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| 3M Company |
| Standard Operating Procedures |
| Enterprise Team Foundation Server |

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| Mike O'Brien  Last Update: 3/8/2016 |

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# Introduction

Enterprise Team Foundation Server (ETFS) is a highly available installation of Team Foundation Server for use by all 3M divisions and businesses. More information will be available on the ETFS website after launch: <http://tfs.mmm.com>.

# User Support

## Initiate

To initiate a new support request, an ETFS user can call (651) 733-1000, or go to the <http://ithelp.mmm.com> website. An IT Service Manager (ITSM) ticket is created from either of these actions. HP Service Manager (HPSM) is used to track the status of the ticket, and provide feedback to the user.

Once an ITSM ticket is created, it is assigned to the ETFS ITSM group – **US\_TFS-App-Support**. From there, the common workflows from within ITSM are used. Emails are sent by the ITSM system to notify users of progress.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SLA Name | From | To | Duration (Mins) | Calendar |
| Fix – Priority 1 | Open | Closed | 120 | 24 x 7 x 365 |
| Fix – Priority 2 | Open | Closed | 360 | 24 x 7 x 365 |
| Fix – Priority 3 | Open | Closed | 2,880 | 24 x 7 x 365 |
| Fix – Priority 4 | Open | Closed | 4,320 | 24 x 7 x 365 |
| Response – Priority 1 | Open | Work In Progress | 30 | 24 x 7 x 365 |
| Response – Priority 2 | Open | Work In Progress | 60 | 24 x 7 x 365 |
| Response – Priority 3 | Open | Work In Progress | 720 | 24 x 7 x 365 |
| Response – Priority 4 | Open | Work In Progress | 1,440 | 24 x 7 x 365 |

Table 1 - GOAL TIMES FOR SUPPORT ISSUES

## Support Requests

Below is a list of common support requests that will be handled by the support team.

|  |  |
| --- | --- |
| Request | Resolution |
| New Team Project | Create a new team project with the provided required information. |
| Add/Remove Build Machine | Add the build machine (virtual or physical) to the ETFS Service making it available for use. |
| Add/Remove Proxy Machine | Add the proxy machine (virtual or physical) to the ETFS Service making it available for use. |
| Add support for “some new service or tool” | Escalate to SEMS team, and close the ITSM ticket. |
| Migrate existing project artifacts | Escalate to SEMS team, and close the ITSM ticket. |
| “How do I …” | If not found in the ETFS knowledge base, escalate to the SEMS team, and close the ITSM ticket. |
| Customize my process template | Escalate to SEMS team, and close the ITSM ticket. |

## Resolution

If necessary, an Operations team member will contact the user to determine a resolution. When the issue is resolved, an email notification email is sent by the ITSM system.

Knowledge base articles will be written to encompass common support issues, and when possible, allow the operators to assist users directly.

# Team Structure

## ETFS Teams

## Team Members

|  |  |  |
| --- | --- | --- |
| Team | Name | 3M Id |
| **Service Manager** | Mike O’Brien | A10N1ZZ |
|  |  |
| **Operations** | Emily Gregerson | US338254 |
| Chip Benton | A4Y44ZZ |
| Paul Pottorff | A3CY0ZZ |
| Kyle Garver | A4YH9ZZ |
| Shraddha Jaiswal | A3GL6ZZ |
| Vishwajeet Kumar |  |
| **SEMS DevOps** | Don Carlson | A0JP1ZZ |
| Logesh Rajamanickam | A1SHDZZ |

## Active Directory Groups

|  |  |
| --- | --- |
| Group Name | Name |
| **US-SEMS-DevOps** | Mike O’Brien |
| Don Carlson |
| Logesh Rajamanickam |
|  |
| **WW-CHBS-Admins** | Emily Gregerson |
| Chip Benton |
| Paul Pottorff |
| Kyle Garver |
| Shraddha Jaiswal |
| Vishwajeet Kumar |

## Environment to Group Mapping

|  |  |  |
| --- | --- | --- |
| Environment | Account Name | Description |
| DEV | US-SEMS-DevOps |  |
| WW-CHBS-Admins |  |
| QA | US-SEMS-DevOps |  |
| WW-CHBS-Admins |  |
| PROD | US-SEMS-DevOps |  |
| WW-CHBS-Admins |  |

# ETFS System Architecture

## QA and PROD Environments

For reference, the system architecture diagram is shown below.



## Service Accounts

|  |  |  |
| --- | --- | --- |
| Environment | Account Name | Description |
| DEV | usfetfsdevs | Core TFS Services account for DEV |
| usfetfsdevr | Reporting TFS Services account for DEV |
| usfetfsdevsp1 | SharePoint service account |
| usfetfsdevsp2 | SharePoint service account |
| usfetfssetup | Setup Account for TFS operations – use to install new version, create project collections, create team projects, and administration of ETFS environment. |
| QA | usfetfsqas | Core TFS Services account for QA |
| usfetfsqar | Reporting TFS Services account for QA |
| usfetfsqasp1 | SharePoint service account |
| usfetfsqasp2 | SharePoint service account |
| usfetfsetup | Setup Account for TFS operations – use to install new version, create project collections, create team projects, and administration of ETFS environment. |
| PROD | usfetfsprods | Core TFS Services account for PROD |
| usfetfsprodr | Reporting TFS Services account for PROD |
| usfetfsprodsp1 | SharePoint service account |
| usfetfsprodsp2 | SharePoint service account |
| usfetfssetup | Setup Account for TFS operations – use to install new version, create project collections, create team projects, and administration of ETFS environment. |

# Installation

## Core System

The initial installation of Team Foundation Server is only performed once for each environment. However, an upgrade to a new version may be easier to accomplish by replacement of the AT and/or DT machines. Detailed installation steps are provided by Microsoft and the TFS product team. The latest TFS Installation and Admin Guides for TFS 2013 Update 3 are available at <http://www.microsoft.com/en-us/download/details.aspx?id=29035>.

ETFS provides a SharePoint system in addition to TFS. The SharePoint instance should be installed and configured prior to installation of TFS – as per the latest TFS installation documentation.

|  |  |
| --- | --- |
| NOTE | Load Balancing is also a consideration for configuration prior to installation. A local loopback security feature of Windows Server will need to be disabled to allow machines to talk to themselves through the load balancer. See <http://technet.microsoft.com/en-us/library/dd441168(v=office.13).aspx> for more information. |

The overall process for installation and detailed configuration settings follow.

| Step | Description | Done |
| --- | --- | --- |
| 1 | Read the installation instructions as supplied by Microsoft for a High Availability install. | ⃣ |
| 2 | Obtain the installation media for TFS from MSDN. (Current version is TFS 2013 Update 3). | ⃣ |
| 3 | Run the setup program on the first machine (tfsdev01, tfsqa01, tfsprod01, etc.). After installation, a configuration wizard will be shown. Run the “Advanced” configuration wizard. Refer to the configuration parameters for configuration below. | ⃣ |
| 4 | Upon completion, run setup on all secondary AT machine. After installation, a configuration wizard will be shown. Run the “Application-Tier Only’ wizard. | ⃣ |
| 5 | After installation, run the TFS Admin Console to configure the environment. See the chart below with configuration values. |  |
| 6 | Test the updated version for functionality, make sure each is operational:   * TFS Core Services * Build Services * Test Center – automated testing (test controller) * SharePoint integration * Reporting Services * TFS Cube Processing * Create new Team Project to test permissions – delete when testing complete. | ⃣ |
| 7 | Run the Best Practices Analyzer – fix any outstanding issues. | ⃣ |
| 8 | Install TFS add-on services. These are listed in the Maintenance section under optimizations. | ⃣ |

### Configuration Parameters for Installation

|  |  |  |  |
| --- | --- | --- | --- |
| Configuration Name | DEV | QA | PROD |
| SQL Server Instance | devsql46 | PRODSQL219\SQL219 | PRODSQL220\SQL220 |
| Service Account | usac\usfetfsdevs | usac\usfetfsqas | usac\usfetfsprods |
| Authentication Method | Kerberos | Kerberos | Kerberos |
| Port | 8080 | 8080 | 8080 |
| File Cache Folder | D:\\_tfs\_data | D:\\_tfs\_data | D:\\_tfs\_data |
| Virtual Directory | tfs | tfs | tfs |
| Configure Reporting | Yes | Yes | Yes |
| Reporting Services Instance | devsql46 | QASQLRS06 | PRODSQLRS09 |
| Analysis Services Instance | devsql46 | QASQLRS06 | PRODSQLRS09 |
| Report Service Account | usac\usfetfsdevr | usac\usfetfsdevr | usac\usfetfsprodr |
| Configure SharePoint | Yes | Yes | Yes |
| Create New Project Collection | DefaultCollection | DefaultCollection | DefaultCollection |
| Notification URL | http://tfsdev.mmm.com:8080/tfs | http://tfsqa.mmm.com:8080/tfs | http://tfs.mmm.com:8080/tfs |
| Web Access URL | http://tfsdev.mmm.com:8080/tfs | http://tfsqa.mmm.com:8080/tfs | http://tfs.mmm.com:8080/tfs |
| Email Alert – Mail | Enabled | Enabled | Enabled |
| SMTP Server | mail.mmm.com | mail.mmm.com | mail.mmm.com |
| Email from Address | tfsdev <semsops@mmm.com> | tfsqa <semsops@mmm.com> | ETFS <semsops@mmm.com> |

## Build Machine Configuration

Steps to add or remove a Build machine from the ETFS infrastructure.

