports corruption](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=104.6842105263157) [where there isn't any corruption. There](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=106.33333333333331) [were a couple of rare cases in SQL Server](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=108.25) [2000 where it would do this. From 2005](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=110.5) [onwards, the way that CHECKDB runs online](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=112.6) [is it creates a hidden database snapshot](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=114.69999999999997) [and it runs the consistency checks on that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=116.79999999999995) [database snapshot. So there's no](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=119.60000000000002) [possibility of there being any algorithmic](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=121.60000000000005) [problems that could cause corruptions to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=124) [be reported where there aren't actually](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=126.30769230769232) [corruptions. Now if you want to know an](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=128.61538461538464) [awful lot more about CHECKDB, I do talk](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=130.1666666666666) [about the internals a bit more in the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=131.49999999999986) [advanced course, but I've also done a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=132.83333333333312) [large number of blog posts about CHECKDB](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=134.63636363636368) [and how it works, and you can get that at](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=136.54545454545465) [that bit. ly link there on my blog.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=139.27272727272728) [Additionally, in the SQL Server 2008](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=141.45454545454552) [Internals book and the soon to be released](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=143.0909090909092) [SQL Server 2012 Internals books, I wrote](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=145.33333333333334) [long chapters, about 90 pages each, on CHECKDB and its internals.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=2&mode=live&start=147.66666666666674)

[Other DBCC CHECK\* Commands (1)](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live)

[Other DBCC CHECK commands, part 1. The](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=1) [first one is DBCC CHECKALLOC, and as its](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=3.4500000000000006) [name kind of suggests, this one is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=6.249999999999998) [checking the consistency of the allocation](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=8.666666666666668) [structures in the database. Things like](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=10.666666666666671) [the GAM pages, the SGAM pages, PFS pages,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=12.7) [and the IM pages, all of which are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=15.499999999999996) [structures, bitmaps, that keep track of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=18.300000000000004) [which pages and extents are allocated and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=20.77777777777777) [which indexes and tables they're allocated](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=23.88888888888887) [to. The first thing that it's going to do](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=26.55555555555553) [though is go and look at 3 or 4 of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=28.739130434782595) [critical storage engine system tables and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=31.130434782608663) [make sure that those tables can be read](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=32.526315789473685) [correctly, because that's where CHECKALLOC](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=34.631578947368425) [is going to get the information about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=35.94736842105264) [which indexes and tables exist and what](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=38.3125) [allocation structures to check for them.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=41.375)[So a couple of examples of CHECKS that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=44) [DBCC CHECKALLOC is going to do. It's going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=46.28571428571428) [to look at all of the per database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=48.599999999999994) [allocation bitmaps and make sure, for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=50.99999999999997) [instance, that their page headers are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=52.799999999999955) [correct. It's also going to make sure](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=54.599999999999994) [that, for instance, no two tables think](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=56.699999999999974) [they have the same data file page or pages](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=58.799999999999955) [or extents allocated, multiply allocated](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=61.875) [pages, multiply allocated extents would be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=63.75) [obvious corruption. And everything that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=66)[DBCC CHECKALLOC does is part of what DBCC](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=68.64705882352942) [CHECKDB does as well. And then there's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=72.88235294117649) [DBCC CHECKTABLE, and what this does is it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=75.75) [checks the consistency of a single table](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=77.75) [and all of its indexes, both regular,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=79.5) [non-clustered indexes, columnstore indexes](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=82.5) [if you're on 2012 or filtered indexes if](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=84.5)[you're on 2008 or higher. Some examples of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=88.36842105263158) [what CHECKTABLE does, it's going to read](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=91.31578947368418) [every single allocated data file page in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=93.8947368421052) [the table and all of those indexes, make](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=95.90909090909093) [sure that that page can be read without](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=97.7272727272728) [any I/O errors, and make sure the page has](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=99.54545454545467) [a valid structure. Another example is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=102.47058823529416)[looking at every non-clustered index row](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=104.58823529411772) [that exists and making sure that there's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=106.52631578947367) [exactly one matching row in the table,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=108.36842105263152) [whether that table is a heap or a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=110.21052631578937) [clustered index. Another example is for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=112.66666666666664) [all of the indexes that exist and the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=114.66666666666661) [defined index keys making sure that the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=117.33333333333324) [records are stored in the correct order](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=119.875) [based on those keys. And then a final](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=122.5) [example is if you're on 2008 or higher and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=124.90909090909093) [you have any file stream data, making sure](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=126.95454545454554) [that that file stream data stored out in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=128.77272727272737) [the file system is correctly linked into](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=131.47058823529406) [the table itself. And everything that's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=133.94117647058812) [done by DBCC CHECKTABLE is part of what's done by DBCC CHECKDB.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=3&mode=live&start=138)

[Other DBCC CHECK\* Commands (2)](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=4&mode=live)

[Other DBCC CHECK commands, part 2. DBCC](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=4&mode=live&start=1.5) [CHECKCATALOG. This one checks the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=4&mode=live&start=4.5625) [relationships between the various system](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=4&mode=live&start=6.75) [catalogs, the hidden tables that store all](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=4&mode=live&start=8.921052631578947) [the metadata about tables and indexes and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=4&mode=live&start=11.868421052631575) [columns and so on. So an example of one of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=4&mode=live&start=14.815789473684204) [the things that's checked by CHECKCATALOG](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=4&mode=live&start=17.928571428571423) [is that if a table's metadata lists a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=4&mode=live&start=19.357142857142847) [bunch of different columns, then there](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=4&mode=live&start=21.261904761904745) [must be column metadata in existence for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=4&mode=live&start=23.16666666666666) [all the columns listed, and vice versa. If](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=4&mode=live&start=25.499999999999986) [a column says that it's part of a table,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=4&mode=live&start=28.25) [that table's metadata must exist. This](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=4&mode=live&start=31.625) [used to be a completely separate command](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=4&mode=live&start=33.8) [before SQL Server 2005, but in SQL Server](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=4&mode=live&start=35.89999999999998) [2005 when I rewrote parts of CHECKDB, I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=4&mode=live&start=38.299999999999955) [actually included the CHECKCATALOG](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=4&mode=live&start=40.91176470588235)[functionality, so it is part of CHECKDB](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=4&mode=live&start=42.323529411764696) [from 2005 onwards. And then there's DBCC](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=4&mode=live&start=44.794117647058805) [CHECKFILEGROUP, which as its name](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=4&mode=live&start=47.83333333333334) [suggests, performs consistency checks for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=4&mode=live&start=50.166666666666686) [everything in a single file group. First](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=4&mode=live&start=52.5) [of all, it goes ahead and runs allocation](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=4&mode=live&start=54.3421052631579) [checks for the entire database, and then](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=4&mode=live&start=56.44736842105264) [it does all the logical consistency checks](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=4&mode=live&start=58.333333333333336) [for just the table and index partitions](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=4&mode=live&start=60.277777777777786) [that are in the file group you've asked it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=4&mode=live&start=62.222222222222236) [to check. You can think of it as having](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=4&mode=live&start=64.78571428571429) [similar functionality to DBCC CHECKDB, but just scaled down to one file group.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=4&mode=live&start=67.35714285714292)

[Other DBCC CHECK\* Commands (3)](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=5&mode=live)

[Other DBCC CHECK commands, part 3. DBCC](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=5&mode=live&start=1.5) [CHECKIDENT. And this command is used to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=5&mode=live&start=4.222222222222222) [check the identity value for a table and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=5&mode=live&start=6.944444444444447) [to reseed it or reset it to a correct](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=5&mode=live&start=9.772727272727273) [value if necessary, and that's not part of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=5&mode=live&start=12.636363636363638) [CHECKDB's functionality. And then there's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=5&mode=live&start=15.181818181818185) [DBCC CHECKCONSTRAINTS. And this one checks](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=5&mode=live&start=17.099999999999998) [FOREIGN KEY and CHECK constraints to make](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=5&mode=live&start=19.49999999999999) [sure that they're valid. Again, this is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=5&mode=live&start=22.166666666666664) [not part of DBCC CHECKDB, although DBCC](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=5&mode=live&start=24.49999999999999)[CHECKCONSTRAINTS is one of the things that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=5&mode=live&start=26.833333333333314) [you sometimes need to run after you've run](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=5&mode=live&start=28.75) [a repair operation, and we'll talk about that in module 8.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=5&mode=live&start=30.75)

[What Exactly Does DBCC CHECKDB Do? (1)](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live)

[What exactly does DBCC CHECKDB do, part 1.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=1) [The first thing it's going to do is what I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=3.2857142857142847) [call primitive checks of critical system](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=6.142857142857141) [tables. So depending on which version](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=7.947368421052632) [you're on, there may be 3 or 4 different](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=9.842105263157896) [storage engine metadata tables and these](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=12.684210526315791) [store the information necessary for the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=14.388888888888893)[storage engine to be able to navigate](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=16.055555555555564) [around the database and find where the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=18) [first page or the first allocation bitmap](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=20.210526315789462) [for a particular table or index is. These](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=22.421052631578924) [tables need to be accessible, all the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=24.71428571428571) [pages need to be able to be read correctly](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=26.380952380952372) [without I/O errors to make sure that when](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=28.523809523809508)[CHECKDB calls down into the metadata](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=30.800000000000004) [system, it's not going to fall over in its](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=32.6) [face. Now if any problems are found, these](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=35.3) [can't be repaired, and so the only option](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=37.699999999999974) [you're going to have here is to restore](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=40.09999999999995) [from backups or to try to do manual data](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=42.57894736842106) [extraction into a new database. The next](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=45.42105263157897) [thing it does is the allocation checks,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=47.631578947368425) [like I described earlier when we talked](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=49.84210526315791) [about DBCC CHECKALLOC. Then it goes to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=52.0526315789474) [those same critical system tables and does](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=54.06666666666666) [the logical consistency checks. In other](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=55.93333333333332) [words, a DBCC CHECKTABLE on those critical](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=57.90909090909091) [system tables. If that passes, it moves on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=61.09090909090908)[and does logical consistency checks on all](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=64.00000000000001) [the tables in the database. Once it's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=66.33333333333331) [figured out that the tables are all okay,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=68.5) [it goes and does metadata checks. In other](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=70.5) [words, DBCC CHECKCATALOG. If you have any](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=72.875) [service broker information, that gets](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=75.9375) [validated, the various relationships](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=78.125) [between messages, conversations, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=79.80000000000001) [queues and so on. And then there are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=81.40000000000003) [checks that can be done to validate the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=84.19999999999999) [contents of indexed views, XML indexes,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=86.59999999999997) [and spatial indexes, and this involves](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=88.39999999999995) [creating another copy of those indexes and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=90.33333333333331) [testing to make sure that there's no](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=92.66666666666661) [missing data and there's no extra data.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=95) [Now these are all by default for SQL](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=96.75) [Server 2005, but they didn't find any](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=98.75) [problems and so they were made optional](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=100.66666666666666) [checks for SQL Server 2008 onward. And if](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=102.99999999999996) [you use the WITH EXTENDED\_LOGICAL\_CHECKS](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=105.58823529411765) [option, that's going to force those checks](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=107.05882352941178) [to be run. Now, I don't recommend that you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=109.11764705882356) [do that unless you think you have a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=111.42857142857144) [problem in an indexed view, XML index or](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=113.33333333333337) [spatial index, because you don't want the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=115.47058823529412) [extra runtime and tempdb usage that those](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=118.76470588235293) [checks involve. Now if you've specified a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=122.05882352941174) [repair option, the repairs are done at](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=124.1904761904762) [each stage as it's listed there on the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=125.85714285714289) [slide, apart from primitive checks of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=127.76190476190482) [critical system tables. And if repairs are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=129.7647058823529) [necessary, they'll be done before moving](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=132.23529411764696) [onto the next portion of the consistency checks.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=6&mode=live&start=135)

[What Exactly Does DBCC CHECKDB Do? (2)](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=7&mode=live)

[What exactly does DBCC CHECKDB do, part 2.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=7&mode=live&start=2) [Now I've run through on the previous slide](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=7&mode=live&start=4.105263157894736) [all the different things that CHECKDB](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=7&mode=live&start=6.210526315789476) [does, and before that we talked about the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=7&mode=live&start=7.8) [various other CHECK commands. So another](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=7&mode=live&start=9.933333333333339) [way to think about DBCC CHECKDB does is to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=7&mode=live&start=11.666666666666668) [think about it as a combination of these](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=7&mode=live&start=14.666666666666673) [other commands. So you could think of it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=7&mode=live&start=17.333333333333336) [as doing the primitive system table](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=7&mode=live&start=19.5) [checks, then doing a CHECKALLOC, then a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=7&mode=live&start=21)[CHECKTABLE of those system tables, a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=7&mode=live&start=22.75) [CHECKTABLE of all the user tables, a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=7&mode=live&start=24.764705882352935) [CHECKCATALOG, then service broker checks](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=7&mode=live&start=27.235294117647044) [and the other optional checks that I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=7&mode=live&start=29) [mentioned. Bear in mind of course that it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=7&mode=live&start=31.210526315789462) [doesn't do DBCC CHECKIDENT, so it doesn't](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=7&mode=live&start=33.73684210526315) [play around with the identity values and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=7&mode=live&start=35.9375) [it doesn't do DBCC CHECKCONSTRAINTS](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=7&mode=live&start=38.125) [either. And it doesn't do those because](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=7&mode=live&start=39.6875) [identity values and constraints are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=7&mode=live&start=41.875) [relational level constructs and what](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=7&mode=live&start=43.4375) [CHECKDB is doing is making sure that these](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=7&mode=live&start=45) [storage engine constructs are valid and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=7&mode=live&start=47.22222222222223) [their integrity is good so the storage](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=7&mode=live&start=48.8888888888889) [engine could run without having any problems.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=7&mode=live&start=53)

[Does DBCC CHECKDB Run During Startup?](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live)

[Does DBCC CHECKDB run during startup? When](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=2) [you startup SQL Server, you might see some](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=4.026315789473686) [messages in the error log saying that DBCC](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=6.342105263157898)[CHECKDB completed, there's an example of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=9.166666666666666) [one there. That doesn't mean that CHECKDB](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=11.666666666666663) [was actually running during the startup of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=13.888888888888893) [the instance, you might also see these](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=15.833333333333343) [when a database is brought online. What](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=17.75) [this is actually telling you is the last](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=19.5) [known good time that I mentioned a few](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=21.5)[slides back, the time that DBCC CHECKDB](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=23.83333333333333) [last finished without finding any](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=26.166666666666654) [corruptions in the database. This is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=27.833333333333314) [stored in the boot page, which is page 9](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=29.75) [and file #1. Now one thing to note about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=32.5625) [this is if you run a CHECKDB on something](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=35.29999999999998) [like an availability group primary](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=37.99999999999996) [replica, that's not going to get](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=39.5) [propagated to your other replicas, because](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=40.91176470588235) [certain boot page changes don't get](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=42.323529411764696) [propagated. Now I think this is a good](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=43.76315789473684) [thing because you should be running](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=45.86842105263158) [consistency checks on all of the replicas](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=47.44736842105264) [on your availability group as we talked](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=49.50000000000001) [about in the previous module. Now apart](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=51.83333333333336)[from looking in the error log, you can see](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=53.900000000000006) [the last known good time using the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=55.70000000000003) [undocumented command DBCC CHECKINFO, which](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=57.10000000000005) [I actually cover more in the advanced](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=58.07142857142857) [course, but I'm going to show you a demo](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=59.4047619047619) [of how to do that next. The reason why I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=61.119047619047606) [wanted to put this slide in here is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=63.68181818181819)[because people often get confused when](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=65.86363636363633) [they look at the error log and they think](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=67.5) [that CHECKDB is running as part of instant](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=69.5454545454546) [startup and it runs really quickly, so why](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=71.36363636363647) [is it that when you run CHECKDB manually,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=73.38235294117648) [it takes such a long time. And of course](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=75.73529411764709) [it's not the CHECKDB that was running, so](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=78.10000000000001) [the very short time between it reporting](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=79.70000000000003) [for the multiple databases is really](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=81.10000000000005) [meaningless. But let's have a look at how](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=82.5) [you can go and see these last known good times using that DBCC CHECKINFO command.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=8&mode=live&start=84.5)

[Demo: Viewing Last-Known-Good Time](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live)

[In this demo, I want to show you how you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=1) [can look at the last known good time, the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=3.083333333333334) [time that CHECKDB last completed for a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=4.958333333333333) [database and didn't find any errors. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=6.521739130434783) [first off what I'm going to do is make](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=8.347826086956523) [sure that I don't have any old databases](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=10.69565217391304) [lying around, and then create a very](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=13.588235294117647) [simple database and run CHECKDB on it. And](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=17.294117647058826) [we shouldn't have any errors, like so.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=21.31578947368421) [Now, I mentioned that there is an](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=23.52631578947367) [undocumented command that you can use](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=25.736842105263133) [called DBCC DBINFO, and this is it here.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=27.454545454545453) [I'll talk about it a lot more in the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=29.272727272727266) [advanced course, but here's how you run](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=31.318181818181806) [it. You have to turn on this trace flag](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=32.90909090909091) [and this trace flag just allows output](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=34.954545454545446) [from undocumented DBCC commands to be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=36.54545454545453) [printed out, and then you just run it and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=38.04347826086956) [give it the name of the database you're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=40.39130434782608) [interested in. And this is going to dump](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=42.478260869565204) [out the boot page, page 9 and file 1 for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=45.333333333333314) [the database. So we go ahead and run that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=49.22222222222217) [and it gives us a whole bunch of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=51.45833333333335) [information, but one of the things that it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=53.125000000000036) [gives us here if we look down,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=54.79166666666672) [dbi\_dbccLastKnownGood, so the 6th of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=60.052631578947384) [September, which is today, and the time](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=64.26315789473686) [that I ran that at. And we'll talk about a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=70.1578947368421) [bunch more of this other information here](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=73.0454545454546) [in the advanced course as I said. Now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=74.63636363636374) [another way that you can look at the last](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=76.45454545454547) [known good time is have a look in the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=78.50000000000007) [error log. So let's cycle our error log](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=80.54545454545467) [and clear it out and then I'm going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=82.90909090909088) [quickly set the database offline and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=85.7727272727272) [online. This is not something you're going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=87.68181818181807) [to do in a production system, but I'm](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=89.79999999999998) [showing you how you can look. And if we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=92.19999999999996) [look in our error log, connect up to my](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=95.30434782608697) [instance. If we go down to Management,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=99.21739130434787) [Error Logs, the Current error log, what we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=102.26086956521746) [can see here is, let's make that full](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=105.63636363636363) [screen, there, I set offline and online,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=108.90909090909088) [and as part of bringing that database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=111.77272727272722) [online, which is when you do an explicit](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=114) [bringing a database online or as part of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=116) [instant startup, you're going to get this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=118) [message reported as long as there is a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=120.57894736842103) [last known good time. And this is the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=123.52631578947363) [message that confuses people because they](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=125.84210526315792) [think that CHECKDB is running as part of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=127.1052631578948) [starting up the instance, but of course it's not.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=9&mode=live&start=128.78947368421063)

[DBCC CHECK\* Options (1)](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live)

[DBCC CHECK options, part 1. NO\_INFOMSGS.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=1.5) [This one skips printing out informational](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=3.75) [messages, and I'm going to show you that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=6) [in a demo. I recommend you always use](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=8.227272727272727) [that, because really you just want to have](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=9.68181818181818) [the error messages and all the error](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=11.136363636363633) [messages, which brings us to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=13.318181818181817)[ALL\_ERRORMSGS. Now this says print out all](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=15.136363636363633) [the error messages. And that's because](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=17.300000000000004) [prior to SQL Server 2008 SP1, it would](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=19.10000000000001) [only print out the first 200 error](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=21.5) [messages by default unless you used WITH](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=24.29999999999999) [ALL\_ERRORMSGS. If you're on any version](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=27.09999999999998) [from 2008 SP1 onward, you don't need to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=29.16666666666666)[use this. NOINDEX, this one just says](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=31.833333333333318) [don't check any non-clustered indexes. I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=34.49999999999999) [absolutely don't recommend that you do](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=36.785714285714285) [this. This is there for backwards](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=38.49999999999999) [compatibility. DATA\_PURITY, this is the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=40.2142857142857) [one that performs column data validation,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=42) [making sure that the column values conform](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=44.25) [with the data type boundaries that exist](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=46.916666666666664) [for those data types. Now this is going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=49.833333333333314) [be done by default for all databases](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=52.690476190476204) [created on SQL Server 2005 or higher, but](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=54.35714285714289) [there's actually a bug, which I discovered](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=56.261904761904816) [just a couple weeks ago for master and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=58.500000000000014) [model. This is not done by default because](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=61.1666666666667) [there's a bug in how the boot page of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=63.090909090909086) [these databases is created, and you can](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=65.13636363636365) [read a description of the bug and what you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=66.7) [can do about it at that bit. ly link](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=68.50000000000003)[there. Usually you'd only use this after](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=70.30000000000005) [upgrading from SQL Server 2000 to force](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=72.23684210526312) [CHECKDB to do data purity checks, and if](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=74.26315789473676) [no problems are found, to mark that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=76.57142857142858) [database as pure, so the data purity](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=78.57142857142863) [checks are done by default from then onwards.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=10&mode=live&start=80.57142857142867)

[DBCC CHECK\* Options (2)](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live)

[DBCC CHECKDB options, part 2.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=1) [ESTIMATEONLY, this is the one that's going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=2.944444444444444) [to ask CHECKDB to estimate how much tempdb](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=5.666666666666668) [space is going to be required to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=8.666666666666668) [successfully run CHECKDB. It provides a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=11.000000000000005) [pretty conservative estimate of how large](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=12.85714285714286) [your tempdb has to be. Now unfortunately,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=14.571428571428578) [that functionality is broken in current](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=16.705882352941174) [builds as of recording time, SQL Server](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=18.823529411764696) [2008 R2 and SQL Server 2012. TABLOCK. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=21.294117647058805) [TABLOCK tells CHECKDB to use database and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=25) [table locks instead of creating a hidden](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=28.5) [database snapshot and running the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=31.666666666666664) [consistency checks on the snapshot. You](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=33.333333333333336) [might have to use this if for some reason](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=35.3125) [a database snapshot cannot be created. Now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=38.125) [note that it is going to take an exclusive](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=40.3) [database lock for the allocation checks](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=42.99999999999997) [and then share table locks for the table](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=44.799999999999955) [checks. You can't do this on the master](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=47.05263157894737) [database because you can't take an](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=49.15789473684211) [exclusive lock on the master database, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=50.736842105263165) [it is the default for tempdb, although it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=53.000000000000014) [skips allocation checks because the tempdb](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=55.6666666666667) [database cannot be exclusively locked.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=57.8) [EXTENDED\_LOGICAL\_CHECKS that I mentioned a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=59.79999999999999) [few slides back, this is the option from](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=61.79999999999998) [SQL Server 2008 onwards that allows some](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=64.25) [extra validation to be done of indexed](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=66) [views, XML indexes, and spatial indexes.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=67.75) [You usually do not have to do this.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=70.30769230769234) [PHYSICAL\_ONLY. Now this option tells](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=74) [CHECKDB to skip most of the logical](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=75.7857142857143) [consistency checks. It really boils things](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=78.28571428571433) [down to checking the critical system](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=80.5) [tables, running allocation checks, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=82.75) [validating at a basic level, basic](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=84.625) [structural level, each of the allocated](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=86.66666666666664) [pages in the database. It really reduces](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=88.66666666666661) [the time that it takes to run CHECKDB](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=90.89999999999999) [because it's not doing anywhere near as](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=93.29999999999997) [much work and of course because it's not](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=95.39999999999995) [doing so much work, it reduces the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=97.57894736842101) [resources that are necessary as well. Now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=99.42105263157886) [some options that I haven't talked about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=101.25) [are the repair options. And I'll talk](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=103) [about all of those in more depth in module](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=104.75) [8, the final module. But now, let's have a look at some of these CHECK options.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=11&mode=live&start=107)

[Demo: DBCC CHECK\* Options](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live)