### Add

| Step | Description | Done |
| --- | --- | --- |
| 1 | Read the installation instructions for installation as supplied by Microsoft from the TFS Installation Guide. | ⃣ |
| 2 | The installing agent needs administrator access to the build machine. | ⃣ |
| 3 | Run setup of TFS – this performs a full install of TFS. | ⃣ |
| 4 | When the configuration wizard is shown, select the Build Configuration. | ⃣ |
| 5 | Configure the build machine to use Network Service as the service account.  Select the appropriate project collection. | ⃣ |

### Reassign to ETFS

Business groups may already have a build machine, and may want to make it available for use by ETFS. See the steps below to reassign a build machine to ETFS.

|  |  |
| --- | --- |
| NOTE | This procedure assumes the current version of the build services on the build machine is compatible with ETFS. |

| Step | Description | Done |
| --- | --- | --- |
| 1 | The installing agent needs administrator access to the build machine. | ⃣ |
| 2 | Run the Team Foundation Server Admin Console. | ⃣ |
| 4 | Select the Build Configuration area. | ⃣ |
| 5 | Stop the build service (click on stop). | ⃣ |
| 6 | Navigate into the properties, and enter the ETFS url into the Communication entry area. Preferably have the service run under ‘Network Service’, unless necessary to change. Save the changes. | ⃣ |
| 7 | Start the build server, and ensure the build machine is available as a build machine. | ⃣ |

### Remove

Removal of a TFS Build machine from the ETFS system. This will decommission the build machine, and make it permanently unavailable.

| Step | Description | Done |
| --- | --- | --- |
| 1 | Read the installation instructions to uninstall as supplied by Microsoft from the TFS Installation Guide. | ⃣ |
| 2 | The un-installing agent needs administrator access to the build machine. | ⃣ |
| 3 | Go to the control panel, and uninstall ‘Microsoft Team Foundation Server’. | ⃣ |
| 4 | Upon completion of uninstall, the build machine is removed from use, and removed from the attached project collection. | ⃣ |

## Proxy Machine Configuration

Steps to add or remove a proxy machine from the ETFS infrastructure. This procedure assumes a suitable machine is available to run as a proxy server.

### Add

| Step | Description | Done |
| --- | --- | --- |
| 1 | Read the installation instructions for installation as supplied by Microsoft from the TFS Installation Guide. | ⃣ |
| 2 | The installing agent needs administrator access to the proxy machine. | ⃣ |
| 3 | Run setup of TFS – this performs a full install of TFS. | ⃣ |
| 4 | When the configuration wizard is shown, select the Proxy Configuration. | ⃣ |
| 5 | Configure the proxy machine to use Network Service as the service account.  Select the appropriate project collection. | ⃣ |

### Remove

| Step | Description | Done |
| --- | --- | --- |
| 1 | Read the installation instructions to uninstall as supplied by Microsoft from the TFS Installation Guide. | ⃣ |
| 2 | The un-installing agent needs administrator access to the build machine. | ⃣ |
| 3 | In the control panel, uninstall ‘Microsoft Team Foundation Server’. | ⃣ |
| 4 | Upon completion of uninstall, the build machine is removed from use, and removed from the attached project collection. | ⃣ |

## Test Controller Configuration

Setting up a relevant test environment for a team is detailed below. Special attention should be paid to the architecture of the test controller and test agents, also being mindful if the test controller needs to be registered with ETFS. See the [Test Documentation](http://msdn.microsoft.com/en-us/library/dd293551.aspx)[[1]](#footnote-1) for more details.

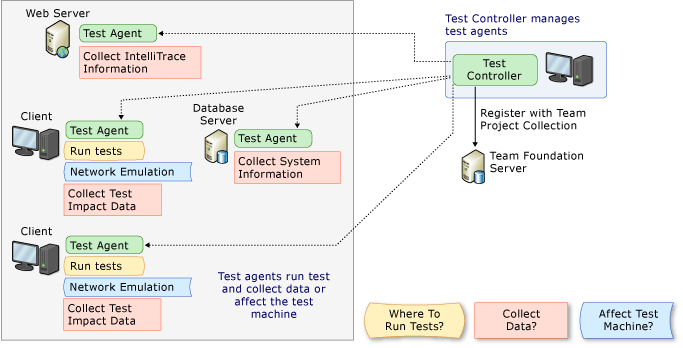


Figure 1 - Test controller architecture[[2]](#footnote-2)

### Add

| Scenario | Description | Purpose / Reference Link |
| --- | --- | --- |
| Manual Tests | It is recommended that you run your manual tests on a local machine that is not part of the environment. You can collect data or affect a test machine for your manual tests in the following ways:   * Collect data on the local machine using default test settings * Collect data on a local machine specifying the data to collect * Collect data on local and remote tiers of your application | For more information about how to set up your test settings and environments for these situations, see [Collect more diagnostic data in manual tests](http://msdn.microsoft.com/en-us/library/ee231892.aspx).[[3]](#footnote-3) |
| Automated Tests | May or may not require registration of a test control and test agent. | * [Installing and Configuring Test Agents and Test Controllers](http://msdn.microsoft.com/en-us/library/dd648127.aspx) * [Test Controller and Test Agent Requirements for Load Testing](http://msdn.microsoft.com/en-us/library/ff937706.aspx) * [Managing Test Controllers and Test Agents with Visual Studio](http://msdn.microsoft.com/en-us/library/dd695837.aspx) |

### Remove

Use the standard method of uninstalling a program via the control panel to uninstall a test controller and/or test agent. Uninstalling also unregisters the test controller and/or test agent with the ETFS environment.

## Lab Management

Lab Management is currently out of scope for ETFS. This functionality will be considered for future implementation if a critical mass of users state an implementation would be of value.

# Service Updates and Upgrades

## Operating System Update

Operating System Updates are performed by an automated process within 3M by IT. Automatic reboot of the Application Tier (AT) machine is performed on the weekend.

## Operating System Upgrade

The preferred method of upgrading the Operating System is during a TFS upgrade.

If this is not possible, or an upgrade is desperately needed, an AT machine should not be upgraded, but should be rebuilt. See the process for replacing an AT machine for further instructions.

## TFS Update

Updates to TFS are issued frequently – currently quarterly. This task should be done with a very deterministic approach, and could take several days (or weeks) to test thoroughly. The process for performing an update as follows is a high level approach. Specific update instructions that accompany the release should be used for the update – while maintaining the high level process outlined below.

| Step | Description | Done |
| --- | --- | --- |
| 1 | Read the installation instructions for the update as supplied by Microsoft. | ⃣ |
| 2 | Restore a current database backup of PROD into the QA environment | ⃣ |
| 3 | Follow the update directions provided. Make sure to update the AT machines, and other associated services (build, release management, test controllers, etc …). The primary server update should be done on the first AT machine (tfsdev01, tfsqa01, or tfsprod01), and the second updated with an “Application Tier Only” configuration. | ⃣ |
| 4 | On the QA environment, test the updated version for functionality, make sure each is operational:   * TFS Core Services * Build Services * Test Center – automated testing (test controller) * SharePoint integration * Reporting Services * TFS Cube Processing * Create new Team Project to test permissions | ⃣ |
| 5 | If QA passes testing, perform the same steps on the PROD environment during a scheduled maintenance window. | ⃣ |
| 6 | Inform users of the impending upgrade – a 30-day notice prior to the upgrade is preferred. |  |
| 7 | Once PROD is updated, test the upgraded version for functionality, make sure each is operational:   * TFS Core Services * SharePoint integration * Reporting Services * TFS Cube Processing * Create new Team Project to test permissions | ⃣ |
| 8 | If PROD passes testing, inform users of the update completion. | ⃣ |

## TFS Upgrade

Upgrades to a new version of TFS are being releases frequently – currently annually. This task should be done with a very deterministic approach, and could take several days (or weeks) to test thoroughly. The overall process for performing an update is:

| Step | Description | Done |
| --- | --- | --- |
| 1 | Evaluate if Operating Systems should be upgraded as part of the upgrade process. See the Operating System requirements that are included with the new version of TFS. If an operating system is desired or required, new Virtual Machines need to be requested. This can be done at the IT Server Express website. | ⃣ |
| 2 | Evaluate if the Data Tier needs to be upgraded as part of the upgrade process. See the Database requirements that are included with the new version of TFS. | ⃣ |
| 3 | Read the installation instructions for the update as supplied by Microsoft. | ⃣ |
| 4 | Restore a current database backup of PROD into the QA environment | ⃣ |
| 5 | Follow the update directions provided. Make sure to update the AT machines, and other associated services (build, release management, test controllers, etc …) | ⃣ |
| 6 | Test the upgraded version for functionality, make sure each is operational:   * TFS Core Services * Build Services * Test Center – automated testing (test controller) * SharePoint integration * Reporting Services * TFS Cube Processing * Create new Team Project to test permissions | ⃣ |
| 7 | If QA passes testing, schedule the upgrade of the PROD environment during a maintenance window. | ⃣ |
| 8 | If this upgrade has breaking changes to Build, Test, or other expanded services, notify the affected teams and determine an appropriate upgrade schedule. | ⃣ |
| 9 | Inform users of the impending upgrade – a 30 day notice prior to the upgrade is required. | ⃣ |

## Migration to TFSArchive

As users onboard to ETFS, they may be leaving behind a previous install of TFS. Additionally, they may want to keep historical information in an available system, but not import all if it onto ETFS. Below are the steps to bring a Project Collection onto the TFSArchive machine. Only the Project Collection is migrated. SharePoint site collections are not migrated. Custom reports can be imported, but are handled on a case-by-case basis.

| Step | Description | Done |
| --- | --- | --- |
| 1 | Gain access to the existing TFS server by adding the US-ETFS-Admin group to the Administrators group. | ⃣ |
| 2 | Add the USFETFSSETUP account to the TFS Console users. | ⃣ |
| 3 | Add the USFETFSSETUP account to the database as a system admin. | ⃣ |
| 4 | Detach the targeted Project collection via the TFS Administration Console. | ⃣ |
| 5 | Check the version of SQL Server. If the SQL Server is running SQL Server Enterprise, run this command to disable compression:  SELECT DISTINCT 'ALTER TABLE [' + SCHEMA\_NAME(schema\_id) + '].[' + NAME + '] REBUILD PARTITION = ALL WITH (DATA\_COMPRESSION = NONE);'  FROM sys.partitions p  join sys.objects o  on p.object\_id = o.object\_id  WHERE o.TYPE = 'u'  and data\_compression\_desc != 'NONE'  UNION  SELECT 'ALTER INDEX ALL ON [' + SCHEMA\_NAME(schema\_id) + '].[' + NAME + '] REBUILD PARTITION = ALL WITH (DATA\_COMPRESSION = NONE);'  FROM sys.partitions p  join sys.objects o  on p.object\_id = o.object\_id  WHERE o.TYPE = 'u'  and data\_compression\_desc != 'NONE'  This generate multiple sql scripts that should be copied to another window and executed. | ⃣ |
| 6 | Backup the project collection database using SQL Management Studio to a bak. | ⃣ |
| 7 | Restore the backup to the tfsarchive.usac.mm.com database instance. | ⃣ |
| 8 | Using the TFS Administration Console, attach the project collection. The project collection will be upgrades upon attachment. | ⃣ |
| 9 | Go through each team project, and mark all users as Readers (TFS Admin Console is handy for this). | ⃣ |

# Maintenance

|  |  |
| --- | --- |
| NOTE | Content for Maintenance of ETFS was sourced from Grant Holiday’s blog post - [What does a well maintained Team Foundation Server look like?](http://blogs.msdn.com/b/granth/archive/2013/10/08/what-does-a-well-maintained-team-foundation-server-look-like.aspx) |

## Keep Current

* Apply all security updates that the [MBSA](http://go.microsoft.com/fwlink/?linkid=20567) tool identifies. ‘Critical’ security updates should be applied within 48 hours – There’s no excuses for missing Critical security updates. They are very targeted fixes for very specific and real threats. The risk of not patching soon enough is often greater than the risk of introducing a regression.
* Be on the latest TFS release.
* Be on the latest edition of SQL that is supported by the TFS version. [Check your SQL version here](http://sqlserverbuilds.blogspot.com/). (TFS 2010 = SQL2008R2**SP3**, TFS 2012.4 = SQL2012 SP1, TFS 2013 = SQL2012 SP1). Be on Enterprise edition for high-scale environments.
* Be on the latest OS release supported by the combination of SQL + TFS. Most likely Windows Server 2008 R2 SP1 or 2012.
* Be on the latest supported drivers for your hardware (NIC & SAN/HBA drivers especially).

## Regular SQL DBA Maintenance

(These are not TFS specific and apply to most SQL servers)

|  |  |
| --- | --- |
| NOTE | The 3M Database Services Team (DBS) performs updates and patches for the database machine operating systems and Microsoft SQL Server. They also perform all database backups, run DBCC Saturday evenings, and rebuild all database indexes Sunday evening. |

* Backup according to the [supported backup procedure](http://msdn.microsoft.com/en-us/library/ms253070(v=vs.100).aspx) (marked transactions, transaction logs, SSRS encryption key and use SQL backup compression and WITH CHECKSUM). It’s important to ensure that transaction log backups run frequently – they allow you to do a point-in-time recovery. It also checkpoints and allows the transaction log file to be reused. If you don’t run transaction log backups (and you’re running in FULL recovery mode, which is the default), then your transaction log files will continue to grow. If you need to shrink them, [follow the advice in this article](http://www.sqlskills.com/blogs/kimberly/8-steps-to-better-transaction-log-throughput/).
* [Run DBCC CHECKDB regularly](http://blogs.msdn.com/b/cindygross/archive/2010/06/13/dbcc-checkdb-database-integrity.aspx) to detect physical/logical [corruption](http://www.sqlskills.com/blogs/paul/how-to-tell-if-the-io-subsystem-is-causing-corruptions/) and have the best chance at repairing and then preventing it in the future. [Ola Hollengren's SQL Server Integrity Check scripts](http://ola.hallengren.com/sql-server-integrity-check.html) are an effective way of doing this. TFS rebuilds its own indexes when needed and it requires marked transactions as per the [supported backup procedure](http://msdn.microsoft.com/en-us/library/ms253070(v=vs.100).aspx))
* Ensure PAGE\_VERIFY=CHECKSUM is enabled to prevent corruption. If it’s not, you have to rebuild indexes after enabling it to get the checksums set.
* Mange data/log file free space and growth.
* Monitor for TempDB free space (<75% available).
* Monitor for long-running transactions (>60 minutes, excluding index rebuilds, backup jobs).
* Monitor table sizes & row counts ([there’s a script here](http://blogs.msdn.com/b/granth/archive/2011/02/12/tfs2010-test-attachment-cleaner-and-why-you-should-be-using-it.aspx), search the page for sp\_spaceused).
* Monitor SQL ERRORLOG for errors and warnings.

## TFS Configuration Optimizations

* At least two application tiers in a load balanced configuration. That gives you redundancy, increased capacity for requests/sec, and two job agents for running background jobs. Ensure that your load balancer configuration has a TCP Idle Timeout of 60 minutes, or that all your clients are running a recent version. [See here for more details](http://blogs.msdn.com/b/granth/archive/2013/02/13/tfs-load-balancers-idle-timeout-settings-and-tcp-keep-alives.aspx).
* Ensure that SQL Page Compression is enabled for up to a 3X storage reduction on tables other than tbl\_Content (if running on SQL Enterprise or Data Center Edition). To enable, it’s the opposite of [KB2712111](http://support.microsoft.com/kb/2712111/en-US).
* Ensure that table partitioning is enabled for version control (if a large number of workspaces and running SQL Enterprise). Not recommended unless you have >1B rows in tbl\_LocalVersion. Contact Customer Support for the script, since it’s an undocumented feature for only the very largest TFS instances (i.e. [DevDiv](http://blogs.msdn.com/b/bharry/archive/2009/07/13/july-09-devdiv-dogfood-statistics.aspx)).
* Check that [SOAP gzip compression is enabled](http://blogs.msdn.com/b/granth/archive/2010/05/09/tfs2010-how-to-enable-compression-for-soap-traffic.aspx) (should’ve been done by TFS 2010 SP1 install. I have seen up to an 80% reduction in traffic across the wire and vastly improved user experience response times for work item operations).
* Disable / monitor the IIS Log files so they don’t fill the drive: %windir%\system32\inetsrv\appcmd set config -section:system.webServer/httpLogging /dontLog:"True"  /commit:apphost
* Change the TFS [App Pool Idle Timeouts](http://technet.microsoft.com/en-us/library/cc771956(v=ws.10).aspx) from 20 minutes to 0 (no idle timeout), and [disable scheduled recycling](http://technet.microsoft.com/en-us/library/cc754494(v=WS.10).aspx) so that you don’t have an app-pool recycle during business hours.
* Implement a TFS Proxy Server and make sure people use it (especially build server), even if no users are remote it reduces the requests/sec load on the ATs. Configure it as the default proxy for our AD site using: tf proxy /add
* [Enable work item tracking metadata filtering](http://blogs.msdn.com/b/visualstudioalm/archive/2012/06/06/how-to-improve-the-performance-of-the-first-connect-to-tfs.aspx) if appropriate.
* Enable SMTP settings and validate that they work. The most common issue here is that a SMTP server won’t relay for the service account that TFS is running as.
* Set TFS’s [NotificationJobLogLevel = 2](http://blogs.msdn.com/b/granth/archive/2009/10/28/tfs2010-diagnosing-email-and-soap-subscription-failures.aspx), so that you get the full errors for any event notification jobs that fail.
* Consider moving application tier file cache to a separate physical and/or logical drive. [See here for how to set a different dataDirectory](http://msdn.microsoft.com/en-us/library/vstudio/ms400793.aspx), but don’t touch any of the other settings. The reason you want it on its own drive, is 1) to separate the I/O load and 2) if you ever have to restore the database to an earlier point in time, you have to clear the cache so that you don’t end up sending the wrong content to users. If you make it a separate drive, you can just do a quick-format which takes seconds. Otherwise you have to delete all the folders/files individually which takes much longer.