[In this demo, I want to show you some of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=1) [the DBCC CHECK options. Now you're going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=3.1428571428571432) [to have to download the SalesDB database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=4.6818181818181825) [from this bit. ly here, and that's a zero,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=6.272727272727275) [not an O. So go and download that, unzip](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=8.318181818181822) [the backup file, and put the backup](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=11.117647058823533) [somewhere where you know. And then we're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=13.588235294117654)[going to restore the database by making](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=15.789473684210527) [sure there's no database there and just](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=17.631578947368425) [this restore command, making sure to move](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=19.473684210526322) [our data and log files. So I'm going to go](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=21.578947368421044) [ahead and execute that. That just takes a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=24.736842105263133) [few seconds to do the restore. And then](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=26.95238095238095) [we're going to move over to the demo file.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=28.857142857142847) [Okay, we're done. So the demo file, we've](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=31) [gone ahead and run the setup script](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=34) [already. I'm going to also create a small](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=36.625) [database to use called Company. So we'll](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=38.75) [get rid of any old ones that we had. Go](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=40.58823529411765) [ahead and create it here. Now let's look](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=43.52941176470591) [at a DBCC CHECKDB with no options at all.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=46.22727272727272) [And it gives us a whole bunch of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=49.90909090909088) [informational information, and we'll look](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=53.18181818181813) [at that information more in module 6, but](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=55.05882352941176) [most of it is not required. We're not](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=57.88235294117646)[interested in how many rows and how many](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=60.36363636363636) [pages for all these tables, we really want](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=61.8181818181818) [to know are there any corruptions. So what](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=63.27272727272724) [we can do is use WITH NO\_INFOMSGS, like](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=66.15384615384613) [so. And it gives absolutely no output](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=70.4615384615384) [unless there are corruptions. Now using](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=74) [ESTIMATEONLY, it tells us a number. I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=76.80000000000001)[don't trust that number right now because](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=79.60000000000005) [I said that it's currently broken in 2008](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=82.40000000000009) [R2 and 2012, but it's giving us a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=85.39999999999998) [conservative estimate of how much space is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=88.19999999999993) [going to be required to run CHECKDB. And](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=90.64999999999989) [then the reason I had you restore the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=94.00000000000001) [SalesDB database was because I wanted to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=97.42857142857146) [show you the difference that PHYSICAL\_ONLY](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=100.28571428571429) [takes. So what I'm going to do is I'm](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=102.00000000000004) [going to flush out the buffer pool using](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=104.57142857142867) [this command here, which drops everything](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=106.64285714285712) [out of the buffer pool. I'm turning on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=107.92857142857137) [STATISTICS TIME so I can keep track of how](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=109.62499999999999) [long it takes to run, and then I'm going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=111.49999999999994) [to run a CHECKDB of SalesDB without](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=113.3749999999999) [PHYSICAL\_ONLY, and we'll see how long that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=116) [takes. Let's go ahead and execute that. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=119.5) [9. 6 seconds of CPU time, but the elapsed](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=124.45454545454548) [time was only 1. 6 seconds. And then let's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=130.1818181818182) [run it with PHYSICAL\_ONLY. The elapse time](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=135.5) [again, 1. 6 seconds, but an awful lot less](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=139)[CPU time because there's an awful lot less](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=143.5) [going on. Now, this database has around 30](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=146.57894736842113) [odd thousand pages, so we're not seeing a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=149.52631578947384) [big difference in elapse time using WITH](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=152.71428571428567) [PHYSICAL\_ONLY or not. If you were to take](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=155.71428571428558) [maybe a many gigabytes, hundreds of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=158.50000000000006) [gigabytes or terabytes, you would see a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=160.30000000000013) [huge difference, magnitudes and magnitudes](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=162.4000000000002) [of difference in the elapse time with](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=164.5) [PHYSICAL\_ONLY versus without using](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=168) [PHYSICAL\_ONLY. But remember that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=170) [PHYSICAL\_ONLY skips a bunch of the checks,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=171.25) [so you're not getting as comprehensive a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=173.4375) [check. What PHYSICAL\_ONLY allows you to do](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=175.66666666666669) [is read and validate all the pages, it's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=178.00000000000009) [not checking for problems within those](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=180.66666666666683) [pages. Now let's have a look at data](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=183.14285714285708) [purity. Now, I mentioned that there is a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=186.5714285714284) [bug currently in all versions of SQL](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=189.3333333333334) [Server 2005 onwards, and the bug is that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=191.6666666666668) [the right flag is not set in the boot page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=194.41176470588235) [of the master and model databases. And I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=198.52941176470583) [explain in the blog post that I had on the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=201.66666666666669) [previous slide, so let's have a look at](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=205.0000000000001) [DBCC DBINFO of master. And if we look at](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=207.66666666666686) [dbi\_dbccFlags here, if that value is set](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=210.9047619047619) [to 0, that's incorrect, that means you've](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=213.57142857142856) [got the bug, you want that value set to 2.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=216.2380952380952) [And the value can be set to 2 by running](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=220.47826086956525) [CHECKDB WITH DATA\_PURITY and NO\_INFOMSGS.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=224.8260869565218) [Now I'm not going to go ahead and do that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=227) [on my particular server because I want to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=228.36363636363626) [keep this instance showing the bug so I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=229.45454545454527) [can show other people the bug as well. Now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=231.1428571428571) [let's have a look at using WITH TABLOCK.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=233.7142857142856) [Now I'm going to create another query and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=236) [I'm going to do USE Company, GO, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=241.17647058823536) [execute. So we're in the Company database.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=246.35294117647072)[Anytime you go into the context of a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=248.71428571428567) [database, it creates a shared lock on the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=250.9999999999999) [database. If we go back over to our demo](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=253.30434782608697) [script and we try to do a CHECKDB with](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=256.0434782608697) [TABLOCK on the Company database, now it's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=258.78260869565213) [going to fail because it's not going to be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=261.1052631578947) [able to get the exclusive database lock.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=264.42105263157873) [It's not going to wait for the regular](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=267) [lock timeout, which is infinite, I made it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=268.818181818182) [so that it only waits for the lock for 20](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=270.63636363636397) [seconds. So when we see 20 seconds go down](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=272.909090909091) [there on the bottom right hand side, we'll](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=274.9545454545457) [see that it's going to fail and tell us it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=276.7727272727277) [can't carry on and do anymore of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=280.1500000000002) [checks, like so. Could not be exclusively](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=282.9500000000004) [locked to perform the operation, so it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=285.41176470588243) [says check statement aborted because we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=287.8823529411767) [couldn't create a database snapshot or we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=290) [couldn't lock the database or table. It](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=293.23076923076917) [gives a little bit more information about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=296.14285714285717) [looking in books online as well. That's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=297.14285714285734) [exactly what we expect. Now even though](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=298.2631578947368) [we've got this extra query here using the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=300.10526315789457) [database, if we just run a regular](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=302.21052631578914) [CHECKDB, that works because it goes ahead](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=304.2631578947369) [and creates a database snapshot under the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=306.4736842105264) [covers. But with TABLOCK, you're only](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=308.68421052631595) [going to use WITH TABLOCK because of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=310.25) [fact that it's going to cause blocking and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=312.25) [so on, you're only going to use WITH](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=314.1904761904762) [TABLOCK if you absolutely have to, for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=315.71428571428584) [some reason you can't create a database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=317.04761904761926)[snapshot. So there's a look at some of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=320) [simple options there are for the various CHECK commands.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=12&mode=live&start=329)

[How Are DBCC CHECK\* Commands Online?](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live)

[How are DBCC CHECK commands online? Now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=1) [I've mentioned this a couple of times](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=2.8666666666666663) [already. In SQL Server 2000, it used](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=4.7333333333333325) [transaction log analysis, which was slow,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=6.799999999999999) [and there were also a couple of cases](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=8.6) [where it might erroneously say that there](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=11) [were corruptions when there weren't. I had](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=12.75) [great fun ripping out all the transaction](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=14.5) [log analysis code when I was rewriting](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=16.25) [CHECKDB for 2005, and from 2005 onwards,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=18) [it uses a database snapshot. It creates a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=20.235294117647054) [database snapshot, which is a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=23.529411764705866) [transactionally- consistent, point-in-time](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=25.588235294117624) [view of the database, which is what](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=26.727272727272727) [CHECKDB needs. It needs there to be no](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=29.27272727272727) [changes or nothing with any open](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=31.714285714285708) [transactions in the view of the database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=33.428571428571416) [that it's reading to do the consistency](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=35.42857142857141) [checks. Now it's not going to have to go](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=37.25) [ahead and create that database snapshot if](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=39.5) [the database is read-only, because there](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=41.27777777777778) [can't be any changes happening if the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=42.94444444444445) [database is single user because you're the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=44.8888888888889) [only person that can be using the database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=46.60000000000001) [at that point, or if the target database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=48.20000000000003) [is itself a database snapshot. Now the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=49.800000000000054) [database snapshot that's created under the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=52.25) [covers is what's called hidden, you can't](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=54.5) [see it. It's created as what are called](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=57.10526315789475) [NTFS alternate streams of the existing](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=60.052631578947405) [data files. You can see it using some CMD](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=62.2631578947369) [commands like Fsutil, but if you go in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=65.00000000000001) [there with Windows Explorer, you're not](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=67.28571428571435) [going to be able to see these hidden](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=69) [streams. The database snapshot is going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=70.77777777777783) [be dropped automatically when the CHECK](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=72.33333333333343) [command finishes. Now you could have](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=73.99999999999999) [problems from the use of this hidden](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=75.99999999999996) [database snapshot. The first one could be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=78.33333333333326) [that the database snapshot runs out of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=80.15384615384613) [space. The way that a database snapshot](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=81.76923076923072) [works is any pages that are changed in the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=83.79999999999998) [source database after the time the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=86.49999999999996) [snapshot is created gets pushed into the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=88.3125) [database snapshot, which means that it can](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=90.5) [grow. If it grows so much that it runs out](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=92.6875) [of the available space, the CHECK command](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=95.25) [is going to fail. It could also be that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=97) [there's no permissions to create the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=99.15384615384613) [database snapshot. Maybe the permissions](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=100.53846153846149) [have changed since the initial database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=101.70588235294117) [was created, and now the SQL Server](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=103.11764705882352) [service account doesn't have permissions](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=104.76470588235293) [to create the extra files required in the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=106.77777777777777) [directory where the data files are. It](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=110.33333333333331) [could also be that there are some third](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=113.26315789473684) [party NTFS filter drivers that don't work](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=115.36842105263152)[property with NTFS alternate streams. If](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=117.21052631578937) [you have any of these problems, there's a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=118.83333333333331) [simple solution, which is create your own](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=121.05555555555549) [database snapshot where you can tell it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=123) [exactly where to put the database snapshot](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=124.47368421052636) [files and then run consistency checks on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=125.94736842105272) [that database snapshot. It's almost](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=127.875)[exactly the same as running regular](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=130.0625) [consistency checks where it creates the hidden snapshot for you.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=13&mode=live&start=132.6875)

[How Long Will DBCC CHECKDB Take To Run?](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live)

[How long will DBCC CHECKDB take to run?](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=1.5) [This is a question that I get asked quite](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=3.404761904761905) [frequently and the answer depends on many](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=5.547619047619048) [different things. For instance, how big is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=7.25) [the database, and I don't just mean the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=9) [size of the data files, how many allocated](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=11) [pages are there in the database. The more](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=13.500000000000004) [pages there are, the longer it's going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=16) [take. What's the concurrent load on the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=18) [server, both in terms of I/O and in terms](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=19.75) [of CPU. The more concurrent load there is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=22.4090909090909) [in the server, the longer CHECKDB is going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=24.954545454545432) [to take to run, because it places a large](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=27.5) [resource load in the server as well. What](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=30.3125) [kind of concurrent update activity is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=32.75) [going on in the database? As I explained](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=34.25) [on the previous slide, CHECKDB uses a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=36.25) [database snapshot and any changes that are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=38) [made in the source database need to get](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=39.75) [pushed into the database snapshot. The](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=41.61111111111111) [more changes are going on while the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=42.944444444444436)[consistency checks are running, the longer](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=44.5) [they're going to take. What kind of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=46.89999999999999) [capabilities does the server have in terms](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=49.45454545454546) [of the speed of the I/O subsystem and the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=51.6818181818182) [number of CPUs? The more CPUs, probably](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=54.54545454545458) [the faster it's going to be able to run](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=56.75) [the consistency checks. The better the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=59.5625)[capabilities of the I/O subsystem, the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=61.07142857142857) [faster it's going to be able to read all](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=62.21428571428571) [the pages in the database and so the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=63.928571428571416) [checks are going to go faster. What about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=66.09090909090907) [the speed of the disks where tempdb is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=68.63636363636357) [placed? Tempdb is used for intermediate](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=71.18181818181807) [data to be stored in and the more data](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=73.16666666666664) [that needs to be stored in tempdb and the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=76.1666666666666) [slower the disks for tempdb are, the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=79.13157894736841) [slower it's going to take the consistency](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=81.34210526315785) [checks to run. How complex is the database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=83.55263157894728) [schema? The more different features that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=85.88888888888886) [are used in the database, the more](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=87.55555555555549) [consistency checks needs to be performed](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=89.5) [and the longer it's going to take to run](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=91.16666666666663) [the consistency checks. What kind of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=93.66666666666657) [options did you specify? For instance, did](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=95.13157894736844) [you use WITH PHYSICAL\_ONLY, which is going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=96.6052631578948) [to make things run an awful lot faster](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=98.07894736842115) [than if it's not specified, and what kind](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=100.39473684210523) [of corruptions did it find? It might have](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=102.92105263157887) [to go back and do some rechecking to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=105.16666666666669) [figure out exactly where a corruption is.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=106.94444444444451) [So as you can see, there's a huge number](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=108.5) [of different things that need to be taken](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=110.64285714285717)[into account to figure out how long](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=112.5476190476191) [CHECKDB is going to take to run. The](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=114.10000000000001) [easiest way to know how long it's going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=115.70000000000003) [take to run is to run it and have a decent](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=117.50000000000006) [idea of how long it takes on average to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=120.29999999999998) [run for all your databases. If you want to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=122.99999999999996) [get some more information on any of these](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=125.26190476190476)[different things, I've got a blog post](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=126.78571428571428) [that talks all about them down at that bit. ly link there.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=14&mode=live&start=128.11904761904762)

[Potential Problems With DBCC CHECKDB (1)](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live)

[Potential problems with DBCC CHECKDB, part](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=1.5) [1. I've already talked about the fact that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=3.166666666666666) [CHECKDB and some of the other commands use](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=5.3888888888888875) [a hidden database snapshot under the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=7.833333333333332) [covers to create their point-in-time,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=9.833333333333336) [transactionally-consistent view of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=11.5) [database. Some third party software uses](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=13.346153846153847)[NTFS filter drivers and sometimes these](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=16.115384615384617) [don't cope with alternate streams](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=18.4375) [correctly and can return complete garbage](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=20) [data and CHECKDB is going to report a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=21.875) [bunch of corruption. One of the things to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=23.928571428571423) [watch out for is if everything's been](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=25.83333333333332) [going along fine and suddenly all your](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=27.5) [databases look like they're completely and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=30.29999999999999) [utterly corrupt. You might want to check](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=32.69999999999998) [and see if somebody has just updated an](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=34.86363636363637) [NTFS filter driver, as that could be the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=37.045454545454554) [cause. Another problem is that when the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=39.22727272727274) [database snapshot is created, it runs](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=41.264705882352956) [crash recovery from the database's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=43.02941176470591) [transaction log into the database snapshot](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=44.5) [to create that transactionally-consistent](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=47.071428571428584) [view of that source database. This phase](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=48.785714285714306) [of the database snapshot creation cannot](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=51.735294117647065) [be interrupted at all because it's not](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=54.205882352941195) [possible to interrupt crash recovery of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=57.08823529411768) [any type and the storage engine doesn't](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=58.97058823529413) [draw a distinction between crash recovery](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=61.02941176470591) [for real and crash recovery to create a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=62.86363636363637) [database snapshot. And this can make it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=65.77272727272727) [look if you try killing a CHECKDB command,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=67.63636363636367) [it can make it look like killing the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=69.45454545454554) [CHECKDB is impossible and if you look in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=71.27272727272741) [sys. dm\_exec\_requests, it'll look like the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=74.2222222222222) [SPID says it's in rollback. That's because](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=76.55555555555551) [it's still waiting for the initial phase](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=79.08823529411765) [of the database snapshot creation to be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=81.14705882352943) [performed. And only after that snapshot's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=83.20588235294122) [been created will it allow the entire](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=84.97058823529413) [consistency checking command to be killed](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=87.02941176470591) [and interrupted. Another problem with](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=88.88888888888889) [database snapshots is an issue in NTFS](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=90.83333333333331) [where if you have a heavily fragmented](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=93.55555555555551) [file system, then a database snapshot can](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=96.34210526315789) [only have so many NTFS fragments in it,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=99.2894736842105) [and so you might run out of NTFS fragments](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=102.65789473684207) [for the database snapshot and the database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=105.8333333333333) [snapshot can't grow anymore and then the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=108.1666666666666) [consistency checking command fails. And](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=110.70000000000002)[that's documented in that KB article](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=112.70000000000005) [there. As I mentioned on the previous](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=115.10000000000008) [slide, if you run into that kind of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=116.70000000000002) [problem with the database snapshot, then](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=118.30000000000004) [go create your own snapshot on a portion](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=119.5) [of your file system that doesn't have a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=121.89999999999998) [lot of NTFS fragmentation, and you should be okay.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=15&mode=live&start=124.29999999999995)

[Potential Problems With DBCC CHECKDB (2)](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live)

[Potential problems with DBCC CHECKDB, part](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=1.5) [2. One of the things to be on the lookout](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=3.6000000000000005) [for is suddenly CHECKDB starts to take an](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=7.099999999999998) [incredibly long time to run compared to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=9.5) [how long it usually takes. This could be,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=11.25) [and is most likely, that a corruption has](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=13.35714285714286) [been found and it's triggered an algorithm](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=15.642857142857151) [to go and figure out exactly where the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=17.642857142857146) [corruption is. Some of the algorithms that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=20.0625) [perform consistency checks are engineered](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=22.25) [to run as fast as possible and to be able](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=23.727272727272727) [to tell whether there's a corruption or](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=25.999999999999993) [not as fast as possible, but when a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=27.59090909090908) [corruption does occur, it doesn't know](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=29.5)[exactly where the corruption is, so it has](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=31) [to go back and do what I call a deep dive](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=33) [to figure out exactly where the corruption](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=35.61764705882352) [is. Now it's engineered this way because](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=37.26470588235293) [the vast majority of the time, or think of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=39) [the hundreds of thousands of times or](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=41.25) [millions of times a day around the world](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=43.205882352941174) [that CHECKDB is run, there's no](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=46.02941176470587) [corruptions. But when the corruption does](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=48.14705882352939) [occur, we have to go back and find out](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=49.55263157894736) [exactly where the corruption is. So it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=51.447368421052616) [makes sense to engineer for the more](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=53.099999999999994) [common case. Now if you come across](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=55.199999999999974) [CHECKDB suddenly taking longer than usual,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=57.299999999999955)[don't kill it, let it complete so it tells](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=59.16666666666667) [you what kind of corruptions there are. I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=62.16666666666669) [mentioned previously that consistency](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=64.79411764705883) [checks can make use of tempdb for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=65.97058823529413) [temporary data storage, so you've got to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=68.02941176470591) [make sure that your tempdb is sized](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=70.13157894736841) [appropriately. If tempdb continues to have](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=72.34210526315785) [to grow while the consistency checks are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=74.23684210526308) [running, it's going to slow down. And it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=76.25) [could be that your tempdb runs out of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=78.25) [space and so the consistency checks are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=80.25) [going to fail. You can use the WITH](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=82) [ESTIMATEONLY option to get an estimate of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=84) [how much space is going to be required in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=85.75) [tempdb. It's a very conservative estimate,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=88) [but beware that in some current builds, as](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=89.5) [of the time of recording that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=94.5) [functionality is broken, so use that option with caution.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=16&mode=live&start=100.5)

[Breaking Up Consistency Checks Over Time](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live)

[Breaking up consistency checks over time.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=2) [We talked about this in the previous](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=3.578947368421052) [module and there are a few options for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=5.421052631578949) [breaking up the consistency checks over](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=7.526315789473685) [time if you're not able to take a database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=9.10526315789474) [backup and restore it to another server,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=11.473684210526322) [maybe because you don't have another](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=13.315789473684212)[server to use or maybe the database is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=14.894736842105267) [extremely large and you don't have space](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=17) [or you don't have the time to be able to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=18.473684210526308) [do that. So the first option is you can](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=20.578947368421034) [use DBCC CHECKFILEGROUP to perform checks](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=23.45000000000001) [of each file group, maybe one file group](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=25.55000000000002) [per day, plus a DBCC CHECKCATALOG to make](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=28.352941176470587) [sure you've done everything that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=31.176470588235283) [consistency checks do. And this is one of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=32.94117647058822) [the many benefits you get from using](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=35.000000000000014)[multiple file groups when your databases](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=36.400000000000034) [start to get pretty large, the ability to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=37.60000000000005) [breakup your consistency checks, the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=40.11764705882352) [ability to do more piecemeal backups and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=41.88235294117646) [restores, the ability to use partitioning](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=44.36842105263158) [and so on. Your second option is to use](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=46.578947368421076) [DBCC CHECKTABLE to perform consistency](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=49.89473684210532) [checks of all the tables in the database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=51.526315789473685) [over a number of different days where you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=53.631578947368425) [can have a kind of bucket of tables that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=55.736842105263165) [you check on day 1, a bucket you check on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=57.53846153846155) [day 2, and so on and so on. Plus every so](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=59.46153846153848) [often you do a CHECKALLOC to make sure the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=61.94736842105264) [allocation consistency is okay, and a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=64.78947368421053)[CHECKCATALOG to make sure your system](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=66.68421052631577) [metadata catalogs are all okay as well.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=68.66666666666664) [Now you can bucketize your tables anyway](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=71) [you like, maybe you base it on time where](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=72.59090909090914) [you run through a list of tables and you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=74.63636363636374) [do as many as you can within a certain](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=76.6818181818182) [amount of time, then you move onto the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=78.7272727272728)[next day. Or you bucketize them by table](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=80.54545454545467) [size, or any other factor, maybe table](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=82.66666666666663) [importance or something like that. But](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=84.61111111111103) [there's a couple of different options that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=86.2) [you can use on your main production system](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=87.60000000000002) [if you can't afford the time and resources to run a full CHECKDB frequently.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=17&mode=live&start=89.20000000000005)

[Summary](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=18&mode=live)

[Summary. Most people just use CHECKDB,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=18&mode=live&start=2) [it's the simplest command to use, it does](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=18&mode=live&start=3.875) [absolutely everything, but there can be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=18&mode=live&start=6.375) [times where you want to use some of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=18&mode=live&start=7.842105263157894) [different consistency checking commands,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=18&mode=live&start=9.736842105263163) [maybe if you're trying to break the checks](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=18&mode=live&start=10.57894736842106) [up over time. It's also really useful to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=18&mode=live&start=12.5)[know exactly what CHECKDB is doing so you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=18&mode=live&start=14.5) [get an idea of what consistency checks are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=18&mode=live&start=16.363636363636367) [being run and to know some of the problems](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=18&mode=live&start=17.818181818181834) [that can occur with the implementation of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=18&mode=live&start=19.454545454545485) [CHECKDB and its use of database snapshots](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=18&mode=live&start=21.263157894736835) [and how to work around some of them. In](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=18&mode=live&start=23.473684210526297) [the next module, we're going to talk about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=18&mode=live&start=26.227272727272727) [looking at the output of DBCC CHECKDB and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=18&mode=live&start=28.04545454545454) [I'm going to show you some simple examples](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=18&mode=live&start=29.863636363636353) [of corruption and how that changes the output.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m5-checkdb&clip=18&mode=live&start=34)

[Interpreting DBCC CHECKDB Output](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live)

[Introduction](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live)

[Hi, this is Paul Randal from SQLskills.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live&start=0) [com, and I'm recording this course for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live&start=3.033333333333334) [Pluralsight. This is the SQL Server:](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live&start=6.066666666666669) [Detecting and Correcting Database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live&start=8.21875)[Corruption course, and you're watching](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live&start=9.59375) [Module 6: Interpreting DBCC CHECKDB](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live&start=11.3125) [Output. Introduction. Anytime you're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live&start=15.75) [looking at the output from DBCC CHECKDB,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live&start=17.999999999999996) [it's really important that you're able to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live&start=20.33333333333332) [recognize when it's telling you that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live&start=22.4) [you've got corruption so that you know](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live&start=23.599999999999994) [you're going to have to do something to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live&start=24.99999999999999) [solve that corruption problem. It's also](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live&start=26.789473684210527) [useful to be able to tell when certain](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live&start=28.368421052631582) [types of corruptions are going to limit](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live&start=30.473684210526322)[what you're going to be able to do. For](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live&start=31.769230769230766) [instance, corruptions that prevent CHECKDB](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live&start=33.294117647058826) [from running properly, that's going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live&start=34.764705882352956) [stop you being able to run repair. Now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live&start=36.52941176470591) [unfortunately, the output from CHECKDB is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live&start=38.94736842105264) [kind of cryptic and can be hard to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live&start=40.84210526315791) [understand, but there are a few tips and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live&start=43.36842105263161) [tricks that you can use to try and figure](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live&start=45.14285714285714) [out whether it's telling you something](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live&start=46.85714285714285) [that's going to cause CHECKDB not to be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live&start=48) [able to run for instance. So in this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live&start=49.84615384615387)[module, what we're going to cover is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live&start=51.89999999999999) [interpreting DBCC CHECKDB output at a high](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live&start=53.99999999999997) [level, some simple examples of corruptions](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live&start=56.09999999999995) [and how they're going to appear in the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live&start=57.78947368421053) [output of CHECKDB, and then a restore](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live&start=59.89473684210527) [versus repair decision that you might be able to make.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=0&mode=live&start=61.736842105263165)