## Regular TFS Administrator Maintenance

* Periodically run the [Team Foundation Server Best Practices Analyzer (BPA) tool](http://msdn.microsoft.com/en-us/library/ee248630(v=vs.100).aspx) that is included with the [Team Foundation Server Power Tools](http://visualstudiogallery.msdn.microsoft.com/b1ef7eb2-e084-4cb8-9bc7-06c3bad9148f). It gets continuously updated with rules to detect common configuration problems and issues that lead to TFS support calls.
* Periodically review the [activity log and job monitoring sections](http://blogs.msdn.com/b/granth/archive/2013/02/13/tfs2012-new-tools-for-tfs-administrators.aspx) of the TFS “Operations Interface” at <http://tfs.mmm.com:8080/tfs/_oi/>
* Check for heavy users using Execution Time reports from the [Performance report pack](http://blogs.msdn.com/b/granth/archive/2009/02/03/announcing-tfs-performance-report-pack.aspx) and tbl\_Command in the TPC databases.
* Check build retention policies to ensure stale build logs and results and drops are being cleaned up.
* Clean-up tbl\_Content by running the Test Attachment Cleaner tool. ([Terje has a great article on how to do this](http://geekswithblogs.net/terje/archive/2011/11/15/guide-to-reduce-tfs-database-growth-using-the-test-attachment.aspx))
* Clean-up unused workspaces and shelvesets. The [Workspace](http://www.attrice.info/images/workspace_sk_screen.gif) and [Shelveset](http://www.attrice.info/images/shelveset1_sk_screen.gif) sidekicks from the [Team Foundation Sidekicks](http://www.attrice.info/cm/tfs/) are great for this. [Remember, its "tf workspace /delete", not "tf workspaces /remove"](http://blogs.msdn.com/b/granth/archive/2008/10/14/what-s-the-difference-between-tf-workspace-delete-and-tf-workspaces-remove.aspx)
* Clean-up unused work item tracking fields ([witadmin listfields /unused](http://msdn.microsoft.com/en-us/library/vstudio/dd236909.aspx)).
* Check Cube and Warehouse health using [Admin report pack](http://blogs.msdn.com/b/granth/archive/2010/07/12/administrative-report-pack-for-team-foundation-server-2010.aspx).
* Check work item tracking metadata size, and clean up constants / global list sizes (can’t do this without a script in 2010, automatic cleanup in 2012.2). Look at the file/folder sizes in %localappdata%\Microsoft\Team Foundation\4.0\Cache. The files are named things like ‘ruleconstants1.curcache’, and more files larger metadata. There have been a lot of improvements in TFS2012 + TFS2013 around controlling the size of this metadata, but it can still come unwieldy and need manual intervention. [See this MSDN article for more background on the structure](http://msdn.microsoft.com/en-us/library/aa974183(v=vs.80).aspx).
* Evaluate work item tracking fields that are set to reportingtype=’dimension’. Do they really need to be in the cube? If not, set them to ‘detail’ and [Query them using the Relational Warehouse](http://blogs.msdn.com/b/granth/archive/2010/05/09/tfs2010-how-to-query-work-items-using-sql-on-the-relational-warehouse.aspx) (Tfs\_Warehouse).
* Evaluate if you have custom work item tracking fields that are used in many work item queries and would benefit from being indexed. ([witadmin indexfield /index:on](http://msdn.microsoft.com/en-us/library/vstudio/dd236909.aspx)).
* Check tbl\_EventSubscriptions for invalid email and SOAP subscriptions. Use TFS web access as an admin to view ‘All Alerts’ and delete them. (<http://yourserver:8080/tfs/YourCollection/YourProject/admin/_alerts>)

[René's blog post Top 10 of things every TFS Administrator should do](http://osnabrugge.wordpress.com/2013/03/28/top-10-of-things-every-tfs-administrator-should-do/) also covers some other things.

## Regular TFS Build Administrator Maintenance

This is a community contribution from Jesse on regular maintenance around Build Agents, Symbols and Drop shares:

* Monitor disk space usage on the build agents
* Monitor queue time for the builds, spin up additional agents if available and needed
* Clean up the \Builds folder on build agents to remove old workspaces
* Backup the Symbols share regularly
* Backup the Builds Drop folder regularly
* Exclude \Builds, \Symbols, \Drop, Team Explorer Cache from Anti-virus real time scanning

## Exit Procedures

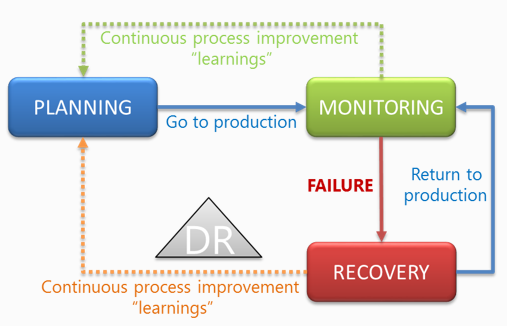
The checklist below is relevant when a user rolls-off a project or otherwise stops using the server:

* Check for locked or checked out files
* Check for queued builds
* Check for remaining workspaces
* Check for work items assigned to this account
* Check for Builds, Source control items that are exclusively owned by the user
* Back up their personal work item queries by exporting them all to WIQL

# Disaster Recovery

Disaster recovery (DR) is the process needed to recover infrastructures and services after being disrupted due to a man-made and natural disaster. Both are very difficult to predict and prevent, making it important for organizations to define, implement and continuously evaluate processes, procedures and policies to mitigate the risk for critical infrastructures and services.

Disaster recovery planning typically encompasses **preventive**, **corrective** and **detective** measures.



Disaster Recovery plans must be created to cover recovery from known issues that may arise on the ETFS Service. Following are Disaster Recovery plans for possible known issues.

|  |  |
| --- | --- |
| NOTE | Content for Disaster Recovery in this guide is directly referenced from the Team Foundation Server Planning Guide by the ALM Rangers, and tailored to the install at 3M. The latest version can be found at: <http://vsarplanningguide.codeplex.com/> |

## Avoidance

Disaster Recovery plans must be created to cover recovery from known issues that may arise on the ETFS Service. Outlined below are Disaster Recovery plans that must be created and tested.

Although this guide mentions the possible DR Strategies for TFS, it focuses on detective measures to prevent an avoidable disaster recovery caused by infrastructure and solution degradation. It’s imperative that you seriously consider disaster recovery strategies, because even the most pro-active and best detective measures cannot guard you against man-made or natural disasters.