[First Signs of Corruption...](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=1&mode=live)

[First signs of corruption. There's a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=1&mode=live&start=2) [variety of different things that as a DBA](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=1&mode=live&start=3.799999999999999) [point to the fact that you've got](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=1&mode=live&start=6.1999999999999975) [corruption happening, even if you're not](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=1&mode=live&start=8.25) [running CHECKDB. For instance, you might](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=1&mode=live&start=9.75) [have users calling you up saying their](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=1&mode=live&start=11.25) [connections are being broken when they're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=1&mode=live&start=13) [trying to run queries, the applications](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=1&mode=live&start=14.5) [aren't being able to connect properly,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=1&mode=live&start=16) [they might even mention 823 or 824 errors](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=1&mode=live&start=17.578947368421055) [that we talked about earlier on in the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=1&mode=live&start=19.684210526315795)[course. You might have backup jobs that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=1&mode=live&start=21.900000000000002) [start failing, for instance with the error](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=1&mode=live&start=24.000000000000007) [3043 that we saw when we talked about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=1&mode=live&start=26.100000000000012) [backup checksums showing that backups have](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=1&mode=live&start=28.5625) [detected checksum errors and they're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=1&mode=live&start=30.4375) [failing. You might have setup SQL Agent](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=1&mode=live&start=32) [alerts for 823 or 824 or even other](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=1&mode=live&start=33.99999999999999)[errors, and these start to fire, so you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=1&mode=live&start=36.28571428571427) [start to get emails from SQL Agent saying](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=1&mode=live&start=38.57142857142857) [that problems are happening. Your](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=1&mode=live&start=40.85714285714285) [maintenance jobs might start to fail. For](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=1&mode=live&start=42.2) [instance, if you have a regular CHECKDB](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=1&mode=live&start=43.60000000000002) [job and you might be looking in the SQL](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=1&mode=live&start=45.00000000000004) [Server error log and start to see problems](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=1&mode=live&start=46.923076923076934) [occurring. All of these things are signs](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=1&mode=live&start=48.7692307692308) [that you've got corruption somewhere and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=1&mode=live&start=50.20000000000002) [you're going to go and have to investigate and take some corrective action.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=1&mode=live&start=51.400000000000034)

[Running DBCC CHECKDB](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live)

[Running DBCC CHECKDB, very, very simple.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=2) [You use the following command and you only](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=3.666666666666666) [use the option WITH NO\_INFOMSGS, so you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=5.8888888888888875) [just DBCC CHECKDB, your database name,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=8.636363636363635) [WITH NO\_INFOMSGS. If you're running SQL](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=11.909090909090905) [Server 2008 RTM or before, you need to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=14) [also add the ALL\_ERRORMSGS as we talked](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=16) [about in the previous module to make sure](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=17.75) [that you get all the error messages back](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=20.058823529411757) [to you. Now when you're dealing with a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=22.411764705882337) [corruption issue, it's a really good idea](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=24.199999999999996) [to know how long CHECKDB takes to run for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=25.59999999999999) [a particular database, and there's a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=27.46153846153846) [couple of reasons for that. The first](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=28.84615384615384) [reason, imagine you're dealing with a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=30.526315789473685) [disaster and your boss comes along and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=32.10526315789474) [says hey, how long until we know what](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=33.94736842105264)[corruption we've got and what we're going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=35.70588235294119) [to have to do about it. It's much better](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=36.94117647058827) [for you to be able to say hey well boss, I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=38.652173913043484) [run CHECKDB every week for this database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=41.04347826086959) [and it takes about 4 hours, so it's going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=42.56521739130439) [to be at least 4 hours, rather than saying](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=44.909090909090914) [well boss, I've never run CHECKDB before](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=47.363636363636374)[so I've got no idea how long it's going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=49.2) [be able to take. The second reason is, as](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=51.20000000000003) [we discussed earlier in the course,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=53.66666666666668) [sometimes CHECKDB, when it finds](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=55.66666666666669) [corruptions, it has to go back and do](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=57.33333333333337) [what's called a deep dive to go and figure](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=59.428571428571445) [out exactly where the corruption is. If](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=61.57142857142861) [CHECKDB suddenly starts to run a lot](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=63.2) [longer than it usually runs, that's a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=64.60000000000002) [really good idea that it's found some](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=66.00000000000004) [corruption and it's going back and doing](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=67.71428571428572) [one of these deep dives. In fact, from](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=70.21428571428575) [2005 SP2 and onwards, it will actually](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=72.6818181818182) [tell you in the error log that it's going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=74.27272727272734) [back and doing a deep dive. Now whatever](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=76.31818181818194)[you do, wait for CHECKDB to complete](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=78.74999999999997) [because it's the only way to know exactly](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=81.19999999999993) [what corruptions you have, nothing else is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=84) [going to be able to tell you. Don't jump](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=85.49999999999996) [the gun and assume that you need to start](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=87.47619047619048) [restoring, because it could be that you've](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=89.61904761904765) [got an error that you don't need to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=91.28571428571433)[actually run a restore to fix. And when](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=93.49999999999999) [you get the output, when CHECKDB](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=95.89999999999996) [completes, have a look through using some](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=97.69999999999995) [of the information you're going to get in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=99.20000000000002) [this module to see whether there's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=100.80000000000004) [anything significant. For instance, was](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=102) [CHECKDB actually able to complete](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=103.5625) [successfully or did one of the corruptions](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=105.125) [cause CHECKDB to finish prematurely?](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=107.3125) [That's going to limit your options because](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=108.875) [it means you're not going to be able to run repair for instance.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=2&mode=live&start=111.0625)

[Where Does DBCC CHECKDB Output Go?](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=3&mode=live)

[Where does DBCC CHECKDB output go? Well as](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=3&mode=live&start=2) [long as the command is not interrupted in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=3&mode=live&start=4) [any way, there's going to be a completion](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=3&mode=live&start=6) [message written out to the SQL Server](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=3&mode=live&start=7.923076923076923) [error log. There's also going to be a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=3&mode=live&start=9.538461538461533) [completion message written out to the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=3&mode=live&start=11.875) [Windows Application event log. All the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=3&mode=live&start=13.75)[regular output is only going to go to the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=3&mode=live&start=15.399999999999999) [connection that's running the command,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=3&mode=live&start=17.199999999999992) [you're not going to get all of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=3&mode=live&start=18.19999999999999) [informational and any error messages](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=3&mode=live&start=20.05263157894737) [written out to the error log or the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=3&mode=live&start=21.368421052631582) [Windows Application event log. Now if any](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=3&mode=live&start=23.473684210526322) [corruptions are found, it's going to print](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=3&mode=live&start=25.875) [out severity 16 messages. They're going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=3&mode=live&start=28.5) [be part of the output, but they're not](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=3&mode=live&start=30.666666666666664) [actually being raised as a regular](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=3&mode=live&start=32.444444444444436) [message. So they're not going to cause](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=3&mode=live&start=33.777777777777764)[try/catch blocks to go into the catch](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=3&mode=live&start=35.79999999999998) [block if you're trying to catch those. Now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=3&mode=live&start=37.89999999999996) [one other foible if there are corruptions](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=3&mode=live&start=40.26315789473684) [found is that Management Studio, SSMS, is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=3&mode=live&start=42.10526315789474) [going to report that the query failed,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=3&mode=live&start=43.94736842105264) [even though the DBCC command is going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=3&mode=live&start=45.9375) [say that it completed successfully. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=3&mode=live&start=48.4375) [that's something to watch out for. And](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=3&mode=live&start=50.21052631578947) [also with Management Studio, you're only](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=3&mode=live&start=51.68421052631578) [going to get back the first 1000 error](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=3&mode=live&start=52.947368421052616) [messages. That's because any more than](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=3&mode=live&start=55.00000000000001) [1000 error messages and it can cause](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=3&mode=live&start=57.00000000000002) [memory problems for Management Studio. Now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=3&mode=live&start=59.33333333333337) [let's have a quick look at an example of CHECKDB output.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=3&mode=live&start=64)

[Demo: Example DBCC CHECKDB Output](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live)

[In this demo, I want to show you some](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=2) [example output from CHECKDB and talk about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=3.636363636363635) [some of the features of it. Now what I'm](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=4.9090909090909065) [going to be doing is creating some](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=6.789473684210527) [corruption in one of these databases using](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=8.631578947368425) [this undocumented DBCC WRITEPAGE command,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=10.473684210526322) [which I'm going to talk about in the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=11.9375)[advanced course in module 3. So first off,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=14.4375) [I'm going to create a couple of databases,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=17.5) [getting rid of any old databases before.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=21.5) [So create database 1 called Company,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=25) [creating a table in there, inserting 10](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=26.578947368421055) [rows, and that's all we're going to do for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=28.421052631578952) [that database. And then for Company2 we're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=31.14285714285714) [going to go ahead and create that table](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=33.809523809523796) [and insert 10 rows and then we're going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=36.85714285714283) [have a look and see what pages are there](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=40.28571428571428) [using the undocumented DBCC IND, pick a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=43.714285714285694) [page, let's pick page 294, and we're going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=46.68181818181818) [to corrupt it. So let's go ahead and run](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=52.13636363636362) [those commands and then we're going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=58.27272727272724)[clean up after ourselves. Alright, over to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=62.75000000000001) [the demo. So the demo script, first of all](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=66.83333333333333) [we're just going to run a regular CHECKDB](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=69.82608695652173) [with no options at all on the non-corrupt](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=71.91304347826086) [database. And we can see it tells us a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=74) [whole bunch of stuff. It's giving us](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=76.14285714285717) [information about all the service broker](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=77.80952380952385) [things that it did, it tells us for every](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=79.33333333333333) [single table how many rows there are and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=82.33333333333329) [how many pages. Now these are all the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=84.99999999999991) [hidden system tables, these are the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=87.49999999999999)[critical system tables that I was talking](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=89.29999999999997) [about in earlier modules. These three,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=91.39999999999995) [sysallocunits, sysrowsets, and sysrscols.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=94.5) [If there's any problems with any of these](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=97) [three tables, then CHECKDB is going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=98.52380952380952) [fail, and I'm going to show you a demo of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=99.85714285714285) [that later on in this module. But then it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=102.39130434782606) [looks like all of the tables don't have](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=105.52173913043471) [any problems. If we go down to the bottom,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=108.30434782608684) [and it says CHECKDB found 0 allocation](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=110.66666666666669) [errors and 0 consistency errors in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=112.33333333333337)[database Company. So that's it, no](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=113.76190476190482) [problems. Now usually we don't care about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=115.94444444444443) [all this informational data, so what we're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=118.66666666666663) [going to do is use WITH NO\_INFOMSGS, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=121.28571428571429) [when we do that, for our database it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=123.57142857142863) [doesn't have any problems, we find that we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=125.85714285714296) [don't get any output. That's exactly what](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=128) [we want, we want to see just the errors.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=129.75) [So now let's look at a database that does](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=132) [have errors. So we've got two errors](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=139.41176470588226) [reported. So what we're seeing here is two](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=145.17647058823513) [errors. The first one is telling us](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=147.99999999999994) [there's an I/O error, basically this page,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=149.9999999999999) [294, the one that we just corrupted,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=152) [cannot be processed. It had an I/O error](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=154.10000000000008) [when it was read in. Now the second error](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=156.50000000000017) [is saying we couldn't process this page,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=159.33333333333337) [page 294, see other errors for details. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=161.66666666666677) [these two errors are linked together. And](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=164.22222222222223) [very often you'll see that in the output](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=165.77777777777783) [of CHECKDB. Now down at the bottom it says](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=167.55555555555566) [we found 0 allocation errors and 2](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=170.80000000000004) [consistency errors in the table](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=173.60000000000008) [RandomData. So it tells us what tables it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=175.6000000000001) [thinks it's found the corruptions in and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=177.82608695652183) [then it gives us a summary for the entire](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=179.65217391304367) [database. And then it tells if you want to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=182) [fix that, repair\_allow\_data\_loss is the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=185.17647058823522) [minimum repair level. And we'll talk about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=186.94117647058812)[repair levels in module 8. So now let's go](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=189.04347826086962) [and have a look and see how that appears](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=191.39130434782626) [in the error log and the application event](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=193.7391304347829) [log. So we'll do View, Object Explorer,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=197.5) [we'll go to Management, SQL Server Error](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=201) [Logs and we'll just refresh. If we look in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=204.56521739130434) [here we see, let's go this way, we see our](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=209.26086956521738) [initial CHECKDB that we did of Company, no](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=214.4782608695652) [problems, and then Company WITH](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=217.57894736842113) [no\_infomsgs, so the output and the error](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=219.42105263157907) [log always tells you which options you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=222) [used, and then there's the one that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=224.3333333333334) [failed. And what I've got turned on is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=226.6666666666668) [Watson error reporting, so whenever a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=229.57894736842113) [problem occurs and CHECKDB finds a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=231.78947368421066) [corruption, it creates a little stack dump](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=234) [and that can be sent up to Microsoft. Now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=236.3333333333334) [if you don't have that turned on, you're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=239.1304347826087) [just going to see this line here, you're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=240.1739130434782) [not going to see all of this stuff as](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=241.2173913043477) [well. Let's have a look and see how that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=243.421052631579) [appears in the Windows Application event](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=247.68421052631595) [log. And I've got that sitting here. So if](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=250.52631578947393) [we look at the Windows Application event](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=255.79999999999995) [log, we see an informational message. Now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=260.0000000000001) [that's because the command didn't fail,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=263.8421052631579) [the command succeeded, but it did tell us](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=266.3684210526317) [that we found 2 errors and repaired 0](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=269.73684210526335) [errors. So we get the information out](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=272.3157894736841)[there in the Windows Application event log](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=274.15789473684185) [as well, but I would look at the SQL](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=276) [Server error log to be honest rather than](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=278.04545454545473) [the Windows Application event log. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=279.8636363636367) [there's a couple of very simple examples](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=281.25) [of CHECKDB output and how it's going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=283) [appear when you've got corruptions there.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=285) [We're going to look at some more examples as we go through the rest of this module.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=4&mode=live&start=288)

[Interpreting DBCC CHECKDB Output (1)](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=5&mode=live)

[Interpreting DBCC CHECKDB output, part 1.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=5&mode=live&start=1) [There are an awful lot of different errors](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=5&mode=live&start=3.333333333333333) [that CHECKDB can output. Some of them have](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=5&mode=live&start=6.444444444444446) [more than 200 different message states,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=5&mode=live&start=9.333333333333336) [which altogether means is roughly about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=5&mode=live&start=11.33333333333334) [1000 different corruption conditions that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=5&mode=live&start=13.333333333333343) [can be reported in the output of CHECKDB.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=5&mode=live&start=14.81818181818182) [Now figuring out what one corruption means](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=5&mode=live&start=17) [mostly isn't too bad as MSDN has some of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=5&mode=live&start=19.100000000000005) [them published, but not all of them](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=5&mode=live&start=21.80000000000001)[unfortunately. Now if you have lots of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=5&mode=live&start=23.882352941176467) [different corruptions altogether, trying](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=5&mode=live&start=25.941176470588225) [to figure out what they mean in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=5&mode=live&start=27.117647058823515) [combination can be really, really hard and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=5&mode=live&start=29.263157894736835) [usually I'll say it's not worth your time.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=5&mode=live&start=31.473684210526297) [But on the other hand, there are some tips](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=5&mode=live&start=34) [and tricks you can use to determine if](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=5&mode=live&start=36.04545454545454) [there's a pattern that you're seeing and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=5&mode=live&start=37.86363636363635) [that could help determine the course of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=5&mode=live&start=39.400000000000006) [action that you're going to take. And](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=5&mode=live&start=40.800000000000026) [we're going to look at a few of these](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=5&mode=live&start=43) [different patterns through the rest of this module.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=5&mode=live&start=52)

[Interpreting DBCC CHECKDB Output (2)](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live)

[Interpreting DBCC CHECKDB output, part 2.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=1) [One of the simplest things to look for is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=3.210526315789473) [did DBCC CHECKDB fail or did it say](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=6.526315789473682) [CHECKDB completed successfully. It could](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=9.333333333333336) [be that there's something gone wrong](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=11.000000000000005) [inside the database that means that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=13.000000000000009) [CHECKDB cannot actually run and it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=14.9375) [prevents it from being able to finish. Now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=16.8125) [if this occurs, that means you really have](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=19.238095238095237) [no choice but to restore from a backup or](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=21.142857142857135) [try exporting the data into a new database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=23.28571428571427) [because if CHECKDB cannot run, then you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=26.105263157894743) [can't use the repair part of CHECKDB. In a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=29.052631578947384) [few examples of errors that are fatal to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=32.36363636363636)[CHECKDB, in other words things that will](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=33.8181818181818) [stop it being able to run successfully,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=35.09090909090906) [anything 7984-7988 says that there's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=36.93333333333334) [corruption in those critical system](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=39.26666666666668) [tables, and that's an immediate game over.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=41.60000000000002) [8967 is something went wrong inside](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=44.55555555555554) [CHECKDB itself, usually caused by some](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=46.88888888888886) [kind of corruption, but something that I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=49.22222222222217) [or the people that took over CHECKDB after](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=52.1875) [me didn't anticipate. And then something](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=55.6875) [like an 8930, and that says there's some](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=57.94736842105264) [kind of corrupt metadata such that DBCC](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=60.473684210526336) [CHECKDB can't work past it and run. Now if](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=62.68421052631582) [CHECKDB did fail for any reason, the error](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=65.54545454545453) [log message is going to have an error](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=68.09090909090904) [state associated with it and those error](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=70.5) [states are documented in books online, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=72.25) [you can go to that bit. ly link there and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=74) [see what those different error states](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=76.84615384615384) [mean. And those error states are going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=78.69230769230768) [map to the various fatal errors that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=81.00000000000004) [CHECKDB is going to print out to. So now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=83.00000000000009) [let's have a quick look at some fatal](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=87) [errors that stop CHECKDB from being able to run.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=6&mode=live&start=95)

[Demo: Fatal Error Examples](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live)

[In this demo, I want to show you some](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=2) [errors that are fatal to CHECKDB, it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=4.142857142857143) [cannot work around these corruptions. I'm](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=5.80952380952381) [going to be using the undocumented DBCC](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=7.2105263157894735) [WRITEPAGE command, which I'm going to talk](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=8.684210526315791) [about in more detail in module 3 of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=10.157894736842112) [advanced course. For first off, I'm going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=12.190476190476186) [to remove any old databases that I've got](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=13.857142857142847) [lying around like so and then I'm going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=15.761904761904745) [go and create three databases,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=23.529411764705884) [FatalCorruption1, 2, and 3. And I'm going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=28.23529411764706) [to turn off page protection on all three](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=33.28571428571429) [of those databases that allows my demo to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=36.71428571428574) [work properly. And I'm going to set all](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=40.14285714285718) [three databases into the single user mode](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=43.000000000000014) [so I can corrupt them. Then for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=45.333333333333364) [FatalCorruption1, we're going to corrupt](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=47.94117647058823) [the fileheader page, which is page 0 of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=50.29411764705881) [every file. FatalCorruption2 we're going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=54.05882352941174) [to corrupt the boot page that I've](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=56.24999999999999) [mentioned before. And then](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=59.16666666666664) [FatalCorruption3 we're going to corrupt](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=60.875)[some of the critical system table](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=63.0625) [metadata, like so. And let's put those all](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=65.6875) [back into the single user mode, sorry,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=68.25) [into the multiuser mode, and when we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=70) [execute this we're going to see an error](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=71.75) [because of the corruption that we've](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=73.49999999999996) [caused. We can ignore that. Remember this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=74.7857142857142) [is a contrived example, but all of these](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=77.28571428571428) [errors I've seen for real in production.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=80.33333333333331) [And then let's clear up. Okay, over to our](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=83) [demo script. First one, CHECKDB of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=88.625)[FatalCorruption1. And it tells us the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=92.375) [header file for that database file there](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=94.66666666666664) [is not a valid database file header, the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=96.99999999999994) [PageAudit property is incorrect. Then it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=99.66666666666657) [tells us we can't start a database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=102.10526315789473) [snapshot and then it says down here, check](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=105.05263157894734) [terminated, a failure was detected while](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=108.27777777777777) [collecting facts, possibly tempdb out of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=109.9444444444444) [space or a system table is inconsistent,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=111.61111111111103) [check previous errors. Well okay, maybe it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=113.625) [was something to do with a snapshot. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=115.8125) [let's use the WITH TABLOCK option and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=118.35) [remove the snapshot from the equation](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=120.79999999999995) [completely, and now we get the same thing,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=122.89999999999992) [the same 8921 check terminated. That's one](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=125.6) [of the errors that can say you can't go](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=127.69999999999997) [any further so you're not going to be able](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=130.40000000000006) [to run repair. And it tells us that our](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=133.10000000000008)[file header is incorrect. You can see](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=135.80000000000018) [those 2 errors here with Object ID 99, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=138.09090909090912) [Object ID 99 is a nonexistent object, it's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=141.3636363636365) [just saying this is the allocation system](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=144.27272727272748) [or these are pages in the database that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=146.6666666666667) [are not part of any tables or indexes,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=149.33333333333346) [they're giving this fake Object ID 99. You](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=152) [can also see that down here there's no](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=154.66666666666674) [error saying what the minimum repair level](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=157.33333333333348) [is. That's because this error cannot be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=159.60000000000002) [repaired. So let's have a look at another](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=161.7000000000001) [example. FatalCorruption2, boot page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=165.8888888888888) [corruption, and we get the same 8921, we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=168.11111111111097) [cannot continue, and this time it says](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=172.52631578947367) [it's the boot page, page 9, and file #1,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=176.21052631578937) [simple example. And now what about this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=180.9473684210524) [one, FatalCorruption3. So we get the same](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=184.22222222222229) [errors about the database snapshot, but](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=187.33333333333348)[now we get a different error, instead of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=190) [the 8921 we've got the 7985, system table](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=192.4000000000001) [pre-checks: Object ID 5 could not read and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=194.80000000000018) [latch page 1:17, check statement](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=198) [terminated due to unrepairable error.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=200.5) [Object ID 5 is one of those hidden system](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=203) [tables and the primitive system table](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=205.5714285714285) [checks right at the start of the check go](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=207.28571428571416) [through and try to read all those pages](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=209.81818181818184) [into memory, and what this is saying is I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=212.00000000000009) [couldn't read this page into memory. We](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=214.4545454545456) [don't care about this latch type share](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=216.15384615384613) [here. What it's saying is we couldn't read](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=217.76923076923072) [the page into memory, but maybe it's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=219.39999999999992) [something to do with the snapshot so let's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=220.79999999999984) [try using WITH TABLOCK. And we get the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=222.72727272727275) [same message. So it was nothing to do with](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=225.63636363636374) [the snapshot at all, we really do have](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=228.9090909090911) [corrupt system table pages. So there's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=232.1052631578948) [three examples of fatal errors to CHECKDB,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=234.63157894736855) [and if you get a fatal error, you're not](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=237.57894736842127) [going to be able to force CHECKDB to run,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=239.33333333333326) [so you're not going to be able to run](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=240.83333333333317) [repair and that's going to limit your](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=242.63157894736844) [recovery options to restoring from backups](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=244.84210526315798) [or trying to export data out into a new database.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=7&mode=live&start=246.7368421052633)

[Interpreting DBCC CHECKDB Output (3)](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live)