Tools that help you troubleshoot and monitor – ETFS leverages all of the listed tools.

| Tool | Description | Reference |
| --- | --- | --- |
| **Microsoft Baseline Security Analyzer** | This tool will help you identify missing security updates and common security misconfigurations in Windows, SQL Server, and IIS. Used regularly, this tool helps increase system reliability. | * [How To: Use the Microsoft Baseline Security Analyzer](http://msdn.microsoft.com/en-us/library/ff647642.aspx) [[4]](#footnote-4) * [Microsoft Baseline Security Analyzer 2.2 (for IT Professionals)](http://www.microsoft.com/en-us/download/details.aspx?id=7558) [[5]](#footnote-5) |
| **Microsoft TFS 2010 Best Practices Analyzer** | This tool collects TFS data from your environment and produces a comprehensive ‘best practice’ rules report. Use this tool before installing or upgrading TFS, thereafter on a regular basis, and while troubleshooting. | * [Best Practices Analyzer Tool for Team Foundation Server](http://msdn.microsoft.com/en-us/library/ee248630(v=vs.100).aspx) [[6]](#footnote-6) * [Team Foundation Server Power Tools December 2011 (TFS BPA download)](http://visualstudiogallery.msdn.microsoft.com/c255a1e4-04ba-4f68-8f4e-cd473d6b971f) [[7]](#footnote-7) |
| **SCOM TFS Monitoring Management Pack** | Proactive and reactive monitoring of TFS can be done by using the Microsoft System Center Operations Manager (SCOM) together with a Management Pack designed for TFS.  Feature Summary (from download link below)  The monitoring provided by this management pack includes availability and configuration monitoring, performance data collection, and default thresholds. You can integrate the monitoring of TFS components into your service-oriented monitoring scenarios.   * Auto discovery of TFS components. * Implements a containment hierarchy, reflecting logical architecture of the Product. * Implements a proper health model using Monitors. * Contains tasks, diagnostic and recovery for certain failures. * Provides events that indicate service outages. * Provides alerts that show configuration issues and connected data source changes. * Verification that all dependent services are running. * Triggers targeted running of BPA against TFS Servers from Operator Console in TFS 2008 and 2010. | * TFS2012: [Visual Studio 2012 Team Foundation Server Monitoring Management Pack](http://www.microsoft.com/en-us/download/details.aspx?id=35773) [[8]](#footnote-8) * TFS2010: [Visual Studio 2010 Team Foundation Server Monitoring Management Pack](http://www.microsoft.com/en-us/download/details.aspx?id=6325) [[9]](#footnote-9) * TFS2008: [Visual Studio Team System 2008 Team Foundation Server Management Pack for System Center Operations Management 2007](http://www.microsoft.com/en-us/download/details.aspx?id=14720) [[10]](#footnote-10) |
| **Performance Analysis of Logs (PAL) Tool** | Reads a performance monitor counter log and analyzes it using known thresholds. It’s a great tool to use when you need to investigate (potential) performance issues in your environment but are not familiar with the various performance counters available. | * [Performance Analysis of Logs (PAL) Tool](http://pal.codeplex.com/) [[11]](#footnote-11) |
| **Reports** | Reports (based on SQL Server Reporting Services) that can be used to evaluate and get a picture of the status of some of the internals of your TFS environment. Download the administration reports and upload them to your TFS Reporting Services environment by following the instructions found in the links. | * Report pack: [TFS2010: Warehouse and Job Service Administrator Reports](http://blogs.msdn.com/b/granth/archive/2010/02/07/tfs2010-warehouse-and-job-status-reports.aspx) [[12]](#footnote-12) * Report pack: [Administrative Report Pack for Team Foundation Server 2010](http://blogs.msdn.com/b/granth/archive/2010/07/12/administrative-report-pack-for-team-foundation-server-2010.aspx) [[13]](#footnote-13) * Blog: [Monitoring the TFS Data Warehouse - FAQ](http://blogs.msdn.com/b/granth/archive/2010/07/12/monitoring-the-tfs-data-warehouse-faq.aspx) [[14]](#footnote-14) * Blog: [Data Driven Subscription Reporting a la Grant](http://blogs.msdn.com/b/willy-peter_schaub/archive/2011/01/31/tfs-integration-platform-data-driven-subscription-reporting-a-la-grant.aspx) [[15]](#footnote-15) |

## Performance Counters worth monitoring

The section **Working with Team Foundation Server Performance Counters** has a complete list of performance counters that can determine the health of your ecosystem. The following performance counters and the specified thresholds should be monitored as part of your DR avoidance strategy.

### Processor utilization

| Counter | Threshold |
| --- | --- |
| % Processor Time | Should be less than 80% (Minor peaks over 80% are OK) |
| % Privileged Time | Should be less than 25% of total processor time |

### Memory utilization

| Counter | Threshold |
| --- | --- |
| Available MBytes | Should be greater than10% of total RAM |
| Pages/sec | Should be less than 2,500 pages per second |

### Disk

| Counter | Threshold |
| --- | --- |
| Avg. Disk Read/sec | Should be less than 10-25 ms |
| Avg. Disk Write/sec | Should be less than 10-25 ms |
| Logical disk/Free megabytes | System Partition greater than 500 MB (10%).  Non system Partition greater than 2 000 MB (10%)[[16]](#footnote-16) |

### Network

| Counter | Threshold |
| --- | --- |
| Bytes Total/sec | Network Utilization should be less than 40% of the total bandwidth and anything above 65% is critical.  This is how you calculate % Network Utilization: [[17]](#footnote-17)  **((Bytes Total /Sec \* 8)/ CurrentBandwidth) \* 100** |
| Packets Outbound Errors | Should be 0 |
| Output Queue Length | Should be less than 1.  A value greater than or equal to 1 is a sign of packets queuing on the NIC. |

### Web Performance

|  |  |
| --- | --- |
| Counter | Threshold |
| ASP.NET Applications(\*)\Requests In Application Queue | Should be as low as possible aiming for 0 |
| ASP.NET Applications(\*)\Request Execution Time | Benchmark your environment when performance is good, to determine the ideal threshold (as low as possible) for your environment. |
| TFS Services\Average Response Time |
| TFS Version Control\Average Response Time |

### System

| Counter | Threshold |
| --- | --- |
| Context Switches/sec | Should be less than 5000 per processor and more than 10000/processor indicates a constraint |
| Paging File(\*)\% Usage | Should be less than 70% |
| Total Cache Hits | Benchmark your environment when performance is good, to determine the ideal threshold (as high as possible) for your environment. |

### SQL server

| Counter | Threshold |
| --- | --- |
| Buffer Manager\Page reads/sec | Should be less than 90 |

### Reports for Monitoring TFS health

|  |  |
| --- | --- |
| NOTE | Refer to **Authoring Reports** in the Team Foundation Server Planning Guide for example reporting walkthroughs |

| Report | Description | Purpose / Reference Link |
| --- | --- | --- |
| Average Build Duration | This report provides details of the average time taken by successful builds. This will help in identifying and monitoring the build information in tabular format. | Average duration for successful builds per build definition. |
| Blocked Field Changes | This report shows blocked fields that have conflicts over all Team Project Collections. | Conflicts across all TPCs for fields being blocked. [Administrative Report Pack for Team Foundation Server 2010](http://blogs.msdn.com/b/granth/archive/2010/07/12/administrative-report-pack-for-team-foundation-server-2010.aspx) [[18]](#footnote-18). |
| Build agent hourly distribution | This report provides the builds run per hour for a particular TFS Project. | Hourly distribution of the usage of the build agents. |
| Build server summary | This report will provide the build server usage details and details on the number of builds run and their durations. | Statistics on a build server. |
| Cube status | This report provides the following information:   * How long is cube processing taking? * How much time elapses between processing jobs? * How often do the processing jobs run? * Do errors occur when the cube is processed? | Used to monitor Analysis Cube processing that occurs on a regular schedule. [Administrative Report Pack for Team Foundation Server 2010](http://blogs.msdn.com/b/granth/archive/2010/07/12/administrative-report-pack-for-team-foundation-server-2010.aspx) [[19]](#footnote-19). |
| Execution time for user | This report provides a visualization of the load by total execution time on the server from and provides details on the users who are putting the biggest load on the server. | Breakdown of user execution time. |
| Execution time summary | This report provides a visualization of the load by total execution time on the server from two axes: users and commands.  You can use this report when you want to know:   * Which commands account for the largest load on the server? * Which tools or users are putting the biggest load on the server? | Breakdown of execution time. |
| Job status | The Job status report shows the job definitions for the instance and the interval they’re set to run on. This is useful for checking to see if a job has somehow been disabled or changed. The report also shows the Job History. | Job definitions for the instance and the interval they’re set to run on from [Warehouse and Job Service Administrator Reports](http://blogs.msdn.com/b/granth/archive/2010/02/07/tfs2010-warehouse-and-job-status-reports.aspx) [[20]](#footnote-20). |
| Reportable fields / Queued fields changes | The Reportable Fields report shows all reportable fields in the deployment of TFS. Administrators of Team Projects can use this report before they add a reportable field or change the properties of an existing field to prevent potential schema-merge conflicts. It lists fields across all collections, including any fields that are blocked. The Queued Filed Changes report shows field changes that are queued behind the blocked changes. | [Administrative Report Pack for Team Foundation Server 2010](http://blogs.msdn.com/b/granth/archive/2010/07/12/administrative-report-pack-for-team-foundation-server-2010.aspx) [[21]](#footnote-21). |
| Server status - historical performance trends | This report serves as a summary of the average response time for two of the TFS subsystems: Work Item Tracking and Version Control.  You can use this report when you want to know:   * How long are users, on average, waiting for a subsystem to process their request. * Which days of the week are the most critical when it comes to performance. | Performance monitoring. |
| Server status - recent performance trends | This report provides more granularity about the performance of the server. The reports start with a view of the server average response time, looking at the entire picture instead of response time broken down by subsystem. This is followed by charts about version control downloads and average response time distributions for the same time period.  Use this report when you want to know:   * The correlation between degraded server performance and average response times by subsystem. * How a large number of downloads affects overall server performance. * An overall health indicator of the server. | Performance monitoring. |
| Server status - Source control request queue | This report provides information about:   * Whether a request blocked source control operations and for how long. * How healthy the performance of version control on this hardware is. | Performance monitoring. |
| Server Status - Top users bypassing proxies | This report allows administrators a view into which users are not complying with internal guidelines around proxy usage, which decreases overall server performance. | Users not using the proxy server. |
| TFS usage | This report provides information on the total number of users using the farm. This will help monitor the load on server. | Number of users using a TPC. |
| Warehouse status | The warehouse report provides a quick an easy way to find out if an incremental or full analysis processing is in progress. It also shows any errors (like warehouse schema conflicts) in the ‘Last Run’ column. This report is also useful after an upgrade or when the warehouse needs to be rebuilt manually. It shows each of the data adapter sync jobs for each collection and their current status. During normal operation, these will run very quickly as data changes in the operational stores, and probably always appear “Idle.” It will also show any errors from previous job executions in the ‘Last Run’ column. | [Warehouse and Job Service Administrator Reports](http://blogs.msdn.com/b/granth/archive/2010/02/07/tfs2010-warehouse-and-job-status-reports.aspx) [[22]](#footnote-22). |
| Average response time | This report provides the average response for requests made by users. This report will help in understanding the performance of the farm. As a standard, a lower average response time signifies a good health of the farm. | Performance monitoring. |
| SQL connection failures/sec | This report provides the details of the connectivity issues between the Application and Data tiers. As a standard, a lower number of failures signifies good farm health. | [Report to Check the SQL issues](http://blogs.msdn.com/b/granth/archive/2008/11/07/querying-perfmon-data-from-sql.aspx) [[23]](#footnote-23) |
| CPU utilization | This report provides the details of the CPU utilization of the Application tier. As a standard, a lower number of CPU utilization signifies that the system is not under load and can support additional users. | Monitor CPU Utilization on App and Data tier |
| Available memory | This report provides details of the RAM utilization of the application and Data tier. This report can be used to monitor the free RAM in the servers, which is important for smooth operation of the farm. | SQL and TFS App tier memory usage |
| Requests/second | This report provides details on the user load on the system. A higher RPS signifies a higher load on the system. | Performance monitoring. |