[Interpreting DBCC CHECKDB output, part 3.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=2) [One of the other things you can look out](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=3.799999999999999) [for is are the corruptions only in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=6.499999999999997) [non-clustered indexes? A couple of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=8.615384615384617) [different ways you can tell that. The](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=10.153846153846159) [first one is if the recommended repair](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=12.3) [level is REPAIR\_REBUILD, then the answer](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=14.400000000000006) [is yes, and if the index IDs in all of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=16.20000000000001) [error that you see are all for index IDs](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=19.400000000000006) [greater than 1, so 2 and higher, then yes,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=21.920000000000016) [it's just non-clustered index IDs that are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=24.440000000000026)[broken. So if the answer is yes, you're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=26.25) [not actually going to need to do anything](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=28.25) [like a restore or a repair to be able to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=30.25) [fix those. As we're going to see in module](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=32.75) [8, you can just manually rebuild those](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=35) [indexes without having to take the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=37.07142857142856) [database offline in any way. Another thing](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=39.21428571428569) [you can look for is were there any](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=41.5) [unrepairable errors. Now CHECKDB is not](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=43.5) [going to tell you that these are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=44.90909090909091) [unrepairable until you try to run repair,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=46.49999999999999) [but if you know that they're there, you're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=48.09090909090908) [going to be able to save some time and not](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=50.05263157894737) [waste time running CHECKDB with](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=52.684210526315795) [repair\_allow\_data\_loss when it's going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=54)[have no effect on these particular errors.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=55.66666666666668) [Some examples of these are 2570, which is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=58) [a data purity error where the columns](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=61.04761904761904) [value is invalid for the data type that it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=63.714285714285694) [is, 8992 where there's some kind of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=67.10526315789473) [metadata mismatch error, and then some](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=69.68421052631575) [more insidious ones, any of those 3 error](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=71.8947368421052) [messages where the error type is PFS,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=75.14285714285715) [that's an allocation bitmap and those](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=78.14285714285717) [can't be repaired. Now none of these](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=80.71428571428575) [different error types can be automatically](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=83.23076923076923)[repaired by CHECKDB. So your options are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=85.07692307692307) [going to be either to restore, maybe](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=86.80000000000001) [export data out into another database, or](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=88.20000000000003) [in some cases to attempt manual repairs.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=89.60000000000005) [In module 8, we're going to fix a 2570](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=91.66666666666664) [error and some of the other unrepairable](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=94.6666666666666) [errors we'll play around with in the more advanced course.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=8&mode=live&start=97)

[Interpreting DBCC CHECKDB Output (4)](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live)

[Interpreting DBCC CHECKDB output, part 4.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=2) [Now, anything else I haven't already](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=4.25) [mentioned on previous slides I classify as](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=6.5) [just general corruptions. And your options](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=8.900000000000002) [there are going to be to restore or](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=10.700000000000006) [repair, or maybe export out to a new](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=13.100000000000012) [database. And I'll talk about exporting](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=15.363636363636367) [out to a new database at the end of this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=17.000000000000007) [module. Now the more corruptions there are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=19.72727272727274) [in the output from CHECKDB, the harder](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=21.14285714285714) [it's going to be to figure out what's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=22.476190476190467) [actually broken under the covers, because](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=24) [it also depends on what kind of page is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=25.5) [corrupt and what kind of corruptions are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=27.75)[reported. For a data page at the leaf](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=29.6) [level of a clustered index, it could be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=32.00000000000001) [that there's just one error about one row](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=34.399999999999984) [on the page, but there may also be a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=36.30434782608697) [matching error about every one of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=38.26086956521742) [non-clustered indexes, and there may also](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=39.782608695652215) [be a matching error about off-row LOB](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=41.75000000000001) [values from that row if such things exist,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=44.20000000000002) [and so on and so on. It could be that the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=47) [entire page can't be processed and that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=50.14285714285713) [error is reported. And then there could](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=52.142857142857125) [also be errors about broken links to other](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=53.95238095238096) [pages in the tree of the clustered index](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=55.85714285714289) [and there may be also other errors about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=57.761904761904816) [the non-clustered indexes for that table,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=60.21052631578949) [and so on and so on. So any particular](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=62.10526315789476) [error could have a whole bunch of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=64.94736842105262) [ancillary errors that are also reported](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=67.15789473684205)[because that row or page or whatever](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=69.05263157894728) [couldn't be processed. And this is what](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=71.14285714285717) [makes it hard to figure out what the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=73.14285714285721) [actual root cause of a particular set of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=75.42857142857154) [corruptions are, what is the one or](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=77.5) [several things that are causing a whole](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=79.25) [bunch of different errors. And this is why](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=81) [I say that it's usually not worth trying](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=82.60000000000002) [to figure out exactly what's wrong for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=84.20000000000005) [most people, you're just going to go ahead](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=85.75) [and restore or repair, and if not](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=87.75) [possible, you're going to export to a new](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=89.5) [database. So now let's have a look at some general corruption examples.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=9&mode=live&start=96)

[Demo: Various Corruption Examples](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live)

[In this demo, I want to show you some](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=2) [examples of various different kinds of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=4.25) [corruptions. Now once again in the setup](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=5.75) [script I'm using the undocumented DBCC](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=7.578947368421055) [WRITEPAGE command, which I talk about in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=9.15789473684211) [the advanced course in module 3. So first](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=11) [off, I'm going to get rid of any old](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=14.826086956521735)[databases that I had, like so. And then,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=19.1304347826087) [the first database is going to be called](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=22.38095238095238) [Company and we're going to corrupt an IAM](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=23.904761904761898) [page, which is an allocation bitmap for a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=25.428571428571416) [table. So I create my database, create my](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=27.999999999999993) [random data table, and then list all the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=31.19999999999998) [pages that are in there. And I want to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=34.526315789473685) [pick one with PageType 10, so here,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=39.26315789473685) [PageType 10. And that's page 1, 231. So we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=42.947368421052644) [plug in 231 there, we go ahead and close](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=48.66666666666665) [that corruption, and then Company2, we're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=54.66666666666663) [going to create our database, create the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=58.421052631578945) [table, insert 10 rows, then we're going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=61.36842105263156) [create a clustered index and we're going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=64.73684210526312) [to corrupt one of the index pages in that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=67.06666666666666) [clustered index. So we create the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=69.46666666666665) [clustered index, list all the pages there,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=71.14285714285717) [and we're looking for a PageType of 2 here](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=73.14285714285721) [because that's an index page. So I guess](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=75.71428571428584) [this page here, which is page 312, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=80.90000000000002) [then we've done that corruption. And then](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=86.50000000000004) [Company3, create the database, create the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=90.66666666666666) [table, insert 10 rows, and this one's got](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=92.66666666666663) [some VARCHAR information so we're going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=95.33333333333326) [have some off-row LOBs stored, what pages](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=99.50000000000001) [there are, we need a PageType of 3. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=104.40000000000003) [let's pick a random page here of type 3,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=110.45833333333333) [page 296, and then we go ahead and cause](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=114.58333333333329)[that corruption and do a bit of cleanup.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=118.70833333333324) [Alright, so we've caused our corruptions.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=121.75) [Let's go and have a look at what they look](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=123.25) [like in CHECKDB now. So first off, the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=125.75) [Company database. Well we've got a whole](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=129.7058823529412) [bunch of errors. Now what's interesting](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=133.41176470588238) [here, we get this page, page 231 could not](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=136.71428571428575) [be processed. So anytime you're seeing a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=141.857142857143) [page could not be processed, that's a good](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=144.31578947368425) [indication that there's some kind of I/O](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=146.42105263157904) [error. Now if we look down, we might find](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=148.55) [an 8939 message like so saying there's an](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=153.5000000000001) [I/O error. So page 231 is corrupt. Now,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=157.9000000000002) [look at the rest of these things. We're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=160.5789473684211)[getting some information here that the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=162.6842105263159) [Index Allocation Map, IAM page 231, so now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=164.3684210526316) [we know that the corrupt page is an](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=167.3157894736843) [allocation bitmap. It's pointed to by the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=170.26315789473702) [next page, the next pointer of IAM page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=172.4285714285714) [00. So this is saying really, storage](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=174.7142857142856) [engine metadata in a system table is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=178) [pointing to our IAM page here, but we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=181.5) [don't see the IAM page because there was](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=185.2941176470588) [an I/O error and we couldn't process it.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=187.6470588235293) [Now all of these errors, all these 8906s](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=190)[are saying there's pages that are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=193.78947368421063) [allocated, or marked as allocated as far](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=196.6315789473686) [as the bitmaps and so on are concerned,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=199.7) [but we didn't see it allocated in any IAM](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=202.49999999999994) [page. That's because our IAM is corrupt](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=205.6499999999999) [and we couldn't process it. So there's an](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=207.80000000000007) [example of the kind of pattern you might](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=210.20000000000016) [see if you have IAM pages or index](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=212.63636363636363) [allocation maps or the bitmaps that keep](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=215.18181818181813) [track of the pages and extents allocated](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=217.40909090909082) [to a particular table or index if one of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=219.5) [those is corrupt, that's the kind of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=221.75) [pattern you're going to see. Company2, so](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=223.5) [we have a whole bunch of different errors](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=226.85714285714292) [and we scroll down and look, here's an](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=231.4285714285716) [8939 saying we had an I/O error reading](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=236) [page 312. And what other kind of errors do](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=240.79999999999995) [we have here? Page 312 could not be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=246.1999999999999) [processed and then what we have here is a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=250.24999999999994) [bunch of index B-tree linkage errors. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=254.29999999999984) [for instance let's look at one of these.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=257.44444444444446) [The parent node for page 314 was not](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=261.0000000000001)[encountered. The parent node for 320 was](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=264.55555555555577) [not encountered. The parent node for 315](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=266.875) [was not encountered. And that's saying](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=269.0625) [that we've got a page in the middle of an](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=271.0909090909091) [index, which has child pages, has not been](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=274.72727272727286) [able to be processed for some reason. And](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=277.63636363636385) [that's exactly what we did when we caused](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=279.23529411764713) [that corruption. So here's some examples](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=280.64705882352956) [of B-tree problems, or index problems when](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=283.20000000000005) [some pages in the index could not be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=287.0500000000001)[processed. Company3, three errors. It has](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=291.4500000000002) [an 8939, so we had an I/O error for page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=295.3333333333334) [296, it's the one we corrupted. And we see](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=302.0000000000003) [the 8928 down at the bottom. Now look at](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=307.7727272727272) [this, this is saying Row-overflow page, so](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=313.0909090909088) [a page that's being stored, being used to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=317.22727272727224) [store data that is pushed off-row out of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=320.9999999999999) [the data record itself, which is off-row](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=324.1999999999997) [LOB data, that VARCHAR 5000 that I had,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=327) [could not be processed. And there we see](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=330.3333333333335) [we failed to go and pull in the off-row](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=334.18181818181824) [data that's pointed to by page 297, row 0.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=339.0909090909093) [It's obviously pointing to page 296, which](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=344) [is our off-row data page. So there's an](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=346.9166666666668)[example of the kind of pattern you might](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=350.1052631578947) [see if you've got a LOB linkage failure.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=353.05263157894717) [So these same three sets of corruptions,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=356) [we're going to look at repairing when we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=358.21052631578954) [get to module 8. Now you'll notice in all](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=360.7368421052633) [three of these cases, the repair level,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=363.4705882352942) [the minimum repair level is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=365.5294117647061)[repair\_allow\_data\_loss. So in other words,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=367) [the broken page, that page that couldn't](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=368.4705882352942) [be read because of the I/O error is going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=370.5294117647061) [to be de-allocated and repair is going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=373.1428571428571) [have to fix up everything that is linked](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=375.42857142857133) [from that page and links to that page. And](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=377.71428571428555) [we'll have a look at those with the same](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=380.181818181818)[corruptions when we talk about repair in module 8.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=10&mode=live&start=382.6363636363633)

[Restore vs. Repair (1)](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live)

[Restore versus repair, part 1. Now most](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=2) [people say that repair is always a last](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=4.099999999999999) [resort, but it's not always a last resort.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=6.499999999999997) [It could be that restoring from a backup](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=8.900000000000002) [would take much, much longer than a small](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=11.300000000000008) [targeted repair. Now depending on what](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=13.700000000000014) [your downtime and data loss service level](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=15.764705882352944)[agreements are for that particular](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=18.235294117647054) [database, the business may say that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=20) [downtime is actually more important than](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=22.142857142857146) [data loss. So it could be that repair and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=24.285714285714292) [using the repair\_allow\_data\_loss option](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=27.058823529411757) [might be better in that case. Now don't](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=28.235294117647047) [forget, there's always the option to try](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=30.631578947368418) [exporting data out from a damaged database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=32.84210526315789) [if restore or repair is not possible. Now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=35.05263157894738) [to make your restore versus repair](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=37.47058823529413) [decision, there's a few different decision](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=39.235294117647086)[points that you're going to have to work](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=41) [through, and one of those decision points](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=42.68421052631578) [could actually short circuit your decision](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=44.15789473684209) [making process. For instance, do you still](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=45.83333333333333) [have a database? Well, if you don't have a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=48.74999999999998) [database you've really got no choice but](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=51.33333333333333) [to restore from a backup. Do you still](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=52.88888888888888) [have working backups? If you don't have](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=54.75) [any working backups, you're going to have](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=56.5) [to use repair or maybe restore a damaged](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=58.25) [backup, which is pretty advanced and we'll](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=60.31578947368421) [talk about that in the advance course, or](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=62.15789473684211) [export data into a new database. Is the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=64.41666666666667) [transaction log damaged? If the answer is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=67.75000000000004) [yes, then you're going to either have to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=69.95238095238096) [restore or use a thing called emergency](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=71.85714285714289) [mode or emergency mode repair, which we'll](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=73.52380952380958) [talk about in the advanced course, or](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=75.31578947368418) [export data out into a new database if you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=77.15789473684202) [can. Now there's a bunch of different](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=79.6) [transaction log issues that you might run](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=81.69999999999997)[across, and I consider those more](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=83.79999999999995) [advanced, so we'll talk about those in a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=85.52631578947367) [complete module in the advanced course](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=87.63157894736835) [that's coming a few weeks after this one goes live.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=11&mode=live&start=89.21052631578937)

[Restore vs. Repair (2)](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=12&mode=live)

[Restore versus repair, part 2. Continuing](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=12&mode=live&start=2) [with the decision making process, did DBCC](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=12&mode=live&start=4.800000000000001) [CHECKDB fail? If the answer is yes, then](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=12&mode=live&start=8.066666666666668) [you've really got no choice but to restore](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=12&mode=live&start=10.304347826086957) [or export as you're not going to be able](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=12&mode=live&start=12.043478260869566) [to force CHECKDB to run, which means you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=12&mode=live&start=14) [can't run repair. Is it just non-clustered](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=12&mode=live&start=16.52631578947368)[indexes that are damaged? If the answer is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=12&mode=live&start=18.736842105263143) [yes, you don't need to restore or repair](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=12&mode=live&start=20.84210526315789) [because you can manually rebuild them](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=12&mode=live&start=22.52631578947367) [yourself. We'll cover that in module 8.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=12&mode=live&start=23.789473684210506) [Are there any non-repairable errors? If](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=12&mode=live&start=26.18181818181818) [the answer is yes, you're going to have to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=12&mode=live&start=28.227272727272727) [restore or export, but you might be able](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=12&mode=live&start=30.272727272727266) [to manually repair them. Some manual](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=12&mode=live&start=32.09090909090908) [repairs are pretty trivial, and we're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=12&mode=live&start=33.45454545454545) [going to do one of them in module 8, but](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=12&mode=live&start=34.81818181818181) [most of them are usually very advanced and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=12&mode=live&start=37.09090909090908) [we'll cover a bunch of those in the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=12&mode=live&start=39.14285714285714) [advanced course. Now if you're still able](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=12&mode=live&start=41.428571428571416) [to make your repair versus restore choice](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=12&mode=live&start=43.38888888888889) [after working through all those decision](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=12&mode=live&start=45.33333333333334) [points, then again, consider your downtime](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=12&mode=live&start=47) [and data loss service level agreements and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=12&mode=live&start=48.764705882352956) [figure out which option is more palatable](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=12&mode=live&start=50.82352941176474) [to you and which one is more important to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=12&mode=live&start=53.28571428571429) [the business. Now there's a very](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=12&mode=live&start=57.14285714285717) [comprehensive flowchart that I put](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=12&mode=live&start=58.888888888888886) [together for SQL Server Magazine on this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=12&mode=live&start=59.99999999999999) [entire decision making process, and you can get it at that bit. ly link there.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=12&mode=live&start=61.55555555555554)

[Exporting Data to a New Database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=13&mode=live)

[Exporting data to a new database. Several](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=13&mode=live&start=2) [times now I've mentioned that if you can't](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=13&mode=live&start=4.210526315789474) [repair or you can't restore, then the only](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=13&mode=live&start=6.736842105263159) [option is to export as much data as](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=13&mode=live&start=9.411764705882355) [possible into a new database. Here's how](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=13&mode=live&start=12.235294117647065) [you go ahead and do that. First of all,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=13&mode=live&start=14.38095238095238) [you obviously create the new database with](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=13&mode=live&start=16.095238095238088) [the same tables and indexes, basically the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=13&mode=live&start=17.428571428571416) [same schema as the corrupt database. Make](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=13&mode=live&start=19.200000000000003) [sure that you're also creating all your](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=13&mode=live&start=21.294117647058822) [stored procedures and functions and so on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=13&mode=live&start=23.35294117647058) [as well. And then you're going to try](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=13&mode=live&start=25.411764705882337) [selecting as much data as possible from](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=13&mode=live&start=27.714285714285708) [all of the tables in the corrupt database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=13&mode=live&start=29.7142857142857) [into the new database. Now this can be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=13&mode=live&start=32) [harder than it sounds because you've](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=13&mode=live&start=34.5263157894737) [probably got corruptions in some of these](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=13&mode=live&start=36.42105263157897) [tables and that's going to complicate how](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=13&mode=live&start=38.5) [you do those SELECTS, and this calls for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=13&mode=live&start=40.25) [some more advanced methods to be able to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=13&mode=live&start=42.25) [figure out which bits of data you're going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=13&mode=live&start=44.08695652173914) [to be able to export and how to work](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=13&mode=live&start=45.82608695652176) [around those corrupt pages. And I'm going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=13&mode=live&start=47.782608695652215) [to show you some examples and discuss some](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=13&mode=live&start=49.71428571428571) [more of the methods to do this in module 6 of the advanced course.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=13&mode=live&start=51.999999999999986)

[Summary](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=14&mode=live)

[Summary. So in this module we talked about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=14&mode=live&start=2) [interpreting DBCC CHECKDB output. There's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=14&mode=live&start=5.333333333333334) [a few very important take-aways. Number](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=14&mode=live&start=7.352941176470588) [one, always make sure you let CHECKDB](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=14&mode=live&start=9.47058823529412) [complete before you start your recovery](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=14&mode=live&start=11.94117647058824) [process because it's the only thing that's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=14&mode=live&start=13.833333333333336) [going to tell you what corruptions you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=14&mode=live&start=15.777777777777786) [have. Have a quick look at the output from](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=14&mode=live&start=17.722222222222236) [CHECKDB because there could be some very](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=14&mode=live&start=20) [simple pointers in there that are going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=14&mode=live&start=21.75) [help you determine what you should do in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=14&mode=live&start=23.75) [terms of restore versus repair versus](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=14&mode=live&start=25.75) [exporting out to a new database. Now the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=14&mode=live&start=27.25) [more that you expose yourself to corrupt](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=14&mode=live&start=29.944444444444446) [databases and corruptions, the more](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=14&mode=live&start=32.666666666666664) [comfortable you're going to get in looking](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=14&mode=live&start=34.61111111111109) [at the output of CHECKDB and figuring out](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=14&mode=live&start=36.41176470588235) [what to do. So take these demos and play](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=14&mode=live&start=38.29411764705881) [around with them, try some different](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=14&mode=live&start=40.14285714285714) [corruptions, have a look in some of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=14&mode=live&start=41.28571428571428) [different corruption forums and see what](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=14&mode=live&start=42.809523809523796) [people are reporting and what the outcome](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=14&mode=live&start=44.764705882352935) [of recovering from those corruptions is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=14&mode=live&start=47.235294117647044) [and what advice people are offering. In](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=14&mode=live&start=49.26315789473684) [the next module, we're going to talk about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=14&mode=live&start=51.10526315789474) [some simple techniques you can use to recover from corruptions using restores.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m6-interpreting&clip=14&mode=live&start=53.21052631578948)

[Simple Restore Techniques](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=0&mode=live)

[Introduction](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=0&mode=live)

[Hi, this is Paul Randal and I'm recording](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=0&mode=live&start=0) [this course for Pluralsight. This is the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=0&mode=live&start=3) [SQL Server: Detecting and Correcting](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=0&mode=live&start=5.625) [Database Corruption course, and you're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=0&mode=live&start=7.5) [watching module 7, Simple Restore](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=0&mode=live&start=9.375) [Techniques. Introduction. It's very true](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=0&mode=live&start=12.5) [that when you're recovering from a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=0&mode=live&start=14.75) [disaster, restoring from backups is the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=0&mode=live&start=16.625) [absolute best way to avoid data loss, but](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=0&mode=live&start=18.5) [only as long as you've got the correct](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=0&mode=live&start=20.900000000000006) [backups, the ability to restore right up](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=0&mode=live&start=23.30000000000001) [to the point that the disaster occurred.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=0&mode=live&start=25.289473684210527) [Now when you are recovering from a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=0&mode=live&start=27.131578947368425) [diaster, it's really important that you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=0&mode=live&start=28.973684210526322) [minimize the time that your system is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=0&mode=live&start=30.5) [down, so you need to know what the various](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=0&mode=live&start=32.25) [restore options are and how to use them.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=0&mode=live&start=34.5) [With that end in mind, in this module,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=0&mode=live&start=36.68181818181819) [we're going to cover some of the various](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=0&mode=live&start=38.863636363636374) [restore options that you can use,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=0&mode=live&start=41.35714285714286) [point-in-time restores, tail-of-the-log](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=0&mode=live&start=43.928571428571445) [backups, why they're important and how you can use them, and then restore sequences.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=0&mode=live&start=45.21428571428574)

[Recovering Using Backups](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=1&mode=live)

[Recovering using backups. Now as I've](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=1&mode=live&start=2) [said, recovering using backups is the best](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=1&mode=live&start=3.8947368421052637) [way to avoid data loss, but it's not](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=1&mode=live&start=6.105263157894738) [necessarily the best way to avoid](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=1&mode=live&start=8.5) [downtime, it really depends on what kind](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=1&mode=live&start=10) [of backups you've got and when the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=1&mode=live&start=11.75) [corruption or disaster occurs. For](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=1&mode=live&start=13.666666666666668) [example, if you have a backup strategy](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=1&mode=live&start=15.333333333333337) [where every Sunday you're doing a full](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=1&mode=live&start=17.666666666666664) [backup and every half an hour during the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=1&mode=live&start=19.75) [week you're doing transaction log backups,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=1&mode=live&start=21.75) [if you have to recover towards the end of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=1&mode=live&start=23.25) [the week just before the next Sunday full](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=1&mode=live&start=25.428571428571423) [backup, that's an awful lot of log backups](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=1&mode=live&start=27.33333333333332) [that need to be restored, and that's going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=1&mode=live&start=29.235294117647058) [to take quite a long time to do. In that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=1&mode=live&start=31.117647058823522) [scenario, it'd be better to have daily](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=1&mode=live&start=33.5) [full backups or daily differential backups](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=1&mode=live&start=35.25) [to allow you to do a faster restore, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=1&mode=live&start=36.75) [we're going to talk about the different](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=1&mode=live&start=39.47368421052633) [kinds of backups over the next few slides.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=1&mode=live&start=42.052631578947405) [But remember, you have to have backups for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=1&mode=live&start=45) [them to be useful, and they have to also](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=1&mode=live&start=47.086956521739125) [be valid to avoid data loss. How often are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=1&mode=live&start=49.43478260869564) [you validating your backups? Ideally you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=1&mode=live&start=51.94736842105264) [want to perform a full test restore on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=1&mode=live&start=53.84210526315791) [another server at least once a week, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=1&mode=live&start=56.36842105263161) [later on in this module I'll show you a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=1&mode=live&start=58.36363636363636) [survey showing what other people out there](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=1&mode=live&start=60.4090909090909) [in the industry are doing in terms of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=1&mode=live&start=62) [validating their backups, and it's not pretty.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=1&mode=live&start=70)

[Backup Types (1)](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live)

[Backup types, part 1. Now I don't want to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=2) [spend a huge amount of time in this course](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=4.045454545454544) [talking about backup types and recovery](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=6.090909090909092) [models and so on. You do need to know what](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=7.333333333333334) [these are and I'm just going to touch on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=8.999999999999998) [some of the different backups types, but](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=10.499999999999993) [that bit. ly link there, I've got a long](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=12.200000000000003)[blog post that talks all about different](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=14.90000000000001) [backup types and recovery models and I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=17) [recommend that you go and read that. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=18.999999999999993) [the first type of backup I want to mention](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=21.2) [is a full database backup. And any restore](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=22.999999999999993) [sequence that you're going to use has to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=25.105263157894736) [start with the most recent full database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=28.052631578947366)[backup. Now a full database backup,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=30.631578947368418) [commonly just called a full backup,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=32.31578947368421) [provides one single point of time that you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=33.89473684210527) [can restore to, and that is the time at](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=36) [which the backup completed. You can also](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=39.46153846153848) [use this as the basis for further restore](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=41.60000000000001) [operations, and we're going to talk about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=43.20000000000003) [the different restore options and how you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=44.60000000000005) [would do that later on in this module. The](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=46.923076923076934) [next most common type of backup is called](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=50.25) [a transaction log backup, and that's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=52.25) [commonly known just as a log backup. And](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=53.75) [what a log backup does is it backs up all](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=55.857142857142854) [the transaction log records that have been](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=58.7142857142857) [generated since the last log backup](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=60.714285714285694) [completed, as long as you're in the full](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=63.058823529411775) [or bulk\_logged recovery models. A](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=66.35294117647058) [transaction log backup is not possible if](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=68.16666666666667) [you're using the simple recovery model,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=69.33333333333337) [which limits the points in time to which](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=70.3333333333334) [you can recover that database. If you want](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=72.33333333333331) [to roll forward a database to a particular](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=74.99999999999994) [point in time, then you must have transaction log backups.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=2&mode=live&start=77.66666666666657)

[Backup Types (2)](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live)

[Backup types, part 2. The other kind of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=2) [backup I wanted to mention is a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=4.666666666666667) [differential database backup. And this you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=6.999999999999998) [can think of as the set of all data file](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=8.782608695652172) [pages that have changed since the most](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=11.391304347826079) [recent full backup preceding this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=13.217391304347814) [differential backup. What this means is if](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=14.7) [that if you take a full backup, say on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=17.150000000000002) [Sunday, and you've got changes happening](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=20.300000000000015) [in your database all the time, if you take](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=21.84210526315789) [a differential backup on Monday and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=23.736842105263143) [another one on Tuesday and another one on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=25) [Wednesday, as you move from Monday to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=27.10526315789474) [Tuesday to Wednesday, the differential](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=28.947368421052637) [backups will get larger because more](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=30.27777777777778) [things have changed since that full backup](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=31.94444444444445) [that you did on Sunday. You can think of a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=33.8888888888889) [differential backup as the net effect of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=37.210526315789494) [all the transaction log backups between](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=39.78947368421057) [the most recent full backup and that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=42) [particular differential backup. What this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=44.79999999999999) [means is that you can use a differential](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=46.57142857142857) [backup to skip having to restore a whole](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=48.85714285714285) [bunch of transaction log backups when](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=51.142857142857125) [you're restoring your database to recover](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=53.24999999999999) [from a disaster. Where possible then, your](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=55.74999999999998) [restore sequence is going to be starting](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=57.599999999999994) [with a full backup and then your most](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=58.649999999999984) [recent differential backup after that, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=59.84999999999997) [then any log backups necessary to bring](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=61.66666666666668) [the database to the desired point in time.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=64.00000000000003) [And by using differential backups, you're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=66.70588235294119) [making the restore sequence shorter and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=68.82352941176475) [much, much faster than having to restore a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=70.94117647058832) [whole bunch of transaction log backups.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=73.8181818181818) [Now there are also full file backups, full](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=76) [filegroup backups, differential file, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=79.20000000000005) [differential filegroup backups as well,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=81.20000000000007) [but their use is more advanced and not so](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=82.71428571428572) [common, and we're not going to consider](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=84.85714285714289) [them here. But saying that, if you have](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=86.52380952380958) [those in your environment, it's really,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=88.41176470588235) [really important that you practice restore](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=89.8235294117647)[sequences using them because they can](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=92) [complicate how you put together your restore sequence.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=3&mode=live&start=98)

[Backup Validation Survey](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=4&mode=live)

[Backup validation survey. If you follow my](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=4&mode=live&start=2) [blog, you'll know that I do surveys every](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=4&mode=live&start=3.333333333333335) [so often and I did one a while back on how](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=4&mode=live&start=4.85714285714286) [often people validate their backups, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=4&mode=live&start=8.000000000000002) [here are the results. So, it's quite](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=4&mode=live&start=10.400000000000004) [interesting to see. If you look here,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=4&mode=live&start=12.85714285714286) [there's the answer never. So 23% of people](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=4&mode=live&start=14.857142857142865)[responding answered never. Really the only](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=4&mode=live&start=17.77777777777777) [correct answer is regularly, full, diff,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=4&mode=live&start=20.44444444444443) [and log backups, so testing your full](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=4&mode=live&start=23.111111111111086) [restore sequence to make sure that they](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=4&mode=live&start=25.923076923076916) [work. Now this one's not quite as good,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=4&mode=live&start=28.6153846153846) [but at least it's testing all the backups.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=4&mode=live&start=30.86666666666666) [But if you're running a restore sequence](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=4&mode=live&start=33) [test and you're just using the full](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=4&mode=live&start=34.8421052631579) [backups like these people are answering,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=4&mode=live&start=36.684210526315795) [that's not good enough. You need to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=4&mode=live&start=38.23529411764706) [restore your entire restore sequence to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=4&mode=live&start=39.882352941176464) [test that your differential and your log backups are working as well.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=4&mode=live&start=41.29411764705881)

[How to Restore?](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live)

[How to restore. Any time you have any kind](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=2) [of disaster or emergency, you always want](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=4.142857142857143) [to go to your operations guide or your](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=5.80952380952381) [disaster recovery handbook or your run](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=7.857142857142857) [book, whatever you call it. Do you have](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=9.571428571428575) [one of those? If you don't have one of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=11.714285714285712) [those, you absolutely should do, because](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=13.857142857142847)[what your operations guide or your run](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=15.28571428571427) [books is going to define is where your](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=16.909090909090907) [backups are, how you're going to put](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=18.72727272727272) [together a restore sequence depending on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=20.318181818181806) [what is damaged, what commands or scripts](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=21.882352941176467) [to use, because hopefully you've got](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=23.941176470588225) [scripts and so on worked out in advance,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=25.70588235294116) [and the amount of time that's expected for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=27.999999999999993) [each step during the restore process, so](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=30.28571428571427) [if something's taking longer than usual,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=32.2) [you know that you have to go and ask](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=33.40000000000002) [somebody with maybe more experience to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=35.200000000000045) [help you out. Now a good operations guide](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=36.54545454545455) [is going to have a huge amount more than](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=38.727272727272734) [just how to restore from backups, but](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=41.181818181818194) [these are the things pertinent to this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=43.33333333333334) [module. It could be that you've got some](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=45.66666666666669) [kind of third party backup and restore](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=47.27272727272726) [tool as well that you're going to have to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=48.54545454545452) [use, so you need to make sure that you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=50.19047619047619) [know how that works and your operations](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=51.9047619047619) [guide should have instructions for that as](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=53.23809523809523) [well. Now in this module though, we're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=55.05882352941176) [just talking about SQL Server native](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=57.52941176470587) [backups. When you are doing your restores,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=59.64705882352939) [you need to make sure you're using the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=61.05882352941178) [correct restore options. There's a bunch](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=62.47058823529416) [of different restore options and we're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=63.449999999999996) [going to talk about a few of these, the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=64.35000000000001) [most important ones for you, later on in this module.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=5&mode=live&start=65.70000000000006)

[Continuity of The Log Backup Chain](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live)

[Continuity of the log backup chain. The](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=1) [log backup chain is an unbroken sequence](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=3.5789473684210518) [of log backups covering the time between](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=6.1578947368421035) [the most recent full backup and the time](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=8.5) [that you want to restore to. If you don't](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=10.5) [have a complete log backup chain covering](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=12.714285714285712) [that time, for instance if maybe one of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=14.380952380952372)[the log backups is damaged or missing,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=16.28571428571427) [then you're not going to be able to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=17.695652173913047) [recover to the point in time that you want](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=19.08695652173914) [to recover to unless the gap, the missing](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=20.652173913043494) [portion of the log chain can be bridged](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=23.333333333333336) [with a differential backup. It's extremely](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=26.44444444444445) [important that you're able to restore from](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=28.631578947368418) [your most recent full backup up to the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=30.84210526315788) [most recent point in time, or the point in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=33.36842105263157) [time you want to restore to using log](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=36.625) [backups. Because of this, it's incredibly](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=39.625)[important that you create copies of your](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=41.25) [backups, probably including some that are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=43) [stored off site. So if you have some kind](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=44.66666666666667) [of site disaster, you're still able to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=47.66666666666669) [restore your backups. There are some](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=50.00000000000004) [operations that will actually break the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=51.60000000000001) [log chain, in other words your ability to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=52.800000000000026) [take a log backup and you'll have to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=54.40000000000005) [restart the log chain using a full or](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=56.84210526315791) [differential backup before you can](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=59.78947368421057) [continue taking log backups. So what](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=61.63157894736848) [breaks the log chain? If you clear the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=63.57894736842106) [transaction log manually using the backup](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=66.10526315789471) [log with TRUNCATEONLY or backup log with](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=68) [NOLOG commands that existed in SQL Server](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=71.1111111111111) [2005 and earlier versions, if you change](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=74.2222222222222) [from the full or bulk log recovery models](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=76.83333333333331) [into the simple recovery model, that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=79.05555555555549) [immediately breaks your log chain, and if](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=80.72222222222211) [you use a database snapshot and you revert](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=82.57894736842101) [from that database snapshot, that breaks](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=84.6842105263157) [your log chain, or if you rebuild the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=86.27777777777777) [transaction log using something like](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=88.49999999999994) [emergency mode repair or some of the other](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=89.8888888888888) [log corruption recovery options that we're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=92.26315789473682) [going to talk about in the advanced](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=94.15789473684205) [course, you really don't want to break](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=96.36842105263149) [your log chain or your log backup chain.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=98.15384615384613) [You need to have that full set of log](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=100) [backups to allow you to recover right up to the correct point in time.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=6&mode=live&start=109)

[Restore Options](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live)

[Restore options. Now there are a lot of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=2) [different restore options, but what I'm](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=3.8947368421052637) [going to be talking about here is how the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=5.315789473684209) [restore completes. WITH RECOVERY is the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=8.166666666666668) [default and that doesn't allow any further](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=10.666666666666664) [restore options to take place as the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=13.583333333333327) [database has undergone full recovery. This](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=16.18181818181818) [is really frustrating because it's the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=18.235294117647058) [default and it causes people problems](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=19.647058823529406) [because they don't realize it's the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=21.058823529411754) [default. So if you restore for instance a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=22.6) [full backup and you don't say WITH](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=25.000000000000007) [NORECOVERY, then recovery runs and you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=27.100000000000012) [can't restore any further in your restore](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=29.09090909090909) [sequence. Always use WITH NORECOVERY for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=31.636363636363633) [safety. Make it the default for every](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=33.38888888888889) [single restore operation that you do in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=35.33333333333334) [your restore sequence, and that postpones](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=37.36363636363637) [fully recovering the database. Right at](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=39.54545454545457) [the end of your restore sequence you then](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=41.55555555555556) [use RESTORE DATABASE with whatever](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=43.777777777777786) [database name WITH RECOVERY to complete](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=45.16666666666668) [the restore sequence. It's really](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=47.05882352941176) [important that you use WITH NORECOVERY all](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=48.823529411764696) [the time because if you make a mistake and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=51.294117647058805) [you don't include it and recovery runs](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=53.590909090909086) [before you want it to, then you have to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=55.18181818181817) [restart your restore sequence. There's no](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=57.3125) [way to go back if you make a mistake.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=59.1875) [There is another option called WITH](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=62) [STANDBY, and that's kind of the same as](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=63.428571428571445) [with NO RECOVERY in that it allows you to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=65.33333333333337) [carry on doing more restores afterwards,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=67.70588235294119) [but it creates a recovered read-only](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=69.82352941176475) [database that you're allowed to look](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=71.94117647058832) [inside, and it's really useful to see](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=73.83333333333331)[whether you're at a particular point or](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=75.77777777777771) [not. The way it works is it creates an](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=77.72222222222211) [undo file and that saves all the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=80) [transactional information for the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=81.75)[transactions that are recovered at the end](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=82.75) [of that restore operation. If you then go](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=84.6363636363636) [on to do another restore, it kind of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=86.81818181818173) [undoes the recovery that it did and allows](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=89) [you to carry on restoring, it's pretty](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=92) [cool. Most of the time though, you're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=94.625) [going to be using the WITH NORECOVERY](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=96.09090909090912) [option all the way to the end of your](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=97.36363636363643) [restore sequence and then do RESTORE DATABASE, database name, WITH RECOVERY.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=7&mode=live&start=99)

[Restoring an Entire Database to a Point-in-Time](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=8&mode=live)

[Restoring an entire database to a point in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=8&mode=live&start=2) [time. Sometimes you don't want to restore](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=8&mode=live&start=4) [right up to the most recent possible point](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=8&mode=live&start=5.75) [in time, but there's a specific point that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=8&mode=live&start=7.75) [you want to restore to. Some examples of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=8&mode=live&start=9.75) [this are maybe a user or an application](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=8&mode=live&start=11.900000000000002) [error occurred that deleted some data or](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=8&mode=live&start=14.300000000000008)[dropped a table and you want to restore to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=8&mode=live&start=16.400000000000013) [just before that thing happens, or maybe](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=8&mode=live&start=19.227272727272716) [you want to restore to a known point when](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=8&mode=live&start=21.454545454545432) [corruption occurred. If you're going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=8&mode=live&start=24.31578947368421) [restore to a particular point in time, you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=8&mode=live&start=26.210526315789462) [start with your most recent full backup](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=8&mode=live&start=28.736842105263133) [and you use the smallest set of backups to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=8&mode=live&start=30.833333333333336) [reach the desired point in time. Now to be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=8&mode=live&start=33.33333333333334) [able to get there to make sure that your](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=8&mode=live&start=35.71428571428572) [restoration doesn't go past that point in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=8&mode=live&start=37.85714285714289) [time, you're going to use WITH STOPAT, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=8&mode=live&start=39.523809523809575) [it's a best practice to use WITH STOPAT on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=8&mode=live&start=41.428571428571445) [all the operations in your restore](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=8&mode=live&start=43.57142857142861) [sequence. The WITH STOPAT option you're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=8&mode=live&start=45) [going to use usually with a date and time](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=8&mode=live&start=46.71428571428571) [or you might use a transaction name if](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=8&mode=live&start=49.28571428571427) [you're using marked transactions for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=8&mode=live&start=51.47619047619048) [instance. I'm going to show you a demo of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=8&mode=live&start=52.666666666666686) [using a date and time. Now note that when](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=8&mode=live&start=54.80952380952385) [you restore to a particular point in time,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=8&mode=live&start=57.19999999999999) [any work that's included in backups after](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=8&mode=live&start=59.599999999999966) [that point in time is going to be lost because it's not going to be restored.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=8&mode=live&start=61.699999999999946)

[Demo: Restore Options and Point-in-Time Restore](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live)

[In this demo, I want to show you some of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=1) [the various restore options you can use.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=3.3529411764705888) [First off, I'll get rid of any old](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=5) [database I've got lying around and then](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=7.545454545454547) [I'm going to create a Company database and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=9.772727272727275) [in that Company database I'm going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=12.2) [create a table that's going to be able to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=13.599999999999994) [store some transactions, it's a very](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=15.399999999999988) [contrived example obviously. And then I'm](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=17.263157894736846) [going to create transaction #1 and then](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=19.789473684210538) [perform a full database backup. And then I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=22.73684210526318) [do transactions 2 and 3 and a transaction](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=27.66666666666667) [log backup. Then transactions 4 and 5, but](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=33.533333333333346) [I want to save the time in between](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=37.85714285714285) [transaction 5 and transaction 6 because](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=41.66666666666664) [I'm going to use that time to be able to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=44.52380952380949) [do a point-in-time restore. Now, usually](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=47.76923076923076) [when you're recovering from some kind of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=49.55555555555556)[disaster you don't have the luxury of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=51.50000000000001) [knowing the exact time and date that it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=53.44444444444446) [happened at, so again, this is a contrived](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=56.39999999999999) [example. So now let's do transaction 6 and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=59.59999999999998) [7 and another transaction log backup, like](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=63.73333333333332) [so. So we go back over here, we're going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=67.46666666666664) [to simulate a disaster, our database is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=70.35294117647061)[completely destroyed. So we've got our](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=72.41176470588239) [three backups. Let's go ahead and restore](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=74.71428571428572) [the first one, which is our full backup,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=77.71428571428574) [and then restore our two log backups. And](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=81.14285714285718) [of course it fails. And the message is the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=84.40000000000003) [log or differential backup cannot be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=88.00000000000009) [restored because no files are ready to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=90.41176470588235) [rollforward. We forgot that WITH RECOVERY](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=93.29411764705878) [is the default. So we have to go back and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=95.76470588235287) [start our restore sequence all over again.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=99.00000000000004) [This time we'll use WITH NORECOVERY, we'll](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=101) [restore our full backup and then our two](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=104.8888888888889) [transaction log backups. Now we've](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=109.33333333333336) [finished our restore sequence, but our](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=111.66666666666666) [database is still restoring. We finalized](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=113.66666666666663) [recovery by using RESTORE DATABASE,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=115.625) [database name, WITH RECOVERY and once](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=117.1875) [we've done that, we should be able to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=119.0625) [select everything out. And there's all our](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=122.5) [seven transactions. So now let's say that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=126) [we want to examine things between](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=128.1764705882353) [restores, we can use WITH STANDBY. And if](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=129.58823529411774) [you remember from the slides, WITH STANDBY](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=131.45454545454544) [is kind of like WITH RECOVERY, but it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=133.04545454545448) [allows you to get a read-only view of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=134.86363636363623) [database so you can see what's going on.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=137.81818181818187) [So we'll go ahead and do WITH STANDBY and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=141.4545454545456) [that allows us to look and see what's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=145.54545454545482) [going on in the database during our](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=149.1111111111112) [restore sequence, like so. Now, can we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=152.2222222222224) [update anything? No, because it's a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=155.3636363636364) [read-only database. But what we can carry](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=158.0909090909092) [on doing is restoring our next log file.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=161.04545454545453) [So we'll restore our next log file WITH](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=164.31818181818178) [STANDBY. So we've moved on a bit further](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=167.59090909090904) [in our restore sequence and we can have a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=170.4347826086957) [look and see what's there, like so. And](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=173.5652173913045) [then we can just say restore everything](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=176.27777777777777) [else, bring the database online using our](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=178.22222222222217) [RESTORE DATABASE WITH RECOVERY, and then](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=180.16666666666657) [select and see what's there, and no matter](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=181.75) [how many times we stop doing our restore](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=183.75) [sequence, the restore sequence works](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=185.75) [perfectly. Now let's say for instance that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=187.26315789473688) [we didn't like transaction 6 and 7, we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=189.47368421052641) [want to stop in between transactions 5 and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=192)[6. Now we happen to know what the time is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=194.28571428571422) [between transactions 5 and 6, so what we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=197.142857142857) [can do is do RESTORE DATABASE and WITH](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=200.04545454545453)[NORECOVERY on our full backup and say WITH](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=203.31818181818178) [STOPAT. Now, with STOPAT, if I paste our](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=206.59090909090904) [time in there, it doesn't do anything](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=208.99999999999994) [because you can't stop in the middle of a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=210.9999999999999) [full backup, it's a syntactical nicety](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=213.63636363636363) [that it allows you to use WITH STOPAT on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=215.5454545454545) [all of your restore statements, even when](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=218.40909090909082)[WITH STOPAT doesn't make any sense. So we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=220.66666666666669) [go ahead and do it for our full backup,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=223.33333333333343) [like so. And then we can do it on our log](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=226.3333333333335) [backups, or our first log backup. We'll](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=229.40000000000012) [use our STOPAT and we're using WITH](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=231.30434782608697) [STANDBY so we can have a look and see if](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=233.43478260869574) [we're at the right time. So we'll restore](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=236.47826086956542) [that log backup, and SQL Server even tells](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=238.78947368421055) [us look, this backup set contains records](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=240.89473684210535) [that were logged before the designated](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=242.7368421052633) [point in time, the database is being left](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=244.50000000000006) [in the restoring state so that more roll](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=246.90000000000015) [forward can be performed. In other words,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=249.2) [it's smart enough to know hey, you didn't](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=250.5999999999999) [really need to use WITH STOPAT there, but](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=252.19999999999982) [it doesn't stop us doing it. And let's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=254.39999999999998) [just check that SQL Server got it right.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=257.20000000000005) [Yes, of course it did. So now let's use](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=260)[our second log backup and do another WITH](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=264.71428571428567) [STANDBY restore and WITH STOPAT, like so.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=268.9047619047618) [So there the time that we wanted was](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=272.1428571428572) [included in that log backup because we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=275.1904761904765) [didn't get that informational message](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=277.85714285714334) [saying hey, you didn't need to do that. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=279.4761904761905) [let's have a look and see if we're at the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=281.61904761904765)[right point. Yes we are. Okay, so now what](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=284) [we can do, even though we're midway](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=287.1500000000002) [through that transaction log backup, we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=289.60000000000036) [can say that's enough, we're done, and we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=291.7058823529412) [finalize our restore sequence using](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=294.5294117647061) [RESTORE DATABASE WITH RECOVERY. We](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=296.2941176470591) [finalized and then we just checked that we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=297.99999999999994)[were at the right point, yes we are, very](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=300.66666666666646) [cool. Now, anytime that you're going to do](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=303.6666666666663) [a point-in-time restore, you want to also](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=306.5789473684209) [take a full database backup after the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=309.15789473684185) [point-in-time restore sequence is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=311.7058823529412) [finished. And this is so that if another](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=313.11764705882365) [disaster occurs and you have to recover](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=315.9411764705885) [again, you don't want to have to go](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=318) [through a long drawn out point-in-time](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=320) [restore sequence just to get back to this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=321.5) [point in time, and then we carry on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=323.80000000000007) [rolling forward more transaction log](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=326.20000000000016) [backups. So best practice after a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=327.7000000000002) [point-in-time restore, always go take a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=329.4285714285714) [full database backup. So that's just a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=331.14285714285705) [view of using WITH NORECOVERY, using WITH](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=333.33333333333326) [STANDBY, and using WITH STOPAT, very](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=335.66666666666646) [simple contrived example, but you're going to have to use these potentially for real.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=9&mode=live&start=337.66666666666634)

[Tail-of-the-Log Backups](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live)

[Tail-of-the-log backups. Now when a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=1.5) [disaster occurs and you're going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=2.9705882352941173) [restore from your backups, you must make](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=4.735294117647058) [sure that you pick up the final portion of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=6.785714285714286) [the transaction log that hasn't yet been](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=9.35714285714286) [back up, and that allows you to restore](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=11.357142857142865) [right up to the point in time that the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=13.452380952380949) [crash or disaster occurred with zero data](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=15.595238095238084) [loss. Now this special backup is called a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=17.261904761904745) [tail-of-the-log backup, sometimes it's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=19.833333333333325) [called a tail-log backup. Anytime you're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=21.166666666666654)[going to do a tail-of-the-log backup, I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=22.970588235294116) [recommend doing it manually rather than](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=24.617647058823522) [using Management Studio because Management](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=26.02941176470587) [Studio will put your database into the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=27.499999999999996) [restoring state and you can only get it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=29.83333333333332) [out of the restoring state by restoring](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=32.5) [your backups, and you may not be ready to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=34.71052631578949)[start restoring yet. Now if you go to do a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=37.5526315789474) [tail-of-the-log backup and it says that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=39.83333333333333) [you can't because there's data files that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=40.97619047619047) [are inaccessible or damaged, you can force](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=42.309523809523796) [the tail-of-the-log backup to work using](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=45.125) [the WITH NO\_TRUNCATE option. Some things](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=47.75) [to be aware about, if you have a minimally](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=49.921052631578945) [logged operation in the transaction log](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=51.8157894736842) [since your last log backup and the data](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=53.078947368421034) [files are inaccessible, then your](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=56.676470588235304) [tail-of-the-log backup should not work](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=59.323529411764724) [because if there's been a minimally logged](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=61.970588235294144) [operation, a log backup needs to also](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=64.07894736842105) [access and backup data extents that have](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=65.9210526315789)[changed. So if your data files are damaged](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=67.72222222222223) [or inaccessible, your tail-of-the-log](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=69.50000000000006) [backup is not going to be valid. Now until](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=70.38888888888897) [SQL Server 2008 R2, in this situation it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=73.05555555555554) [will fail the tail-of-the-log backup,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=76.16666666666663) [which is great, but from SQL Server 2008](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=78.11111111111106) [R2 onwards, it will actually allow the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=81.2222222222222) [tail-of-the-log backup to succeed even](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=83.9444444444444) [though it's going to create a backup that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=86) [contains essentially corruption. When you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=90) [try to restore that log backup, it will](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=92.08823529411765)[succeed, but it will corrupt your](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=94.44117647058826) [database. This is because the log backup](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=96.20588235294122) [contains the minimally-logged operation](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=98.21428571428575) [saying allocate pages, allocate pages,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=99.35714285714292) [allocate pages, but not the actual data](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=100.83333333333333) [extents that were changed containing those](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=103.16666666666663) [pages as a result of that minimally logged](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=105.1666666666666) [operation. So be careful if you're using](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=108) [tail-of-the-log backups and you've got](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=110.625) [minimally logged operations in there as](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=112.5) [well. But generally, you're going to want](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=113.73529411764704) [to take a tail-of-the-log backup anytime](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=115.17647058823526) [you're restoring after a disaster has](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=116.55000000000001) [occurred to make sure you can get right up to the point of the disaster.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=10&mode=live&start=118.20000000000005)