## Planning

Information about preparing ETFS for disasters, which is essential to recovering from a disaster, must be shared in an effective and timely manner.

## Complete Failure (fire, natural disaster)

The system must provide the means to recover from a complete failure of the ETFS Service.

|  |  |
| --- | --- |
| SYMPTOMS | The service is completely non-responsive, no machines can be reached and/or respond. Users from all locations cannot access the ETFS Service. |
| NOTE | ETFS has AT and DT machines load balanced across both 3M data centers. Therefore, a Complete Failure would entail the loss of both 3M data centers. | |

ETFS runs in both 3M data centers. If both data centers are unavailable and/or incapacitated for a lengthy period of time, the ETFS team will work with 3M IT to evaluate the situation and provide a working system as soon as possible.

## Data Tier (DT) Failure

If the Data Tier fails, outline the plan to recover.

|  |  |
| --- | --- |
| SYMPTOMS | The disaster could be a physical hardware failure or it could be data corruption. Symptoms include error messages that indicate data corruption, hardware related error messages on the hosting server, or an inability to connect to any of the TFS databases. |
| NOTE | The Data Tier for ETFS is running on physical hardware in a 2 node cluster configuration, i.e., both servers must fail for complete DT failure. If all DT communications is lost, and network connectivity is not the issue, contact 3M IT Database Services for diagnosis. The below procedures are left here for reference, as a reconnection to the DT may be necessary. | |

### DT Recovery – Single Server Restoration, New Hardware

Use the following checklist as guidance when all server components are deployed on a single physical server.

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Description | Reference Link(s) | Done |
| 1 | Prepare the new hardware. | See [Prepare the New Hardware](http://msdn.microsoft.com/en-us/library/hh529825.aspx)[[24]](#footnote-24). | ⃣ |
| 2 | Restore the databases. | See [Restore the Databases](http://msdn.microsoft.com/en-us/library/hh529829.aspx)[[25]](#footnote-25). | ⃣ |
| 3 | Install and configure TFS | See [Install and configure Team Foundation Server](http://msdn.microsoft.com/en-us/library/hh529828.aspx)[[26]](#footnote-26). | ⃣ |
| 4 | Reconnect services and users. | See [Reconnect Services and Users](http://msdn.microsoft.com/en-us/library/hh529824.aspx)[[27]](#footnote-27). | ⃣ |

Table 2 – Walkthrough: single-server restoration

### DT Recovery – Restore data to the same location

Use the following checklist as guidance for restoring TFS data to the same hardware. This same procedure may be used for either a single-server or multiple-server deployment.

| Step | Description | Reference Link(s) | Done |
| --- | --- | --- | --- |
| 1 | Verify permissions. | See [Required Permissions](http://msdn.microsoft.com/en-us/library/ms252458.aspx#RequiredPermissions)[[28]](#footnote-28). | ⃣ |
| 2 | Stop services. | See [Stop Services that Team Foundation Server Uses](http://msdn.microsoft.com/en-us/library/ms252458.aspx#StopServices)[[29]](#footnote-29). | ⃣ |
| 3 | Restore TFS databases. | See [Restore Team Foundation Databases](http://msdn.microsoft.com/en-us/library/ms252458.aspx#RestoreDatabases)[[30]](#footnote-30). | ⃣ |
| 4 | Update service accounts. | See [Update All Service Accounts](http://msdn.microsoft.com/en-us/library/ms252458.aspx#UpdateAccounts)[[31]](#footnote-31). | ⃣ |
| 5 | Rebuild the warehouse. | See [Restore the Warehouse](http://msdn.microsoft.com/en-us/library/ms252458.aspx#RebuildDataWarehouse)[[32]](#footnote-32). | ⃣ |
| 6 | Restart TFS services. | See [Restart Services that Team Foundation Server Uses](http://msdn.microsoft.com/en-us/library/ms252458.aspx#RestartServicesForTFS)[[33]](#footnote-33). | ⃣ |
| 7 | Refresh client cache. | See [Refresh the Caches on Client Computers](http://msdn.microsoft.com/en-us/library/ms252458.aspx#RefreshDataCache)[[34]](#footnote-34). | ⃣ |

Table 3 – Walkthrough: Restore Data to the same location, multiple servers

### DT Recovery – Restore data to a different location

Use the following checklist as guidance for restoring TFS data on multiple servers to new hardware.

| Step | Description | Reference Link(s) | Done |
| --- | --- | --- | --- |
| 1 | Verify permissions. | See [Required Permissions](http://msdn.microsoft.com/en-us/library/ms252516.aspx#RequiredPermissions)[[35]](#footnote-35). | ⃣ |
| 2 | Install and configure SQL Server. | See [Install and Configure SQL Server on new hardware](http://msdn.microsoft.com/en-us/library/ms252516.aspx#InstallAndConfigure)[[36]](#footnote-36). | ⃣ |
| 3 | Stop services. | See [Stop Services that Team Foundation Server Uses](http://msdn.microsoft.com/en-us/library/ms252516.aspx#StopServices)[[37]](#footnote-37). | ⃣ |
| 4 | Restore Team Foundation databases. | See [Restore Team Foundation Databases](http://msdn.microsoft.com/en-us/library/ms252516.aspx#RestoreDB)[[38]](#footnote-38). | ⃣ |
| 5 | Redirect SharePoint. | See [Redirect SharePoint Products to the New Location of the Content Database](http://msdn.microsoft.com/en-us/library/ms252516.aspx#RedirectSPT)[[39]](#footnote-39). | ⃣ |
| 6 | Modify Reporting Service configuration. | See [Change the Database in Reporting Services Configuration Manager](http://msdn.microsoft.com/en-us/library/ms252516.aspx#ChangeSQLRS)[[40]](#footnote-40). | ⃣ |
| 7 | Prepare SQL Server. | See [Prepare the New SQL Server or Instance for Team Foundation Server](http://msdn.microsoft.com/en-us/library/ms252516.aspx#ConfigNewSQL)[[41]](#footnote-41). | ⃣ |
| 8 | Modify the database owner. | See [Change the Ownership of the Restored Databases](http://msdn.microsoft.com/en-us/library/ms252516.aspx#ConfigNewSQL)[[42]](#footnote-42). | ⃣ |
| 9 | Redirect TFS to restored Project Collections. | See [Redirect Team Foundation Server to Remote Collection Databases](http://msdn.microsoft.com/en-us/library/ms252516.aspx#RedirectSQLRTPC)[[43]](#footnote-43). | ⃣ |
| 10 | Update service Accounts. | See [Update All Service Accounts](http://msdn.microsoft.com/en-us/library/ms252516.aspx#UpdateNetworkService)[[44]](#footnote-44). | ⃣ |
| 11 | Register restored databases. | See [Register the Location of the Restored Databases](http://msdn.microsoft.com/en-us/library/ms252516.aspx#RegisterDB)[[45]](#footnote-45). | ⃣ |
| 12 | Rebuild the warehouse. | See [Restore the Warehouse](http://msdn.microsoft.com/en-us/library/ms252516.aspx#RestoreWarehouse)[[46]](#footnote-46). | ⃣ |
| 13 | Clear the Application tier server Cache. | See [Clear Data Cache on Server](http://msdn.microsoft.com/en-us/library/ms252516.aspx#ClearData)[[47]](#footnote-47). | ⃣ |
| 14 | Restart TFS services. | See [Restart Services that Team Foundation Server Uses](http://msdn.microsoft.com/en-us/library/ms252516.aspx#RestartServices)[[48]](#footnote-48).. | ⃣ |
| 15 | Clear client cache. | See [Refresh the Caches on Client Computers](http://msdn.microsoft.com/en-us/library/ms252516.aspx#RefreshDataCache)[[49]](#footnote-49). | ⃣ |