[Demo: Tail-of-the-Log Backups](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live)

[In this demo, I want to show you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=1.5) [tail-of-the-log backups. So first thing](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=3.6818181818181808) [I'm going to do is get rid of any old](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=5.045454545454543) [database that I had lying around and then](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=7.9) [create my Company database again, and then](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=11.100000000000003) [I'm going to create a table to store](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=13.900000000000006) [transactional information, again a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=18.299999999999997) [contrived example. Create a full database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=21.099999999999994) [backup, create a couple of extra](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=25.16666666666667) [transactions and a transaction log backup,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=29.16666666666668) [and then a couple of extra transactions,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=33.16666666666668) [and then I'm going to simulate a disaster.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=36.423076923076934) [We're going to take our database offline,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=39.5) [like so, we're going to go into Windows](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=42.29999999999999) [Explorer over to the Data directory and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=45.49999999999998) [I'm going to delete my MDF, like so. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=48.59090909090909) [back over in SQL Server, we try to bring](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=53.500000000000014) [the database online, and it's going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=58.409090909090935) [fail, and depending on which version you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=61.07894736842106) [are running when you're playing with these](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=63.28947368421055) [demos yourself, you might see different](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=65.5) [error messages, different error numbers.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=68.77272727272728) [So now we've got damage, let's have a look](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=71.5) [at what backups we have. So we're going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=74.07142857142863) [restore the backup we took of Company and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=76.45238095238096) [we're going to restore it to a different](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=78.35714285714289) [database name, Company\_Copy, and we're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=80.26190476190482) [going to move the files somewhere else. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=81.95454545454544) [we're not overwriting our Company](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=84.75) [database, or what's left of it. So we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=86) [restore our full database backup WITH](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=88.34210526315789) [NORECOVERY, and then we restore that log](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=90.86842105263156)[backup that we took WITH NORECOVERY and we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=93.81578947368418) [finish our restore sequence and we see](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=97.5) [what's in there, and we've lost](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=101) [transactions 4 and 5 because they're in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=104) [the tail-of-the-log that hasn't yet been](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=106.16666666666663) [backed up from the Company database. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=107.83333333333326) [let's go and backup the tail-of-the-log.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=109.83333333333333) [So we try just doing a log back of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=111.8333333333333) [Company database, and it fails because](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=115.16666666666659) [there's inaccessible data files. So now we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=117.38888888888889) [can use the NO\_TRUNCATE option, which says](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=120.49999999999999) [we don't care if there's data file damage,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=123.61111111111109) [do the tail-of-the-log backup please, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=127.07142857142858) [that succeeds. So now let's try our](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=129.6428571428571) [restore sequence again. So we restore our](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=132.74999999999994) [full backup with REPLACE this time, we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=135.89999999999986) [restore the initial log backup that we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=139.04999999999978) [took and then the tail-of-the-log backup](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=142.83333333333326) [that we just did, like so. And then we can](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=146.16666666666652) [finish the recovery and check and see if](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=151.18421052631584) [we've got everything, and yes we did. We](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=154.5526315789475) [got transactions 4 and 5. They were not](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=157.72727272727272) [backed up before the disaster occurred,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=159.54545454545448) [but we were able to do a tail-of-the-log](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=160.9090909090908) [backup and add that to the end of our](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=162.75) [restore sequence and recover right up to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=165) [the point of the disaster with zero data](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=166.75) [loss. Anytime you're going to do any kind](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=169.1666666666667) [of disaster recovery involving restoring](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=171.83333333333346) [from backups, make sure that you check](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=173.5) [whether you have to do a tail-of-the-log](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=175.25) [backup first. As soon as you start to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=177)[restore into the database that has the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=179.13636363636368) [damage, you lose the ability forever to do](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=181.04545454545465) [a tail-of-the-log backup, very important thing.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=11&mode=live&start=183.2272727272729)

[Recovering With Full, Differential, and Log Backups](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=12&mode=live)

[Recovery with full, differential, and log](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=12&mode=live&start=1) [backups. Here's a very simple example of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=12&mode=live&start=3) [some backups in a backup strategy and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=12&mode=live&start=5.333333333333332) [backup 1 is a full backup, backup 2 on the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=12&mode=live&start=7.699999999999999) [timeline there, and backup 3 are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=12&mode=live&start=11.199999999999996) [differential backups. We've got](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=12&mode=live&start=13.299999999999994) [transaction log backups in between them.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=12&mode=live&start=14.625) [This is obviously a very simple, contrived](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=12&mode=live&start=16.5) [example. Now imagine that we have a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=12&mode=live&start=18.6875) [failure at time x. The first thing we're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=12&mode=live&start=20.565217391304344) [going to want to do is take a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=12&mode=live&start=22.65217391304347) [tail-of-the-log backup like we just talked](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=12&mode=live&start=24.739130434782595) [about, and that includes all of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=12&mode=live&start=26.428571428571423) [transaction log from time t7 up to the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=12&mode=live&start=28.428571428571416) [current point in time after we noticed the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=12&mode=live&start=30.714285714285694) [disaster. Our restore sequence then is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=12&mode=live&start=33.45000000000001) [going to be the full backup first of all,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=12&mode=live&start=35.55000000000002) [and then the most recent differential](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=12&mode=live&start=38.66666666666667) [backup, which is #3 on the timeline, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=12&mode=live&start=40.666666666666686) [then all the log backups up to the point](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=12&mode=live&start=43.33333333333337) [of the failure. So we need to go from](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=12&mode=live&start=46.16666666666666) [point 3 on the timeline to point t7, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=12&mode=live&start=48.791666666666636) [that's going to involve the t7 log backup,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=12&mode=live&start=51.416666666666615) [and then the tail-of-the-log backup we did](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=12&mode=live&start=54.39999999999999) [at t8 we restore, and we've restored past](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=12&mode=live&start=57.19999999999998) [our disaster. Very simple example of a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=12&mode=live&start=61) [restore sequence based on what backups we have.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=12&mode=live&start=68)

[Falling Back on Log Backups](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live)

[Falling back on log backups. Now using the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=1.5) [restore sequence example from the previous](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=4.611111111111112) [slide, what happens if differential backup](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=6.944444444444447) [#3 turns out to be bad and we can't use](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=8.96153846153846) [it. Well, we're going to have to fall back](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=11.26923076923076) [and use differential backup #2, but that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=13.5) [also means we're going to need to use all](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=15.25)[those extra transaction log backups](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=17.611111111111114) [between point 2 and point 3 on our](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=19.000000000000007) [timeline. So we restore our full backup,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=21.222222222222236) [we restore the next most recent](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=23.833333333333336)[differential backup that's working, point](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=26.16666666666667) [2, and then we have to restore all of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=28.111111111111118) [log backups in between point 2 and point](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=32.62499999999999) [3, taking us past point 3 to t7 and then](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=36.29166666666668) [our tail-of-the-log backup that restores](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=40.699999999999996) [us past the point of our disaster. That](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=42.69999999999999) [means you have to have those transaction](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=45.73529411764706) [log backups laying around, you can't just](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=47.382352941176464) [delete transaction log backups because](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=49.02941176470587) [you've already taken a few more](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=50.50000000000001) [transaction log backups. You don't delete](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=52.50000000000002) [differential backup #2 because you've just](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=54.65384615384616) [taken differential backup #3. You have to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=56.96153846153848) [have some amount of full backups,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=59.44736842105264) [differential backups, and log backups](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=61.34210526315791) [around to allow you to recover and restore](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=62.92105263157897) [if differential backups or full backups](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=66.24999999999999) [suddenly become bad. If possible, I like](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=69.74999999999996) [to recommend having 2 or 3 months' worth](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=72.40909090909093) [of backups on hand and maybe stored off](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=74.2272727272728) [site as well, just in case multiple things](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=76.04545454545467) [go wrong and multiple corruptions affect](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=78.49999999999997) [not just your database, but also your backups.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=13&mode=live&start=80.49999999999994)

[Determining The Restore Sequence](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live)

[Determining the restore sequence. If you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=2) [have a complex restore sequence because](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=3.875) [you have many different kinds of backups](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=5.75) [that are being used, you might have](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=7.63157894736842) [differential and log backups that are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=9.10526315789474) [covering the same time interval. In that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=10.368421052631586) [case, you're just going to waste time if](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=12.333333333333336) [you're restoring unneeded log backups](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=15.000000000000007) [because you've already stored a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=16.66666666666667) [differential backup that covers the same](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=18) [time period. But you also need to make](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=19.5)[sure that the log backups that you are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=21.36363636363636) [going to restore cover the correct time](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=23.181818181818173) [period, and this is measured in what are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=24.77272727272726) [called log sequence numbers in the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=27.47058823529411) [transaction log, or LSNs. And this process](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=29.58823529411763) [is called finding the minimum required](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=31.75) [LSN, or min-LSN, and you can do it using a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=33.25)[variety of different methods. You can use](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=35.75) [the backup history tables that exist in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=37.578947368421055) [the msdb database, and you really want to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=39.42105263157895) [make sure that you're backing up msdb, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=41.47619047619048) [of course all the other system databases](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=43.38095238095241) [as well to make sure that you have the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=45.047619047619094) [backup history tables available to you.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=47.31578947368421) [You can look in the backups themselves](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=48.89473684210527) [using the output from RESTORE HEADERONLY.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=50.736842105263165) [If you're going to do either of these two](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=52.57894736842106) [kind of manual operations, it's really](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=55.42105263157897) [good to have scripts written and tested in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=57.25) [advance that make use of either of these](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=59.25) [two options so that you're not trying to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=61.25)[work out how to do it when a disaster has](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=63.17647058823529) [actually occurred. You can also figure out](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=65.52941176470587) [what restores you need to be able to do](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=67.1904761904762) [using the Recovery Advisor that's in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=69.33333333333337) [Management Studio. You can get more](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=70.76190476190482) [information on putting together restore](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=72.66666666666664) [sequences in Books Online at that bit. ly](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=74.33333333333329) [link there, and I'm going to show you all](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=77) [three of these different options in a demo now.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=14&mode=live&start=86)

[Demo: Determining The Restore Sequence](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live)

[In this demo, I want to show you about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=1.5) [restore sequences, and the first thing I'm](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=3.065217391304347) [going to do is I'm going to clean out my](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=4.282608695652172) [backup history. And the way that you do](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=6.499999999999999) [that is you execute this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=9.166666666666666) [sp\_delete\_backuphistory with a string that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=10.833333333333336) [says the date that you want to clear out](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=12.300000000000002) [everything up to. Now you can just use a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=14.70000000000001) [date or you can use a date or time, I'm](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=16.653846153846157) [going to use a full time and say delete](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=18.57692307692309) [everything out in backup history. Now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=20.30769230769233) [every so often you have to do this,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=21.75) [otherwise your backup history tables are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=23.75) [just going to grow and grow and grow and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=25.25) [grow. But make sure you've got backups of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=27.785714285714278) [msdb from before you delete your backup](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=30.071428571428555) [history so that if necessary you can go](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=32.026315789473685) [back and find out what the backup history](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=34.131578947368425) [was. Now I'm going to go and recreate my](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=36.236842105263165) [Company database because that's what we're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=41.676470588235304) [going to use. And I'm going to create a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=45.55882352941178) [table that's going to have a bunch of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=50.02631578947367) [information in it, nothing major. Now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=53.39473684210523) [here's our scenario. Every Sunday we do a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=55.911764705882355) [full backup. So there's our Sunday full](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=59.205882352941195) [backup. And the way that we store our](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=62.08823529411768) [backups is we have a single backup file](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=64.93478260869564) [for all of each day's log backups and all](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=67.71739130434777) [of each day's differential backups. Not a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=70.85)[fantastic thing to do because it can make](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=73.29999999999995) [it hard to specify which backup you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=76.09999999999991) [actually want to restore because you have](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=78.44736842105262) [to specify which backup within the backup](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=80.65789473684205) [file you want to restore. But that's what](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=82.86842105263149) [I'm going to do just to show you how it's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=84.55882352941174) [done. So I'm going to kick off my Monday](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=86.32352941176464) [log backups. So now we're into Monday. And](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=90.23333333333335) [here's some code and what this code is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=93.84782608695652) [going to do is it's going to insert](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=96.63043478260865) [another row into my table, take another](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=99.41304347826078) [log backup simulating the fact that a half](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=101.86363636363636) [hour has gone past, or an hour has gone](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=104.77272727272724) [past, and then if the count of the number](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=108.04545454545448) [of backups we've taken so far is divisible](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=110.36956521739133) [by 6, it's going to say okay, 6 hours have](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=111.76086956521745) [gone past, do a differential backup. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=113.5) [we're going to go ahead and do that and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=117.45652173913041) [that's going to run for 25 seconds. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=122.5434782608695) [we're going to create 24 log backups and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=126.8125) [we're going to create 4 differential](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=129.3125) [backups. So it's actually not a bad backup](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=131.1875) [strategy apart from the fact that we are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=133.60000000000008) [concatenating backups into only a few](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=136.00000000000017) [files. It's far better to have each](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=137.83333333333334) [individual backup have its own backup file](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=140.16666666666674) [with the date and time as part of the file](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=142.50000000000014) [name and to have its own description.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=147.23684210526312) [Okay, so there's our simulated Monday's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=152.02631578947359) [backups, and now let's start a log file](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=156.13157894736827) [for Tuesday's backups and simulate 3 log](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=160.9285714285715) [backups occurring, so 3:00 a. m. on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=164.9285714285716) [Tuesday. Unfortunately, we're going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=168.92857142857167) [have a disaster. So we're going to set the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=171.38235294117646) [database offline, contrived example again,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=175.6176470588235) [and I'm going to go in and delete the MDF](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=178.21428571428572) [file, like so. So back into Management](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=185.35714285714295) [Studio we try to bring the database online](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=189.36666666666667) [and it fails. Okay, so now we know there's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=193.10000000000002) [a problem. So the first thing we're going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=195.92857142857144) [to do is take a tail-of-the-log backup. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=197.83333333333337) [we go ahead and take our tail-of-the-log](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=199.7) [backup using our special syntax that I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=201.0999999999999) [showed you in the last demo, like so. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=202.49999999999983) [now we're going to have to create our](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=205.5) [restore sequence. There's a variety of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=209.5) [different ways we can do that. The first](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=211.22727272727275) [thing we're going to need is we know we're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=212.68181818181824) [going to have to have the most recent full](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=214.31818181818193) [backup, the most recent differential](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=216.0999999999999) [backup, and then all the log backups after](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=217.09999999999985) [that. We can have a look in the backup](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=218.8684210526316) [files themselves to find that out using](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=222.1842105263159) [RESTORE HEADERONLY. So I'm going to do](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=224.76315789473702) [restore header only from my full on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=227.00000000000006) [Sunday. The file that has my differential](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=229.10000000000014) [backups from Monday, the file that has my](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=231.20000000000022) [24 log backups from Monday, and the file](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=233.9347826086957) [that has my 4 log backups from Tuesday,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=236.71739130434796) [and I execute those. So I'm going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=239.5) [scroll across to the log sequence numbers,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=242.86842105263167) [because that's what's interesting there.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=245.8157894736844) [This is the full backup, we're going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=247.75) [need this one. The differential backup](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=249.75) [we're going to need this one, it's the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=252.21428571428575) [most recent one. The log backup is from](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=256.7857142857144) [Monday. Now to find the minimum LSN, which](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=259.86363636363626) [log backup we need to restore, we look at](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=262.0454545454543) [the last LSN of that differential backup](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=264.5) [we're going to restore, and we need a log](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=266.95000000000016) [backup that contains this LSN plus 1, so](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=270.10000000000036)[751451. So let's scroll down here. 75, no,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=273.97619047619037) [none of those, none of Monday's log](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=278.9285714285711) [backups have that final LSN in it, the one](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=283.26190476190425) [that we need. So let's have a look at](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=287.6818181818181) [Tuesday's log backups and Tuesday's log](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=291.772727272727) [backups, the very first one, no, this one.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=294.5) [This one has first LSN of 751451 and we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=298.5) [need that number plus 1, so it's in this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=303) [backup here. So we need the backup that's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=307.58695652173924) [at position 2, then 3, then 4 in this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=311.7608695652177) [Tuesday's log backups. Now, what about if](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=316.456521739131) [this differential backup here proved to be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=319.6875) [bad in some way? We'd have to go back and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=322.75) [full back on this differential backup. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=326.21428571428567) [now we need the log backup that contains](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=328.2142857142856) [this log sequence number plus 1, and that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=330.5) [would be this log backup here from](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=333.8684210526317) [Monday's log backup file. So we would need](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=336.8157894736844) [all of these log backups from Monday's log](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=339.6428571428571) [backup file and then all the backups from](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=341.92857142857133) [Tuesday's log backup file, plus our](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=344.21428571428555) [tail-of-the-log backup. But let's assume](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=346.4999999999999) [that this guy is good. So now we know we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=348.4999999999998) [need full, most recent differential, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=352.4999999999999) [then the three log backups here, this one,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=354.89999999999975) [this one, and this one from Tuesday's log](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=358.09999999999957) [backups plus our tail-of-the-log. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=361.0454545454546) [that's one way of finding this out. This](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=362.92105263157896) [is really tedious having to use the file](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=366.28947368421063) [headers themselves. So let's go and have a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=369.6578947368423) [look at some code. So here's a little](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=372.2500000000001) [script that you can use, and what this is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=374.5833333333336) [going to do is it's going to query the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=377.20833333333377) [backup history tables and it's going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=381.30952380952385) [give us some nice readable output, like](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=384.6428571428572) [so. So here's all backups we've taken](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=387.86842105263156) [since we cleared out our backup history](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=390.4473684210525) [for the Company database. We have our full](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=393.0263157894734) [backup and we can very easily see what the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=396.5) [most recent differential backup is, it's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=401) [position 4 in our Monday Diff's backup](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=404) [file. And then we can see here there's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=408.0454545454544) [145, so this is the last LSN, 751451. The](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=412.7727272727269) [one that we need next, the next log backup](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=417.79411764705884) [contains that plus 1, which is here. So we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=420.4411764705884) [can very easily see 2, 3, 4, and our](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=423.2692307692307) [tail-of-the-log backup. That's an awful](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=426.73076923076894) [lot simpler than having to mess around](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=428.3823529411765) [with multiple result sets from multiple](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=430.4411764705884) [RESTORE HEADERONLYs. So we could go ahead](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=432.20588235294144) [and run our restore sequence. We use](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=436.31818181818176) [master and then we go ahead and restore](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=440.6) [our full backup, our most recent](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=445.0000000000001) [differential backup, then we restore the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=448.3000000000002)[log backups from positions 2, 3, and 4 in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=451.4) [our Tuesday log backup file that contains](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=455.4499999999999) [multiple log backups, and then our](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=458.5999999999998) [tail-of-the-log backup that we took as](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=461.70000000000005) [soon as we knew there was a disaster, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=465.0000000000001) [we should be able to bring the database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=469.9500000000002) [online and see we have all of those](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=474.3888888888888) [transactions in there. Now looking down](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=478.83333333333314) [here, we already talked about what happens](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=481.1666666666667) [if one of those differential backups is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=482.7222222222223) [bad. Some things that you can do to help](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=484.2777777777779) [out. You can name your backups with a date](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=486.586956521739) [and time, you can have scripts like the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=488.9347826086954) [one I just showed you already worked out](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=491.08333333333337) [in advance and know how to use it or you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=493.41666666666686) [can use the Recovery Advisor in SQL Server](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=496.3333333333337) [2012. So let's have a look at that. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=499.6052631578948) [View, Object Explorer, Refresh my](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=504.3421052631581)[databases. If I go to Company and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=506.9736842105266) [right-click and say Tasks, Restore,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=510.80000000000007) [Database, it shows me, it actually goes](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=513.55) [and looks at all the backups as well and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=517.3999999999996) [it shows me all the backups that it's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=520.9347826086955) [going to need to restore, actually it is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=523.7173913043475) [not optimal because it says here that we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=526.5) [have to restore the first log backup from](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=529.4473684210525) [Tuesday's log backups, which we don't](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=532.394736842105) [actually have to do, you saw me not do](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=534.4545454545456) [that. Now the Recovery Advisor in 2012,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=537.3181818181824) [click here where it says Timeline and it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=539.5454545454555) [comes up with a timeline. Now, what you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=542.021739130435) [would see if you were doing this on your](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=544.456521739131) [production system is you'd see these](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=547.1956521739139) [backups all spaced out. I did them all in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=548.8043478260869) [the space of 25 seconds so we don't see](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=551.1521739130433) [that, but you'd see what full backups](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=553.5) [you've got, differential backups,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=555.6875) [transaction log backups, and a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=556.9375) [tail-of-the-log backup, and you could use](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=558.5) [that, you could actually move the sliding](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=560.166666666667) [bar around and it would figure out which](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=562.1111111111118) [backups you'd have to do. If you wanted to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=564.3181818181818) [go to a specific point in time, you could](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=566.772727272727) [specify what the point in time was and it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=569.2272727272723) [would show you here's what you're going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=571.681818181818) [have to restore, and then you would go](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=573.863636363636) [forward and click okay here and it would](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=576.1363636363637) [take you back to this screen, oops, let's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=578.6818181818187) [click OK, it would take you back to this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=581.2272727272737) [screen and tell you what backups you would](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=583.4090909090907) [have to restore, and then it would go](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=584.8636363636357)[ahead and do it for you, or you could](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=586.3181818181807) [script it out, and so on. So that's pretty](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=588.7222222222226) [cool. And there's examples of how to do](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=591.2222222222231) [that in SQL Server Books Online as well in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=592.9000000000003) [the bit. ly link that I had on the slide on restore sequences.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=15&mode=live&start=594.7000000000007)

[Restoring to Non-Enterprise Edition](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live)

[Restoring to non-enterprise edition. Now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=1.5) [you might have a disaster recovery](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=3.0625) [strategy that says if something goes wrong](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=4.9375) [with your enterprise edition production](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=7.300000000000001) [instance, you actually restore to a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=9.300000000000002) [standard edition instance because the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=11.700000000000005) [licensing for standard edition is cheaper](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=13.653846153846155) [than for enterprise edition. There could](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=15.961538461538465) [be a problem with that though. You might](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=17.9) [have a feature in our database that makes](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=19.499999999999993) [your database only restorable on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=21.099999999999987) [enterprise edition. Now in SQL Server](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=22.55882352941176) [2005, there's only one feature that makes](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=24.676470588235283) [your database enterprise-only, and that's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=27.14705882352939) [using table or index partitioning. In SQL](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=29.72222222222223) [Server 2008 and onwards, there's three](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=33.25) [more features, change data capture, data](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=35.5) [compression, and transparent data](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=37.75)[encryption. Now all of these features](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=39.32352941176471) [apart from one require sys admin](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=41.79411764705884) [permissions, but data compression only](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=44.26470588235297) [requires the ALTER TABLE permission. What](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=46.32352941176471) [this means is that somebody, a table](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=48.79411764705884) [owner, can inadvertently make the database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=51.676470588235325) [only restorable in enterprise edition](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=54) [without you, the DBA, knowing that that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=55.875) [restriction has now been placed on that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=58.5) [database. Now in a disaster recovery](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=60.3421052631579) [situation, this can be a serious problem](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=61.92105263157895) [because the restore of that now enterprise](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=63.888888888888886) [edition-only database is going to fail,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=66.61111111111109) [and it will only fail at the end of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=68.9444444444444) [restore sequence. So you'll go all the way](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=72) [through your restore sequence and then SQL](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=74) [Server will say no, I'm sorry, this is an](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=75.75) [enterprise edition-only database when you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=78)[try to restore it on standard edition. Now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=79.25) [you might think, why on earth does it not](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=81.39999999999999) [tell me before I finish my restore](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=84.09999999999997) [sequence, why doesn't it tell me as soon](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=86.19999999999995) [as possible? Well the problem is, there](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=88.16666666666669) [could be some transaction log in the very,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=89.83333333333337) [very last transaction log backup that you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=91.8) [restore that turns on one of those](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=93.89999999999998) [features, or there may be a feature in the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=95.99999999999996) [database from the get go when you restore](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=98.5) [your full backup and there's transaction](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=100.5) [log that turns off at the end of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=102) [restore sequence. Now luckily there is a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=104.50000000000004) [DMV that's been included from SQL Server](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=106.50000000000009) [2008 onwards called sys.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=108.5) [dm\_db\_persisted\_sku\_features, and you can](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=110) [use that DMV, you can run it against your](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=111.5) [databases, and it will tell you whether](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=114.71052631578948) [you have any of these features enabled in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=116.18421052631584) [your databases that make that database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=117.86842105263167) [essentially enterprise-only as far as](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=120) [restores go. You really don't want to be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=122.5) [caught out trying to restore to standard](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=124.70000000000002) [edition and finding you've got one of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=126.10000000000004) [these features only at the end of a long](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=127.5) [restore sequence, it's really going to screw up your downtime.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=16&mode=live&start=136.5)