Table 4 – Walkthrough: Restore data to different location, multiple servers

## Application Tier (AT) Failure

Recovery plan if an Application Tier machine fails.

|  |  |
| --- | --- |
| NOTE | Sometimes it’s easier to switch to a new Application tier than to fix a corrupt Application tier. |

Implementing a new Application-tier server is recommended in case of hardware failures on disks or software issues like viruses. Because the Application tier holds just temporary cache data files, you **don´t lose** data, with the exception of log files, when you start over on a new system.

It is recommended to always know where the media to rebuild the Application Tier is. This reduces the time of getting your environment back up and running. Having the pressure of “where’s the media” is the something you should take out of the equation.

The following walkthrough summarizes the implementation of a new Application tier (AT) server. It’s assumed that the server is a dedicated AT server and that it is not hosting other servers such as Reporting or Build services.

| Step | Description | Reference Link(s) | Done |
| --- | --- | --- | --- |
| 1 | Open ticket with IT Infrastructure – is a rollback/restore of the VM possible |  | ⃣ |
| 2 | Verify the system requirements and server considerations. | See [System Requirements for Team Foundation Server](http://msdn.microsoft.com/en-us/library/vstudio/dd578592.aspx) [[50]](#footnote-50). | ⃣ |
| 3 | Re-install Team Foundation Application tier. | See [Restore an Application-Tier Server](http://msdn.microsoft.com/en-us/library/dd793167.aspx) [[51]](#footnote-51). | ⃣ |
| 4 | Update the Team Foundation Application tier to pre-disaster patch level. | See [Latest Updates for Team Foundation Server 2012](http://social.msdn.microsoft.com/Forums/en-US/tfsadmin/thread/33034618-778d-423c-9cca-1b4b6edd71fd) [[52]](#footnote-52). | ⃣ |
| 5 | Configure an isolated and manageable group of users who were impacted by the failure and verify that TFS is available and fully functional – connect via the machine name vs. the NLB VIP. Verify AT is functional. |  | ⃣ |
| 6 | Verify available in NLB VIP |  | ⃣ |
| 7 | Inform affected users (if any), and close support ticket. |  | ⃣ |

## Proxy Failure

Recovery from a failing Proxy machine.

|  |  |
| --- | --- |
| SYMPTOMS | A dedicated group of users has issues on working with TFS Source Control; the impact could range from slow source control responses to an unreachable TFS. |

### DR Investigation - Investigation Walkthrough

| Area | Solution | Involved personas | Checked |
| --- | --- | --- | --- |
| Bypass proxy in use | Questions to ask …   * Do all reported symptoms belong to user(s) using a proxy? * Did they all use the same proxy? * Do they all come from the same location?   Deactivate the use of proxy on one of the reported clients (in Visual Studio go to Tools, Options, Source Control, and then Visual Studio Team Foundation Server). If the problem seems to be solved by this, you can instruct all the users to bypass the proxy until issue is resolved. | TFS Expert, End user | ⃣ |
| Service Account | Confirm the password still works and the proxy service account is not disabled. If it is disabled, enable it. If password has changed, reconfigure the proxy and retype the password. | TFS Expert, Active Directory Administrator | ⃣ |
| Hard Disk | Check if hard disk usage is below 10% of available disk space on the drive.   * On virtual machine: increase disk. * On physical: mount bigger disk, reconfigure proxy to use the new partition. | TFS Expert, Infrastructure Administration | ⃣ |
| Hardware, Other | Proxy system freezes or acts slowly.  If the proxy server is running on outdated hardware, check hard disk health and re-install it on new and more powerful hardware. See [Hardware Recommendations](http://msdn.microsoft.com/en-us/library/vstudio/dd578644.aspx) [[53]](#footnote-53) for the recommended hardware. | TFS Expert, Infrastructure Administration | ⃣ |
| Firewall, intrusion detection systems | Check:   * If new firewall was installed or activated. * If Port 443 and/or 8081 are free to use. Not only on the proxy server itself, also on infrastructure around. * Use [portqry](http://www.microsoft.com/en-us/download/details.aspx?id=17148) to confirm if the port is open for connectivity to the TFS server. For example: * portqry –n <tfsservername> -e 443 | TFS Expert, Security Administrator | ⃣ |
| Antivirus | Is there antivirus software installed on the proxy? Some antivirus tools block access to suspect files. Check the antivirus log file for recent virus activities. | TFS Expert, Security Administrator | ⃣ |
| Developers | Developers report receiving a proxy server error message in the Visual Studio output window that they cannot connect to the proxy server. Determine if the proxy server is accessible remotely via the proxy statistics URL. | TFS Expert, Infrastructure Admin | ⃣ |

### DR Recovery – Re-Install Team Foundation Proxy

Sometimes it’s easier to install a new proxy server than it is to fix it, especially when there’s a hardware failure or a software issues like a virus. Because the proxy just holds a copy of required files, you **don´t lose** any data when you start over on a new system. See the following table for a setup quick start.

| Step | Description | Reference Link(s) | Done |
| --- | --- | --- | --- |
| 1 | Verify the system requirements and server considerations. | See [How to: Install Team Foundation Proxy and Set Up a Remote Site](http://msdn.microsoft.com/en-us/library/vstudio/ee248710.aspx) [[54]](#footnote-54)  See **Proxy Server Considerations**, page 21. | ⃣ |
| 2 | Re-install Team Foundation Proxy. |  | ⃣ |
| 3 | Update the Team Foundation Proxy server to the same patch level as the Application tier. |  | ⃣ |
| 4 | Configure an isolated and manageable group of users who were impacted by the failure and verify that proxy failure symptoms are resolved. |  | ⃣ |
| 5 | Re-configure all users who were affected by the failure to use the new Team Foundation Proxy. |  | ⃣ |

## Build Services Failure

Recovery steps when a build or build machine fails.

|  |  |
| --- | --- |
| SYMPTOMS | A group of developers has an issue with builds when code is checked in to TFS Build Server. |

### DR Investigation - Walkthrough

| Area | Solution | Involved personas | Checked |
| --- | --- | --- | --- |
| End user Visual Studio | Users reports that after checking in code from Visual Studio the build fails intermittently.   * Check if build server is running. It could be down. * If you can log in to the server, check if the TFS Admin Console accessible on the server. The log should be reviewed for changes that adversely affected the server. * Check if the Build Controller is running, * Check if the Build Agent is running, | TFS Expert,  End user | ⃣ |
| Service Account | Confirm that the password still works. If it is disabled, enable it. If password has changed, reconfigure build and retype the password. | TFS Expert, Active Directory Administrator | ⃣ |
| Enable Logging | Enable logging on the build sever to get additional diagnostics information.  Create a config file with the name “TFSBuildServiceHost.exe.config” and paste the following configuration information in it:  <configuration>  <system.diagnostics>  <switches>  <add name="BuildServiceTraceLevel" value="4"/>  </switches>  <trace autoflush="true" indentsize="4">  <listeners>  <add name="myListener" type="Microsoft.TeamFoundation.TeamFoundationTextWriterTraceListener,Microsoft.TeamFoundation.Common, Version=10.0.0.0, Culture=neutral, PublicKeyToken=b03f5f7f11d50a3a" initializeData="C:\TFSBuildService Logs\TFSBuildServiceHost.exe.log" />  <remove name="Default" />  </listeners>  </trace>  </system.diagnostics>  </configuration>  For TFS 2012 Build Server, drop the file in this location (if you installed to the default location): C:\Program Files\Microsoft Team Foundation Server 11.0\Tools | TFS Expert | ⃣ |
| Hard Disk | Check if hard disk space is low.   * On virtual machine: increase disk. * On physical: mount bigger disk and reconfigure the build server to use the new partition. | TFS Expert, Infrastructure Administration | ⃣ |
| Hardware, Other | Build server system freezes or responds slowly.  If the build server is running on outdated hardware, check hard disk health and re-install it on new and more powerful hardware. | TFS Expert, Infrastructure Administration | ⃣ |
| Antivirus | Is there antivirus software installed on the proxy? Some antivirus tools block access to suspect files. Check the antivirus log file for recent virus activities. | TFS Expert, Security Administrator | ⃣ |
| Services | Builds won’t run. Check if Remote Connections Access Manager service is running. Company policies might not allow the Telephony service to run. This is a problem because the RCMA service depends on Remote Connections Access Manager service. | TFS Expert, Security Administrator, Infrastructure Administration | ⃣ |