[Summary](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=17&mode=live)

[Summary. So this module's been a kind of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=17&mode=live&start=1.5) [brief overview of how to restore backups](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=17&mode=live&start=3.899999999999999) [and some of the restore options, and it's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=17&mode=live&start=5.999999999999998) [enough though to get you going in probably](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=17&mode=live&start=8.382352941176471) [the majority of corruption recovery](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=17&mode=live&start=10.735294117647065) [scenarios that you're going to face when](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=17&mode=live&start=12.205882352941186) [you don't have to use repair. A few](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=17&mode=live&start=14.214285714285719)[takeaways that we need to remember though,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=17&mode=live&start=16.500000000000007) [always try to restore as few backups as](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=17&mode=live&start=18.5) [possible, you want to reduce your downtime](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=17&mode=live&start=20.099999999999994) [as much as possible, which means putting](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=17&mode=live&start=21.49999999999999) [together at the optimal restore sequence.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=17&mode=live&start=23.299999999999997) [Make sure you've practiced putting](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=17&mode=live&start=25.69999999999999) [together the optimal restore sequence and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=17&mode=live&start=27.69999999999998) [running restore sequences before you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=17&mode=live&start=29.75) [actually have to do it for real. Also make](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=17&mode=live&start=31.3125) [sure you know how to fall back on earlier](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=17&mode=live&start=33.847826086956516) [backups if some of the backups that you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=17&mode=live&start=35.41304347826084) [want to use turn out to be corrupt. And](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=17&mode=live&start=36.804347826086904) [then make sure you know what the various](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=17&mode=live&start=38.92857142857142) [restore options are, how to use WITH](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=17&mode=live&start=41.2142857142857) [NORECOVERY, how to use WITH STANDBY, how](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=17&mode=live&start=43.214285714285694) [to use WITH STOPAT if you have to use](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=17&mode=live&start=45.75) [those. Now if you're not able to use a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=17&mode=live&start=49.125) [restore, you're going to be using](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=17&mode=live&start=51.02380952380952) [potentially repair, and that's what we're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=17&mode=live&start=52.16666666666666) [going to discuss in the next module, some](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=17&mode=live&start=53.309523809523796) [simple techniques to recover using the DBCC CHECKDB repair options.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m7-restore&clip=17&mode=live&start=60.5)

[Simple Repair Techniques](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=0&mode=live)

[Introduction](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=0&mode=live)

[Hi, this is Paul Randal from SQLskills.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=0&mode=live&start=0) [com, and I'm recording this course for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=0&mode=live&start=3.033333333333334) [Pluralsight. This is the SQL Server:](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=0&mode=live&start=6.066666666666669) [Detecting and Correcting Database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=0&mode=live&start=8.21875)[Corruption course, and you're watching](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=0&mode=live&start=9.59375) [Module 8: Simple Repair Techniques.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=0&mode=live&start=11.3125) [Introduction. Most of the time you're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=0&mode=live&start=15) [going to be using repair because you don't](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=0&mode=live&start=16.66666666666667) [have the backups necessary to be able to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=0&mode=live&start=18.8888888888889) [restore with no data loss. It's unlikely](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=0&mode=live&start=21.473684210526315) [unless your service level agreements say](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=0&mode=live&start=24.052631578947366) [that downtime is more important than data](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=0&mode=live&start=26.26315789473684) [loss that you're going to choose repair as](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=0&mode=live&start=28.5625) [a first choice. Now you have to be very](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=0&mode=live&start=31.0625) [careful when you're using repair or when](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=0&mode=live&start=33.20000000000002) [you're manually fixing corruptions as it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=0&mode=live&start=34.60000000000004) [may involve data loss, and you don't want](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=0&mode=live&start=35.800000000000054) [to make things worse. That means that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=0&mode=live&start=37.75) [you're going to have to practice using](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=0&mode=live&start=39.5) [repair to make sure you know what it's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=0&mode=live&start=41.26315789473684) [going to do, or definitely practice when](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=0&mode=live&start=43.36842105263158) [you're manually fixing corruptions before](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=0&mode=live&start=45.21052631578948) [doing it for real in production. In this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=0&mode=live&start=46.55555555555556) [module then, we're going to cover how](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=0&mode=live&start=48.777777777777786) [repair works and a whole bunch of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=0&mode=live&start=50.722222222222236) [different things about repair,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=0&mode=live&start=53.142857142857125) [REPAIR\_ALLOW\_DATA\_LOSS and misconceptions](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=0&mode=live&start=54.57142857142854) [around repair, the various repair options,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=0&mode=live&start=55.6428571428571) [and then how to manually fix a few different kinds of corruptions.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=0&mode=live&start=61)

[How Does Repair Work?](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live)

[How does repair work? Well first off,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=2) [what's the purpose of repair? The purpose](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=4.333333333333334) [of repair is not to try and save all your](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=6.521739130434783) [data. That doesn't mean that it goes out](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=9.130434782608695) [of its way to delete data, it just doesn't](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=11.21739130434782) [go out of its way to try and save data in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=13.428571428571423) [the face of corruptions. The purpose of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=16.047619047619033) [repair is to make the database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=17.999999999999996) [structurally consistent so that the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=19.99999999999999) [storage engine can process the database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=21.66666666666665) [without running into corruptions. It tries](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=23.631578947368418) [to do this as fast as possible, which is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=25.52631578947367) [why most of the repairs under the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=28.36842105263155) [REPAIR\_ALLOW\_DATA\_LOSS option are delete](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=30.764705882352935) [what's broken and fix up all the links.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=32.17647058823528) [How does it know what to repair? Well at](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=35) [each stage of running CHECKDB, it has a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=37.14285714285717) [list of corruptions that's just been found](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=39.047619047619094) [and it processes those corruptions. How](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=41.00000000000001) [does it process those corruptions, how](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=43.00000000000002) [does it know what it's supposed to repair](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=45.000000000000036) [first? Well it decides that based on what](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=47.25)[corruptions there are. Every corruption](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=49.25) [has a ranking for how intrusive the repair](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=50.599999999999994) [is going to be, and it processes the most](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=52.99999999999997) [intrusive repairs first because quite a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=55.699999999999946) [lot of the time processing one of those](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=57.31578947368421) [intrusive repairs means that some of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=59.42105263157895) [other more minor problems can just be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=61.36842105263158) [crossed off the list because CHECKDB knows](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=63.94736842105266) [that fixing that intrusive repair has as a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=66.52631578947368) [byproduct also fixed some of those less](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=69.84615384615387) [intrusive repairs. How can you tell if it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=73.07692307692314) [repaired everything? Well, check the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=75.5) [output. At the bottom of the output it's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=76.75) [going to say found so many errors, fixed](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=78.5555555555556) [so many errors. If the two numbers](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=80.33333333333343) [matched, then it thinks it fixed](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=82.33333333333331) [everything, but be careful because](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=84.33333333333329) [sometimes a corruption can mask other](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=85.99999999999993) [corruptions. A corruption can prevent](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=88.05882352941178) [CHECKDB from looking into a section of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=89.82352941176475) [database and fixing that corruption. The](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=92.6470588235295) [next time CHECKDB runs, it could mean that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=94.31578947368418) [it's able to look into another portion of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=96.42105263157886) [the database where it finds other](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=98.63157894736841) [corruptions that it couldn't find and fix](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=100.52631578947364) [the first time around. Why do you have to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=102.73684210526308) [put the database into single user mode,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=105.25) [why not repairs online? Well to be honest,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=107) [it's really just not possible to do them](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=108.95238095238096)[online coping with data changing at the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=110.85714285714289) [same time as trying to fix up corruptions](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=112.52380952380958) [just because of the nature of how repairs](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=114.5) [work and the physical changes that are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=116.5) [being made to the database by those repair options.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=1&mode=live&start=119)

[Running Repair](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live)

[Running repair. Now as I've mentioned](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=2) [already, repair is not always a last](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=3.666666666666666) [resort compared to restore, it depends](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=5.61111111111111) [what kind of backups you have and it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=7.222222222222222) [depends on your service level agreements](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=8.999999999999996) [about whether downtime is more important](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=10.333333333333325) [than data loss or not. No matter what kind](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=11.85714285714286) [of repair option you're going to use, they](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=14.428571428571438) [all require the single user mode. In other](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=16.714285714285726) [words, they're all offline. Your database](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=18.909090909090914) [is going to be inaccessible while you're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=20.666666666666664) [running that repair. Additionally, if you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=22.99999999999999) [specify a repair option, it makes DBCC](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=25.28571428571428) [CHECKDB run single threaded. In other](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=28.28571428571427) [words, it removes parallelism, and that's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=30.714285714285715) [also going to slow down CHECKDB. You'll](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=32.857142857142854) [also want to try to minimize the time that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=35.25) [you're running in single user mode by](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=37.5)[running the smallest possible repair. Now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=39.25) [obviously DBCC CHECKDB is the largest](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=40.88235294117648) [command that you can run, but then](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=42.647058823529434) [underneath that, CHECKTABLE is a bit](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=44.70588235294122) [smaller and CHECKALLOC is a bit smaller in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=46.764705882352935) [terms of the runtime. One thing that many](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=49.58823529411763) [people don't realize is that you can put a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=52.05263157894737) [transaction around your repair operation,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=54.42105263157895) [you can do BEGIN TRANSACTION, run CHECKDB](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=55.736842105263165) [with REPAIR\_ALLOW\_DATA\_LOSS, and if you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=58.000000000000014)[don't like what it did, you can roll it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=59.66666666666669) [back. I don't see that used very often at](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=62.66666666666667) [all, but it is possible to do. Now one](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=65.66666666666666) [thing I wanted to make note of in the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=68.54545454545453) [running repair slide was that if you see](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=70.99999999999993) [system table corruption, so corruptions in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=73.18181818181806) [object IDs less than 100, usually that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=75.10526315789473) [can't be repaired successfully, and I'll](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=77.68421052631575) [talk a lot more about that and show you a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=79.8947368421052) [lot of examples about why you shouldn't](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=82.90909090909086) [try to run repair on system tables in the advanced course.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=2&mode=live&start=84.81818181818173)

[Repair Options](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=3&mode=live)

[Repair options, so if you want to know](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=3&mode=live&start=0) [which repair option to use, you run](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=3&mode=live&start=4) [CHECKDB and it's going to tell you what](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=3&mode=live&start=7.5) [the repair option is that's necessary, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=3&mode=live&start=10.100000000000005) [here are the various repair options. First](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=3&mode=live&start=12.20000000000001) [of all, there's REPAIR\_FAST. Now this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=3&mode=live&start=14.294117647058824) [doesn't do anything at all and it's for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=3&mode=live&start=16.058823529411768) [backwards compatibility for pre-SQL Server](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=3&mode=live&start=18.411764705882348) [2005. REPAIR\_REBUILD, that will perform](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=3&mode=live&start=20.399999999999995) [repairs that don't cause any data loss.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=3&mode=live&start=22.73333333333332) [Basically it's going to be rebuilding](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=3&mode=live&start=26) [damaged non-clustered indexes. Now as I'm](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=3&mode=live&start=29.333333333333343) [going to talk about, it's usually better](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=3&mode=live&start=31.631578947368418) [to manually rebuild indexes yourself, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=3&mode=live&start=33.105263157894726) [I'll talk about that a little bit later](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=3&mode=live&start=34.36842105263156) [on. Most of the time though, you're going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=3&mode=live&start=36.66666666666668) [to have to use REPAIR\_ALLOW\_DATA\_LOSS, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=3&mode=live&start=39.333333333333364) [this is performing repairs that are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=3&mode=live&start=42) [likely, but not always, likely to cause data loss.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=3&mode=live&start=48)

[Beware of REPAIR\_ALLOW\_DATA\_LOSS](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=4&mode=live)

[Beware of REPAIR\_ALLOW\_DATA\_LOSS. This](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=4&mode=live&start=1.5) [option was very deliberately named, and it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=4&mode=live&start=3.366666666666667) [was named such because the way it usually](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=4&mode=live&start=6.633333333333335) [fixes any problems is by de-allocating](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=4&mode=live&start=9.763157894736842) [what's broken and fixing up all the links,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=4&mode=live&start=11.657894736842106) [either from the broken thing or to the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=4&mode=live&start=14.184210526315791) [broken thing. The reason it does this is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=4&mode=live&start=16.16666666666666)[because this is the fastest and most](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=4&mode=live&start=18.07142857142856) [provably correct in 100% of cases way to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=4&mode=live&start=20) [affect the repairs. Now,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=4&mode=live&start=24) [REPAIR\_ALLOW\_DATA\_LOSS does not take into](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=4&mode=live&start=25.928571428571427) [account foreign key constraints, any](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=4&mode=live&start=28.071428571428562) [inherit business logic and data](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=4&mode=live&start=30.214285714285698) [relationships you've got in your data or](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=4&mode=live&start=32.333333333333336) [transaction replication publications.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=4&mode=live&start=35.249999999999986) [Before you run repair, it's a very good](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=4&mode=live&start=36.5) [idea to protect yourself by taking a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=4&mode=live&start=38.89999999999998) [backup and quiescing any replication](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=4&mode=live&start=40.99999999999996) [topologies that are involved. After you've](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=4&mode=live&start=42.5) [run repair, make sure you check the data](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=4&mode=live&start=44.394736842105274) [to see what was lost, if anything. Run](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=4&mode=live&start=46.92105263157897) [CHECKDB again to make sure that all the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=4&mode=live&start=49.44736842105264)[corruptions were repaired, make sure if](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=4&mode=live&start=51.973684210526336) [there are any constraints involved in the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=4&mode=live&start=53.86842105263161) [tables that were repaired, you run DBCC](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=4&mode=live&start=55.67647058823529) [CHECKCONSTRAINTS to see if any constraints](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=4&mode=live&start=57.323529411764696) [are now invalid. And any time that a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=4&mode=live&start=58.9375) [replication publication table was](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=4&mode=live&start=62.4375) [repaired, you must reinitialize any of the replication topologies that are involved.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=4&mode=live&start=64.1875)

[Examples of Repairs](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live)

[Examples of repairs. What is repair going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live&start=1.5) [to do to fix the following problems? First](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live&start=4) [off, a missing non-clustered index record.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live&start=6.9375) [Well, there's special code that only](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live&start=9.5625) [CHECKDB can access, which will just allow](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live&start=12.1875) [it to insert the missing record without](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live&start=14.763157894736842) [having any changes made to the table](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live&start=16.97368421052631) [itself. What about a corrupt data record?](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live&start=19.184210526315773) [Well, it depends on how corrupt the data](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live&start=21.375) [record is. Maybe it'll just be able to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live&start=23.875) [delete that record, maybe it's going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live&start=25.928571428571423)[have to delete the entire page if](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live&start=27.595238095238084) [something inside the record has a pointer](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live&start=29.261904761904745) [that points out into the middle of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live&start=31.499999999999993) [rest of the page. And what about a data](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live&start=34.16666666666667) [extent that is allocated to two or more](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live&start=37.16666666666668) [different tables. Well there it's going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live&start=39.833333333333364) [do a little bit more deeper examination of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live&start=41.63636363636363) [the pages in the extent and try to figure](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live&start=43.454545454545446) [out if it really does belong to one or](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live&start=45.5) [other of the objects, and if it can't make](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live&start=48.07142857142856) [that determination, it'll delete the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live&start=50.642857142857125) [extent and deallocate all the pages. Now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live&start=52.205882352941174) [remember, there are some unrepairable](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live&start=54.67647058823528) [errors that we've already mentioned.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live&start=56.44117647058822) [System tables, the clustered indexes of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live&start=58.43333333333334)[those critical system tables can't be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live&start=61.23333333333335) [repaired. PFS allocation bitmaps can't be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live&start=64.03333333333336) [repaired. Data purity errors can't be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live&start=66.16666666666664) [repaired. Some metadata problems also](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live&start=68.16666666666661) [can't be repaired. So just because you get](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live&start=69.61111111111109) [a corruption doesn't mean that repair is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live&start=71.83333333333326) [able to go and fix absolutely everything, it's not completely infallible.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=5&mode=live&start=74.5)

[Misconceptions Around Repair](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live)

[Misconceptions around repair. There's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=2) [actually quite a lot of misconceptions](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=3) [around repair, so I'm going to run through](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=4.5) [a bunch of them for you. First](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=6.7368421052631575) [misconception, repair will not cause data](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=9.315789473684209) [loss: Well, it depends. As I've said, some](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=11.526315789473681) [repairs, when you run the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=14.176470588235297) [REPAIR\_ALLOW\_DATA\_LOSS, will not cause](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=15.647058823529418) [data loss, but the majority of them will.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=16.82352941176471) [Repair should be run as the default: No,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=19.42857142857143) [absolutely not. You should always run](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=22.285714285714292) [CHECKDB to figure out what the corruptions](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=24.05263157894737) [are, and then make a choice between repair](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=25.894736842105267) [or restore or extraction. You can run](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=28) [repair without running DBCC CHECKDB: No of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=30.333333333333325) [course not, because repair is part of DBCC](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=32.66666666666666) [CHECKDB. As soon as you've run repair,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=35.599999999999994) [continue as normal: No. Remember back to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=38.399999999999984)[the very first module where I said anytime](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=40.71428571428572) [you have to deal with any kind of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=42.61904761904765) [corruption, go and do root cause analysis](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=44.523809523809575) [to figure out why the corruption happened](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=46.05263157894736) [so you can take preventative action so it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=47.52631578947367) [doesn't happen again. Repair can always](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=49.5) [fix everything: No. We just talked about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=52.5)[that in the previous slide, there are some](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=54.888888888888886) [things that repair absolutely cannot fix,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=56.66666666666666) [it's not infallible. Repair is safe on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=58) [system databases: No. Well, you can't](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=60.7222222222222) [repair tempdb, you can't repair a master,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=63.055555555555515) [you can't repair the resource database,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=65.83333333333334) [msdb you can repair. Now imagine though](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=68.33333333333337) [that you run REPAIR\_ALLOW\_DATA\_LOSS on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=71.10526315789473) [msdb and it deletes a row from the SQL](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=72.9473684210526) [Agent jobs table and it happens to delete](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=76.26315789473678) [the job that runs your regular consistency](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=78.57894736842101) [checks, now you're not doing any regular](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=80.42105263157886) [consistency checking, or it deletes a row](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=82.38461538461539) [from the backup history table. You have](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=85.0769230769231) [another diaster and you try to use an](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=87.4) [automated script to figure what backups](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=89.00000000000003) [there are, there's a missing backup, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=90.20000000000005) [so the script doesn't work. You can run](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=92.04999999999998) [repairs online: No, you have to use single](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=94.84999999999994) [user mode. Your database is going to be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=97.64999999999989) [offline while you're running repairs.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=100.9166666666667) [REPAIR\_REBUILD will fix everything: No,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=103) [REPAIR\_ALLOW\_DATA\_LOSS. Now this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=105.5) [misconception comes because I've seen many](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=106.66666666666666) [people posting to forums saying hey, I've](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=108.66666666666663)[got these corruptions and I ran rebuild](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=110.99999999999993) [and it didn't fix everything, why not? And](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=113.19999999999999) [the list of corruptions clearly states at](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=115.59999999999997) [the bottom, REPAIR\_ALLOW\_DATA\_LOSS is what](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=117.69999999999995) [you need to use. Repair fixes up](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=119.84615384615387) [constraints: No. As I mentioned before,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=123.07692307692314) [repair doesn't pay any attention at all to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=125.5) [any kind of constraints. And the final](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=128.5) [misconception in this list is that repairs](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=130.80000000000004) [are propagated to replication subscribers.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=132.6666666666668) [Absolutely not. The repairs that CHECKDB](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=134) [and the other check commands do are](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=136.4705882352941) [specifically marked do not replicate](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=139.35294117647052) [because they're making physical changes to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=141.35714285714286) [the database and because a replication](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=143.50000000000003) [subscriber is a logical copy of a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=145.6428571428572) [replication publication database, there's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=148.33333333333331) [no guarantee that the exact same pages](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=149.88888888888886) [hold the exact same data in the exact same](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=152.61111111111106) [structure on the subscription database. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=156.0769230769231) [repairs, because they change physical](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=158.5) [pages directly, cannot be propagated. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=161) [as you can see, there's a bunch of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=164.5) [different misconceptions that have sprung up over the years around repair.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=6&mode=live&start=172.5)

[Demo: Running Repair](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live)