### DR Recovery – Re-Install Team Foundation Build Walkthrough

#### Build controller and agent on the same server

| Step | Description | Reference Link(s) | Done |
| --- | --- | --- | --- |
| 1. | Review the network topology. |  | ⃣ |
| 2. | Confirm that there is a full backup of the TFS build server. |  | ⃣ |
| 3. | Restore the Build server from the server backup. |  | ⃣ |
| 4. | Re-established the connection to the TFS Application tier Server. |  | ⃣ |
| 5. | Make sure that the build controller starts on the TFS build server. |  | ⃣ |
| 6. | Build controller and agent on the same server. |  | ⃣ |
| 7. | Make sure the build agent(s) starts on the TFS build server. |  | ⃣ |
| 8. | Run the Best Practice Analyzer (BPA) on the TFS environment. |  | ⃣ |
| 9. | If the server cannot be resorted from a backup then the OS has to be installed. |  | ⃣ |
| 10. | Install the TFS build server software and configure it to connect to the TFS App Server. | [How to: Install Team Foundation Build and Set Up](http://msdn.microsoft.com/en-US/library/vstudio/ms181712.aspx) [[55]](#footnote-55) | ⃣ |
| 11. | Run the Best Practice Analyzer (BPA). | Best Practice Analyzer is part of the Power tool. [To Install Power Tools](http://visualstudiogallery.msdn.microsoft.com/b1ef7eb2-e084-4cb8-9bc7-06c3bad9148f) [[56]](#footnote-56) | ⃣ |

#### One TFS Build Controller and multi-Server TFS Build agents

| Step | Description | Reference Link(s) | Done |
| --- | --- | --- | --- |
| 1. | Review the network topology. |  | ⃣ |
| 2. | If the TFS build controller failed:   * Confirm that there is a full backup of the TFS build controller server. * Restore the TFS Build Controller server from the server backup. * Re-established the connection to the TFS App Server. * Re-established the connection to the TFS Build Agents server. * Make sure the Build Controller starts on the TFS build server. * Make sure that the Build agent(s) starts on the TFS build server. * Run the BPA on the TFS environment. | [How to: Install Team Foundation Build and Set Up](http://msdn.microsoft.com/en-US/library/vstudio/ms181712.aspx) [[57]](#footnote-57)  Best Practice Analyzer is part of the Power tool. [To Install Power Tools](http://visualstudiogallery.msdn.microsoft.com/b1ef7eb2-e084-4cb8-9bc7-06c3bad9148f) [[58]](#footnote-58) | ⃣ |
| 3. | If the TFS build agents failed   * Confirm that there is a full backup of the TFS build agent server. * Restore the failed TFS Build agent server from the server backup. * Re-established the connection to the TFS Build controller server. * Make sure that the Build agent(s) starts on the TFS build server. * Run the BPA on the TFS environment. | [How to: Install Team Foundation Build and Set Up](http://msdn.microsoft.com/en-US/library/vstudio/ms181712.aspx)  Best Practice Analyzer is part of the Power tool. [To Install Power Tools](http://visualstudiogallery.msdn.microsoft.com/b1ef7eb2-e084-4cb8-9bc7-06c3bad9148f) | ⃣ |

## SharePoint Failure

|  |  |  |
| --- | --- | --- |
| SYMPTOMS | A dedicated group of users—or all users—have issues with Team Portals; the impact could range from slow responses to an unreachable SharePoint Server. This can result in various errors. | |
| NOTE | The attempt to upload a file that exceeds the maximum upload size will also result in an error or a timeout. This task isn´t covered in this guide. For additional information, consult the disaster recovery strategy sources of SharePoint on <http://technet.microsoft.com/en-us/library/ff628971.aspx> for SharePoint Server 2013. |

### DR Investigation – Investigation Walkthrough

| Area | Solution | Involved personas | Checked |
| --- | --- | --- | --- |
| Error Determination | Go to the SharePoint Central Administration and check for the first error(s). | TFS / SharePoint Expert | ⃣ |
| Security | Question to ask….   * Do all reported symptoms belong to a team or a special group like “testers”?   Check the security settings for this group and reconfigure it if needed. | TFS / SharePoint Expert  Administrator  (Project Administrator) | ⃣ |
| SharePoint  Service Account | Confirm that the password still works and that the SharePoint service account is not disabled. If it is disabled, enable it. If the password has changed, reconfigure SharePoint and retype the password. | TFS / SharePoint Expert  Active Directory Administrator | ⃣ |
| Database Connection and SQL Server | Connect to the SharePoint database via Microsoft SQL Server Management Console, and check the SQL server health: CPU, memory, and disk usage. | TFS Expert, SQL Server Administrator | ⃣ |
| Firewall, intrusion detection systems | Check:   * If a new firewall was installed or activated. * Some necessary ports are 1434 TCP and 2383 UDP, 137,138,139, 17012 TCP. Not only on the SharePoint server itself, also on infrastructure around. [Plan security hardening for SharePoint 2013](http://technet.microsoft.com/en-us/library/cc262849.aspx) [[59]](#footnote-59) for more information on ports and security hardening of SharePoint.   If applicable, shut down the firewall or switch to a lower security level to easily diagnose this problem. | TFS Expert, Network Administrator | ⃣ |
| Virus | Check your antivirus solution. Some viruses can cause errors on http communications. | TFS Expert, Security Administrator | ⃣ |
| SharePoint Logging | Review the logs in C:\Program Files\Common Files\Microsoft Shared\Web Server Extensions\12\LOGS to see if errors are being captured. | TFS/SharePoint Expert | ⃣ |
| IIS Logging for SharePoint | C:\Inetput\Logs\... <location of SharePoint IIS logging>. Review connections being made/not made by users. Do you see any status connections other than 200s? Are users connecting? | TFS/SharePoint Expert, Network Administrator | ⃣ |
| SharePoint Content Database | Determine if data is being logged into the SharePoint database for the TPC sites  SELECT TOP 100 \*  FROM [WSS\_Content\_<DB>].[dbo].[EventLog]  ORDER BY EventTime DESC | SharePoint Expert | ⃣ |

1. http://msdn.microsoft.com/en-us/library/dd293551.aspx [↑](#footnote-ref-1)
2. http://msdn.microsoft.com/en-us/library/dd293551.aspx [↑](#footnote-ref-2)
3. http://msdn.microsoft.com/en-us/library/ee231892.aspx [↑](#footnote-ref-3)
4. http://msdn.microsoft.com/en-us/library/ff647642.aspx [↑](#footnote-ref-4)
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6. http://msdn.microsoft.com/en-us/library/ee248630(v=vs.100).aspx [↑](#footnote-ref-6)
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27. http://msdn.microsoft.com/en-us/library/hh529824.aspx [↑](#footnote-ref-27)
28. http://msdn.microsoft.com/en-us/library/ms252458.aspx#RequiredPermissions [↑](#footnote-ref-28)
29. http://msdn.microsoft.com/en-us/library/ms252458.aspx#StopServices [↑](#footnote-ref-29)
30. http://msdn.microsoft.com/en-us/library/ms252458.aspx#RestoreDatabases [↑](#footnote-ref-30)
31. http://msdn.microsoft.com/en-us/library/ms252458.aspx#UpdateAccounts [↑](#footnote-ref-31)
32. http://msdn.microsoft.com/en-us/library/ms252458.aspx#RebuildDataWarehouse [↑](#footnote-ref-32)
33. http://msdn.microsoft.com/en-us/library/ms252458.aspx#RestartServicesForTFS [↑](#footnote-ref-33)
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42. http://msdn.microsoft.com/en-us/library/ms252516.aspx#ChangeOwnership [↑](#footnote-ref-42)
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