[In this demo, I want to show you running](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=2) [repair on a bunch of different repair](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=4.11764705882353) [scenarios. I'm using DBCC WRITEPAGE and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=5.764705882352942) [I'm going to use that to cause some](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=7.428571428571428) [corruption. I'll talk about that more in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=9.714285714285717) [module 3 of the advanced course. So this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=11.90909090909091) [is the same setup script that we used for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=14.454545454545457) [the various corruptions examples in module](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=17.41176470588235) [6, so I'm going to go through this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=19.88235294117646) [reasonably quickly. So I'm just getting](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=23.176470588235272) [rid of all databases and then that one as](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=25.904761904761898)[well, create my first database, and we're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=30.19047619047617) [going to corrupt an IAM page. So we're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=33.52380952380949) [going to go all the way down, create the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=35.666666666666686) [database, create the table, create 10](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=37.80952380952385) [rows, and then DBCC IND to see what's in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=39.46153846153846) [there. And we need PageType 10 just like](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=43.6153846153846) [we did in the demo in module 6. So we're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=47.30769230769228)[going to corrupt page 231, like so, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=52.28571428571429) [that's our first corruption. Our second](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=57.42857142857146) [corruption, we're going to create the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=60.84210526315789) [database Company2, the same table, the 10](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=63.36842105263156) [rows, and I'm going to create a clustered](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=66.31578947368418) [index, we're going to go and look with](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=70.39999999999998) [DBCC IND, find a PageType2, so this one.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=75.19999999999993) [So let's go ahead and grab that page, 312,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=80) [cause that corruption. And then our third](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=87.49999999999996) [corruption we're going to create a broken](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=91.23076923076923) [off-row LOB. So we'll go ahead and create](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=93.38461538461537) [Company3. Our table has 2 VARCHAR 5000s,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=95.90909090909088) [one of them is going to get pushed off](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=98.13636363636357) [row, so we'll have some off-row storage.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=101) [We pick a page of type 3, let's pick that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=104.95652173913041) [one, 297, see its type 3, and we're going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=110.60869565217385) [to corrupt that. We go ahead and do that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=115.26315789473684) [corruption and do whatever cleanup we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=119.05263157894734) [need. Okay, so let's go across to our demo](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=121.57894736842101) [script now and have a look at these](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=124.35294117647061) [corruptions. So first off, the one in the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=126.70588235294122) [Company database, this is the one where](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=129.80000000000004) [we've got a broken IAM page. So it says](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=132.60000000000008) [that REPAIR\_ALLOW\_DATA\_LOSS is what we're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=135.90000000000003) [going to need to use, so let's go ahead](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=137.4000000000001) [and use that. We go into the single user](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=140.1000000000002) [mode, we run REPAIR\_ALLOW\_DATA\_LOSS, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=144.5294117647059) [it says it's all been repaired. So what it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=147.47058823529417)[does in this case is it fixes up the IAM](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=152.5) [pages for that clustered index and it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=157.5) [reallocates everything to all these](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=161) [extents, it reallocates them all to the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=163.00000000000003)[clustered index. So it fixes them, which](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=165.33333333333343) [is pretty cool. It basically recreates](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=167.875) [that broken missing IAM page. So if we go](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=170.125) [to our script again, any time you run](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=173.27272727272725) [repair you should always run a CHECKDB](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=175.81818181818176) [afterwards to make sure that it fixed all](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=178.04545454545445) [the problems. So we go ahead and run our](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=180.1904761904762) [CHECKDB afterwards and low and behold,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=182.33333333333337) [excellent, it fixed everything. Now in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=183.76190476190482) [this case though, we didn't suffer any](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=186.00000000000003) [data loss because nothing had to be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=188.80000000000007)[deleted. We go ahead and we put our](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=191.6000000000001) [database back into multi-user mode again.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=194.15384615384625) [Now it's going to have a look at the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=196) [second corruption. So we run a CHECKDB and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=199.27272727272737) [remember this is the corruption where all](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=202.18181818181836) [the linkages in the B-tree look like their](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=204.76190476190476) [broken because our index page, or one of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=207.8095238095238)[the index pages wasn't able to be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=210.85714285714283) [processed, page 312. So what does it say](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=213.68421052631584) [in terms of the minimum repair level?](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=217.0526315789475) [REPAIR\_ALLOW\_DATA\_LOSS. So let's go ahead](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=220) [and run that. That's because anytime it's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=221.7647058823529) [going to have to delete a page, it's going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=224.23529411764696) [to say REPAIR\_ALLOW\_DATA\_LOSS. Now it's a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=227.06666666666672) [clustered index so it's saying](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=228.6666666666668) [REPAIR\_ALLOW\_DATA\_LOSS, but what we think](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=230) [is going to happen here is it's going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=231.38888888888886) [delete that index page and rebuild the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=233.8888888888888) [index, and we're not going to have any](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=235.92307692307696) [data loss. So we go into single user mode](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=238.38461538461553) [and we run REPAIR\_ALLOW\_DATA\_LOSS and it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=241.94736842105272) [says it de-allocated the index page here](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=244.47368421052647) [and it rebuilt the clustered index. And as](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=247.52380952380952) [part of doing that, all the other repairs](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=251.71428571428567) [were marked as fixed. So it says there](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=255.9047619047618) [that it found and fixed 13 consistency](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=260.4000000000001) [errors. Let's run CHECKDB again just to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=264.60000000000025) [make sure. Excellent, it's fixed. Let's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=268.8000000000004) [look at the third example, so Company3 we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=272.47619047619037) [do a CHECKDB, and this is the one with the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=277.4285714285711) [broken off-row linkage. So it comes back](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=283.4736842105263) [and says page 297 down here, text page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=286.7894736842104) [couldn't be processed, and we've also got](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=290.5789473684208) [a data row on page 298 where we couldn't](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=293.55555555555566) [get to the off-row data. So what's going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=297.0555555555559) [to happen with REPAIR\_ALLOW\_DATA\_LOSS,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=299.79999999999995) [it's going to deallocate, it's going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=300.86666666666656) [delete the page that couldn't be read and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=302.7333333333331) [it's going to have to delete that record](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=304.6666666666667) [as well that points to it. It can't leave](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=306.5714285714286) [that dangling link there. So we're going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=308.75) [to have to go into single user mode on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=310.5) [Company3. So first of all on this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=312.75) [connection, which is still connected up to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=315.10000000000014) [Company3, let's go to master in there, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=317.5500000000003) [then set our database into the single user](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=320.84615384615387)[mode and run REPAIR\_ALLOW\_DATA\_LOSS. And](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=327.6153846153848) [what it says is it de-allocated the broken](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=331.6363636363636) [page and it had to delete the record that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=336.72727272727263) [was pointing to that broken page, slot 0](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=342.45454545454527) [and page 298. If there had been any](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=346.4000000000001) [non-clustered indexes, because we deleted](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=349.2000000000003) [a data record there, all those](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=350.9500000000004) [non-clustered indexes would have been](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=352.75) [rebuilt automatically as part of repair,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=354) [but it said basically it fixed everything.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=355.5) [So there was true data loss. Let's make](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=358.2727272727272) [sure it fixed everything, yes it did. What](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=362.42857142857144) [about our row count? Nine. So we created](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=368.1428571428572) [that table with 10 records and it had to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=372.20000000000005) [delete one as part of the repair. So maybe](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=374.90000000000015) [you'd be able to use an older backup to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=377.4347826086956) [get some of that data back that was](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=379.39130434782595) [deleted, and that's one of the things](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=381.13043478260846) [we're going to talk about more in the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=382.7142857142857) [advanced course, but let's just finish off](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=384.61904761904765) [this demo by making our database back into](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=386.28571428571433) [multiuser mode, like so. So there's three](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=389.3684210526315) [examples of repairs, and two of them we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=392.6842105263156) [got away without any data loss, even](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=396.25) [though we had to use the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=398)[REPAIR\_ALLOW\_DATA\_LOSS option, but on the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=399.5) [third example it did actually cause data](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=400.75) [loss because of the nature of what was broken in the database.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=7&mode=live&start=407)

[Manually Fixing Nonclustered Indexes](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=8&mode=live)

[Manually fixing non-clustered indexes. Any](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=8&mode=live&start=2) [kind of repair, as I've said before,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=8&mode=live&start=3.875) [requires that the database is essentially](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=8&mode=live&start=6.5) [offline in single user mode. So, it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=8&mode=live&start=8.705882352941178) [doesn't really make sense to fix](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=8&mode=live&start=11.176470588235299) [non-clustered indexes using CHECKDB or](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=8&mode=live&start=13.294117647058831) [CHECKTABLE with the REPAIR\_REBUILD option](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=8&mode=live&start=15.200000000000001) [because you're database has to be offline.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=8&mode=live&start=17.199999999999996) [All you need to do is disable the index](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=8&mode=live&start=20) [and rebuild the index, so why not do it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=8&mode=live&start=21.95652173913042) [yourself and keep the database online](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=8&mode=live&start=23.91304347826084)[while you're doing it. Now you might say,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=8&mode=live&start=25.25) [why can't I just rebuild the index? You](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=8&mode=live&start=27.25) [can't do that. If you try to do an online](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=8&mode=live&start=29.25) [index rebuild, it's going to read the old](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=8&mode=live&start=31.75) [index to build the new index, and even an](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=8&mode=live&start=33.75) [offline rebuild is going to do that from](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=8&mode=live&start=36.27272727272728) [SQL Server 2008 onwards as well, so that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=8&mode=live&start=38.81818181818184) [won't work. So here's what you do. Inside](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=8&mode=live&start=41.3636363636364) [a transaction, you do an ALTERINDEX,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=8&mode=live&start=44.333333333333314) [DISABLE, and then an ALTERINDEX, REBUILD.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=8&mode=live&start=46.66666666666663) [It's that simple. You have to use a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=8&mode=live&start=49) [transaction because you can have a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=8&mode=live&start=51.22222222222223) [non-clustered index that's enforcing some](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=8&mode=live&start=52.8888888888889) [kind of constraint and if you disable the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=8&mode=live&start=54.3) [index or drop the index outside the bounds](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=8&mode=live&start=56.699999999999974) [of a transaction, then somebody could](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=8&mode=live&start=59.09999999999995) [insert a row that violates the constraint, and you don't want that.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=8&mode=live&start=63)

[Demo: Manually Fixing Nonclustered Indexes](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live)

[In this demo, I want to show you how you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=1) [can manually fix non-clustered indexes](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=3.857142857142856) [without having to rely on repair. So first](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=5.285714285714284) [off, I'm going to cause some corruption.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=7.421052631578947) [I'm going to use the DBCC WRITEPAGE](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=8.894736842105265) [command, which we're going to talk about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=10.368421052631586) [in the advanced course in module 3. I'd](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=11.952380952380949) [like you to go and download the SalesDB](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=13.857142857142847) [database from this bit. ly link up here,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=15.761904761904745) [unzip it so you've got the backup file,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=18.227272727272716) [and then we're going to restore it. So I'm](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=20.77272727272725) [going to go into master and delete any old](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=23.454545454545453) [copies of the database that are lying](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=25.499999999999993) [around and restore it using this code](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=27.09090909090908) [here, and that's going to restore and then](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=29.66666666666667) [it's going to upgrade it to 2012. Then I'm](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=34.11111111111113) [going to go into the database and I'm](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=38.45454545454545) [going to create a new non-clustered index,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=40.272727272727266) [and this is the one we're going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=41.86363636363635) [corrupt. Let's have a look and see what](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=44.434782608695656) [the index ID is of the one we just](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=48.260869565217405) [created, index\_id 2, perfect. Let's look](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=52.56521739130437) [at the pages in index\_id 2, excellent. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=55.434782608695656) [the first page is 24, 600 and so I've got](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=59.260869565217405) [a bunch WRITEPAGE scripts already worked](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=64.04347826086959) [out that go and corrupt various records on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=67.28571428571428) [that page. If you're not using 2012, you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=71.85714285714283) [might have to put a different page ID in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=74.56521739130434) [there based on the output from DBCC IND,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=76.91304347826086) [but these offsets here, these should work](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=79) [perfectly. So let's go ahead and create](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=81.7222222222222) [all that corruption, like so, and cleanup.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=84.4444444444444) [Now we'll go back and actually look at our](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=87.84615384615384) [demo. So first off, we go and run a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=93.38461538461536) [CHECKDB and we get a whole bunch of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=99.17647058823525) [errors. I've only created a few different](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=104.3529411764705)[corruptions here, but imagine that we come](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=106.33333333333337) [back with hundreds and hundreds of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=107.88888888888897) [different errors, it can be pretty hard to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=109.3125) [figure out, are all the IndexIDs 2? So one](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=111.8125) [of the things you can do is use the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=114.76190476190476) [undocumented with TABLERESULTS option,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=118.19047619047618) [like so, which gives us a nice tabular](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=119.7142857142857) [result set. We get all the same message](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=122.88888888888889) [text back, but there is an IndexID column.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=126.44444444444443) [So we can scroll down and we can see all](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=130) [the way down to the bottom, all the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=131.7391304347825) [IndexIDs are 2, there's always going to be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=133.13043478260852) [a couple of messages right down at the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=134.88235294117644) [bottom where the IndexID is 0. This is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=137.23529411764693) [just the completion messages. So cool. All](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=139.66666666666669) [of the IndexIDs are 2, so they all have](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=142.00000000000009) [the same ObjectID as well, again this is a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=145.00000000000017) [contrived example. So it's the table](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=149.2)[Customers, IndexID 2. So if we're going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=152.39999999999998) [go and manually fix that, we need to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=155.0416666666667) [figure out what the index name is, but](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=156.70833333333346) [first off let's try doing a REPAIR\_REBUILD](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=158.3750000000002) [like it said we could, and of course it's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=160.1428571428571) [not in single user mode, so it's not going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=162.7142857142856) [to allow us to do it. Now we don't want to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=165.20833333333334) [have to drop the database into single user](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=167.5000000000001) [mode just to fix a broken non-clustered](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=169.16666666666686) [index. So let's have a look at](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=171.66666666666663) [sp\_HelpIndex and see what our index names](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=175.55555555555543) [are. Well this is our clustered index,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=179.44444444444423) [it's not that one so it must be this one.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=181.5) [So the index is CustomerName, just as we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=184) [thought. So we go ahead and try](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=186.79999999999995) [rebuilding, ONLINE REBUILD of our](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=189.24999999999991) [CustomerName index. So let's see if that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=191) [worked. We run CHECKDB again, and it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=195.78947368421046) [didn't work, because our online index](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=200.57894736842093) [rebuild reads the old index, so that's not](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=204.41666666666666) [going to work. The missing rows and broken](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=207.74999999999991) [rows are still going to be missing and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=210.11111111111114) [broken in the new index. So what about an](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=211.88888888888897) [offline build? The offline rebuild said it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=215.20000000000005) [worked, we run a CHECKDB, and again, it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=219.05000000000013) [didn't work because from 2008 onwards, an](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=223.45000000000022) [offline rebuild is also going to go and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=226.33333333333331) [read the old index. So the way that we're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=229.4444444444444) [going to fix this manually is we're going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=232.4285714285714) [to go into our SalesDB database and we're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=234.7142857142856) [going to disable the index, which keeps](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=237) [the index structure around, sorry the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=239.7222222222222) [index schema around and then we're going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=242.05555555555551) [to rebuild it, which then rebuilds the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=244.5) [structure, so we're not going to have to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=246.25) [recreate the index. Now we don't want to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=248.25) [go into a drop and a create because there](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=250.1904761904762) [could be a constraint that's being](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=252.33333333333337) [enforced by the index, we don't want that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=253.76190476190482) [to be violated while our index is dropped,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=256.1000000000001) [and even while we're disabled, that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=258.50000000000017) [violation could happen, so we do a BEGIN](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=260.27272727272725) [TRAN, which means that we're going to hold](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=262.45454545454527) [all the locks on the index and nobody's](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=264.6363636363633) [going to be able to insert anything that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=266.78947368421046) [affects that index until our transaction](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=268.89473684210503) [is finished. So we do our BEGIN TRAN, our](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=270.47368421052596) [INDEX DISABLE, our INDEX REBUILD, and we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=274.294117647059) [COMMIT, like so. And let's do a final](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=277.588235294118) [CHECKDB. And that has fixed our index](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=281.69230769230774) [corruption. We didn't have to take the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=285.46153846153857) [database offline at all and with the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=287.42857142857144) [minimum of hassle and with zero data loss, we fixed our non-clustered index.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=9&mode=live&start=289.09523809523813)

[Manually Fixing Data Purity Errors](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live)

[Manually fixing data purity errors. If](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live&start=2) [CHECKDB finds a 2570 data purity error,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live&start=4.666666666666668) [SQL Server cannot repair it. The error](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live&start=7.77777777777778) [there is that a column value is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live&start=10.444444444444443)[out-of-bounds. We already talked about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live&start=11.999999999999993) [data purity checking, so the column value](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live&start=13.1111111111111) [is out-of-bounds for the data type for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live&start=15.249999999999998) [that column. If SQL Server was going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live&start=18.16666666666667) [repair it, what value would SQL Server](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live&start=20.714285714285708) [pick? You might say we'll make it a 0 or](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live&start=22.7142857142857) [make it a null, but those might mean](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live&start=24.95652173913042)[something to your business logic, so it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live&start=26.695652173913015) [can't pick a value. You're going to have](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live&start=28.352941176470587) [to manually repair data purity errors,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live&start=31.176470588235283) [2570 errors. Now you can work out which](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live&start=33.294117647058805) [row is invalid using SELECT or using DBCC](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live&start=35.82608695652172) [PAGE and then you go and update that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live&start=38.26086956521735) [column to a valid value. So you're finding](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live&start=40.695652173912976) [a key value that allows you to do an](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live&start=43.66666666666666) [update on a particular record. There is a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live&start=47.095238095238074) [KB article that explains both of the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live&start=49.54545454545454) [options, either SELECT or DBCC PAGE, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live&start=50.8181818181818) [I'm going to do a demo in a second that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live&start=52.09090909090906) [shows you how to do it using DBCC PAGE.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live&start=54.5909090909091) [It's very important that you choose a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live&start=57.45454545454548) [value when you do the update that makes](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live&start=59.68181818181822) [sense for your business logic, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live&start=61.40000000000002) [whatever the data is that the column value](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live&start=62.60000000000004) [represents. You don't want to make a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live&start=64.3157894736842) [mistake where you give somebody an](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live&start=66.52631578947364) [extremely small price for a very valuable](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live&start=68.42105263157887) [item. That's happened in the past in quite](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live&start=72) [public cases, you don't want that to happen to you.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=10&mode=live&start=80)

[Demo: Manually Fixing Data Purity Errors](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live)

[In this demo, I want to show you how you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=2) [can fix a data purity error. Now we're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=3.875) [going to use DBCC WRITEPAGE and as I said](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=5.3478260869565215) [many times now, I'm going to talk about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=6.913043478260868) [that more in the advanced course in module](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=8.304347826086955) [3. Now for this demo I'd like to go ahead](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=10) [and download the SalesDB database from](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=12.5) [this bit. ly link up here and we're going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=14) [to restore it by getting rid of any old](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=17.521739130434785) [databases we had lying around, and then](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=21.04347826086956) [restore it and go in and use it. It takes](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=23.94736842105263) [a couple of seconds, there we go. And then](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=28.68421052631578) [I'm going to change one of the table](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=32.60869565217391) [columns in the products table to be a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=35.043478260869534) [FLOAT column and I'm going to rebuild my](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=37.47826086956516) [index, and then what pages there are. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=40.63636363636364) [we're going to pick all those pages and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=45.000000000000014) [what I want you to do is look across and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=49.36363636363639) [see where there's PageType 2 and pick the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=53.54545454545457) [page below that one, because it might be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=56.4545454545455) [different depending on which version](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=59.57142857142857) [you're on, 24543. And we plug in 24543](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=62.428571428571416) [there, we're going to do a DBCC PAGE on it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=66.99999999999997) [and look for slot 23. Well we're actually](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=72.41176470588235) [going to look for ProductID 306. So we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=76.17647058823528) [scroll down, let's look and see slot 23,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=80.23076923076923) [ProductID 306, perfect. So the offset is](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=85.15384615384613) [613. So we take that 613, we plug that in](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=90.0769230769231) [here, and we get this, 1563, and we need](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=97.76923076923083) [to plug in this offset, 1563, and this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=104.69230769230779) [here, this page ID, 24543, 24543 into our](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=112) [DBCC WRITEPAGE. And that's going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=120) [corrupt that floating point value. So we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=123.05263157894734) [go ahead and run that plus our cleanup.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=124.89473684210519) [Cool. Now let's go head over to our demo](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=127) [script and we run our CHECKDB, and it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=131.69565217391303) [comes back and says low and behold, we](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=135.86956521739128) [have a data purity error at slot 23 on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=140.04347826086956) [page 24543, the one we just corrupted and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=144.7391304347826) [it says here, column price value is out of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=148.91304347826085) [range for data type float, update the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=152.7647058823529) [column to a legal value. So let's go ahead](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=155.23529411764696) [and look and see what's in there. So it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=160.76470588235293) [was page 24543, 24543. So we need to turn](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=169.23529411764702) [on TRACEON 3604, you saw me do it in the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=174.4583333333333) [setup script, that allows the output of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=177.37499999999986) [DBCC PAGE to come to our current](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=179.41666666666646) [connection. So let's go ahead and run](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=182.69230769230774) [that. If we scroll down to slot 23, now](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=186.46153846153857) [we'll see slot 23, Price, INVALID COLUMN](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=192.5999999999999) [VALUE, and there's the invalid column](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=197.49999999999983) [value there. So we're going to remember](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=201.3684210526316) [ProductID 306, thinking that that's going](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=203.94736842105272) [to be the key value, and we're going to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=206.15789473684225) [check that to make sure. So let's see,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=209.52380952380952) [we're going to go into our SalesDB](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=212.57142857142856) [database and have a look at sp\_HelpIndex,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=215.2380952380952) [and sure enough, ProductID is our key](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=218.64705882352942) [value, so key value 306. So let's just try](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=222.3529411764706) [deleting it. 306, delete, and no, we've](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=227.39999999999998) [got foreign key constraint. So we don't](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=231.59999999999994) [want to start messing around having to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=235.10526315789477) [change our constraints, so let's just](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=237.6842105263159) [update the value. So we could update it](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=239.89473684210543) [to. 01, 1 cent. Let's do that. Okay that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=244.3333333333333) [worked. And let's see if we fixed the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=250.3333333333332) [problem. Excellent. So we fixed the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=254.5) [problem. Now, we've created another](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=257.5) [problem though because this SalesDB is for](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=259.47368421052624) [a mountain bike sale firm and what I just](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=262.05263157894717) [did accidentally there was set the price](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=265.4) [for a mountain bike to 1 cent. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=268.1999999999998)[someone's going to get a real good deal on](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=271.2083333333333) [that on our product website until I go and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=273.08333333333314) [fix that and set it to what the value](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=274.958333333333) [really should be. So one of the things](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=276.86956521739125) [you're going to have to do, because this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=278.60869565217376) [is the only way to fix a 2570, either by](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=280.3478260869563) [figuring out the correct key value from](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=284.1818181818181) [DBCC PAGE or figuring it our using SELECT](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=287.36363636363615) [statements as the KB article describes,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=291) [but you're going to have to go and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=292.5789473684209) [manually update the value because CHECKDB](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=294.6842105263155) [can't do that, there's no way for it to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=296.23809523809524) [pick what value would make sense for your](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=298.3809523809524) [business, but you need to pick a value](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=300.28571428571433) [that makes sense for your business. One](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=302.4285714285714) [cent doesn't make sense for a mountain](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=304.42857142857133) [bike sale. So do make sure that you know](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=306.4285714285713) [what it is that you're updating and you pick a correct value.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=11&mode=live&start=314)

[If You Are Forced to Use Repair...](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=12&mode=live)

[If you are forced to use repair, that](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=12&mode=live&start=1) [usually implies that your backup strategy](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=12&mode=live&start=3.3999999999999995) [does not allow you to meet your downtime](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=12&mode=live&start=5.199999999999998) [and data loss service level agreements. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=12&mode=live&start=7.666666666666666) [you'll want to go and update your backup](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=12&mode=live&start=10.000000000000002) [strategy to make sure that you can use](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=12&mode=live&start=12.666666666666673) [backups the next time some kind of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=12&mode=live&start=14.94444444444445) [corruption or disaster occurs. The way to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=12&mode=live&start=16.8888888888889) [do that is figure out what restores you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=12&mode=live&start=18.68181818181818) [need to be able to perform to meet your](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=12&mode=live&start=20.499999999999993) [different downtime and data loss SLAs, and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=12&mode=live&start=22.545454545454533) [then change your backup strategy to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=12&mode=live&start=24.500000000000004) [perform those backups that allow you to do](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=12&mode=live&start=26.300000000000008) [those restores when you need to. Make sure](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=12&mode=live&start=28.700000000000014) [you also implement regular backup](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=12&mode=live&start=32.23076923076922) [validation. There's no point in having a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=12&mode=live&start=34.53846153846152) [bunch of backups if they turn out to be](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=12&mode=live&start=36.428571428571445) [corrupt when you need them most. Now I've](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=12&mode=live&start=38.57142857142861) [said this before, but I just want to](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=12&mode=live&start=40.347826086956516) [reiterate, if you have to go and use](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=12&mode=live&start=41.73913043478258) [repair, also make sure that you go and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=12&mode=live&start=43.130434782608646) [check any constraints that may have been](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=12&mode=live&start=44.71428571428572) [affected, check to see what data was lost](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=12&mode=live&start=46.38095238095241) [so you know what you're missing,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=12&mode=live&start=48.285714285714334) [reinitialize any affected replication](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=12&mode=live&start=50.15384615384616) [topologies, and very importantly, go](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=12&mode=live&start=51.69230769230771) [perform root-cause analysis so that the corruption problem doesn't happen again.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=12&mode=live&start=53.61538461538464)

[Course Summary](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live)

[Course summary. We're done. Now you know a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=2) [whole bunch of new things about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=3.6842105263157876) [corruptions and how to recover from them.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=4.947368421052628) [You know how corruptions occur, you know](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=6.666666666666666) [how to go and enable automatic page](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=9) [corruption detection, basically setting up](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=11.333333333333337) [checksums. You know how to run consistency](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=12.705882352941174) [checks and a bit about what consistency](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=14.35294117647058) [checks do. You know how to interpret](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=16) [CHECKDB output at a basic level to be able](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=17.999999999999993) [to tell whether for instance CHECKDB](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=20.571428571428555) [failed or it's just non-clustered indexes](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=22.3125) [that are corrupt, or whether you've got](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=24.1875) [any unrepairable errors. You also know a](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=26.375) [bunch of basic restore techniques and](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=28.923076923076916) [repair techniques. Now the most important](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=31.230769230769216) [things I want you take away from this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=32.923076923076934) [course. Corruptions happen all the time,](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=34.7692307692308) [all the way across the world. At some](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=36.25) [point, you're going to get bitten by](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=38.25) [corruption and you want to be prepared. So](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=40) [the more you practice, the more you're](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=42.666666666666686) [comfortable with looking at corruptions](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=45.000000000000036) [and recovering from the corruptions, the](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=46.44444444444444) [easier it's going to be for you to recover](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=47.77777777777777) [when corruptions happen for real in your](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=49.777777777777764) [production environment. I really hope all](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=52.11764705882352) [the stuff that you've learned in this](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=54.235294117647044) [course is going to be helpful to you at](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=56.45454545454545) [some point. Make sure you also check out](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=58.49999999999999) [the Advanced Corruption Recovery](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=60.318181818181806) [Techniques course that will be out a few](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=61.23076923076923) [weeks after this one. Now obviously](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=63.0769230769231) [corruption is something that I am quite](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=64.44444444444446" \t "psplayer) [passionate about and I've got lots of](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=66.00000000000006) [experience with, so I'd love to hear about](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=67.55555555555566) [interesting corruption stories, things](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=69.57894736842101) [that you've had happen to you, how you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=70.63157894736835) [recovered and so on, and any emails you](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=72.73684210526304)[send I'll treat completely confidentially.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=75.9166666666667) [Finally, thanks for watching the course](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=78) [and preparing yourself for corruption. I](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=79.6363636363636) [really hope you enjoyed the course as much as I enjoyed writing it and recording it.](https://app.pluralsight.com/player?course=sqlserver-database-corruption&author=paul-randal&name=sqlserver-detecting-correcting-database-corruption-m8-repair&clip=13&mode=live&start=82)