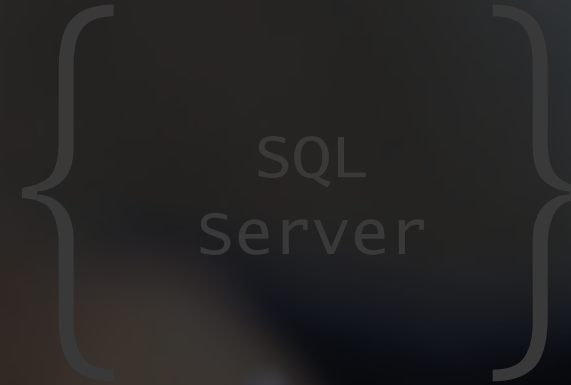




WorkshopPLUS – SQL Server: Performance Tuning and Optimization





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Objectives

After completing SQL Performance Tuning and Optimization workshop, you will be able to:

- Learn the following SQL Server performance concepts
 - SQL Server architecture, scheduling and waits
 - SQL Server processor and memory management
 - SQL Server I/O and database structure
 - SQL Server concurrency and transactions
 - SQL Server index structure
 - SQL Server statistics structure
 - SQL Server query execution and plans
 - SQL Server plan caching and query store
 - SQL Server query tuning
 - SQL Server performance tools



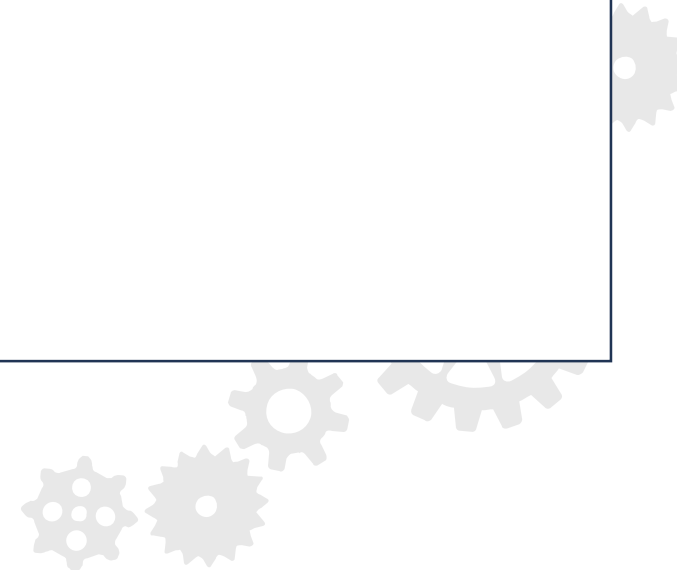
Agenda Day 1

Module 1: SQL Server Architecture, Scheduling and Waits

- Microsoft SQL Server Architecture Overview.
- SQL Server Operating System (SQLOS) Components.
- Task Scheduling
- Waits and Queues
- Understand common wait types

Module 2: SQL Server Processor and Memory Management

- Processor Management
- Non-Uniform Memory Access (NUMA)
- SQL Server Memory Management
- Buffer Pool Management
- Troubleshooting SQL Server memory



Agenda Day 2

Module 3: SQL Server I/O and Database Structure

- SQL Server disk I/O operations.
- Buffer Pool page cache
- Pages and Extents
- Data File Structure
- TempDB File Structure
- Log File Structure
- SQL Server Logging Process

Module 4: SQL Server Transactions and Concurrency

- SQL Server Transactions
- Transaction Isolation Levels
- Locking Compatibility
- Locking Granularity
- Locking Escalation
- Blocking and Deadlocking



Agenda Day 3

Module 5: SQL Server Index Structure

- Indexing and SARGability
- Heaps vs Clustered Indexes
- Non-Clustered Indexes
- Seeks vs Scans
- Indexing Strategies
- Index Monitoring
- Index Fragmentation

Module 6: SQL Server Statistics Structure

- SQL Server Statistics Internals
- SQL Server Statistics Maintenance



Agenda Day 4

Module 7: SQL Server Query Execution and Plans

- Query Optimization and Compilation
- Query Execution Plans
- Reading Execution Plans
- Query Plan Operators
- Logical vs Physical Join Operators
- Troubleshooting Query Plans

Module 8: SQL Server Plan Caching and Query Store

- SQL Server Plan Cache Internals
- Query Store Troubleshooting

Module 9: SQL Server Query Tuning

- Sargable expressions
- Query Hints

Get Ready to Participate

Close email and Update Status

Make it interactive

Check all equipment



Attendee Introductions

Name

Job/Team/Specialty

Time Zone

Experience

Expectations



Class Resources

Virtual Lab Environment, Slides
Decks, Lab Manuals, and Demo
Files

Labs

1



WorkshopPLUS - SQL Server: Performance Tuning and Optimization
WorkshopPLUS - SQL Server: Performance Tuning and Optimization, All Modules

Launch

Additional Resources

1



PowerPoint Slide Decks

Launch

2



Lab Manuals

Launch

3

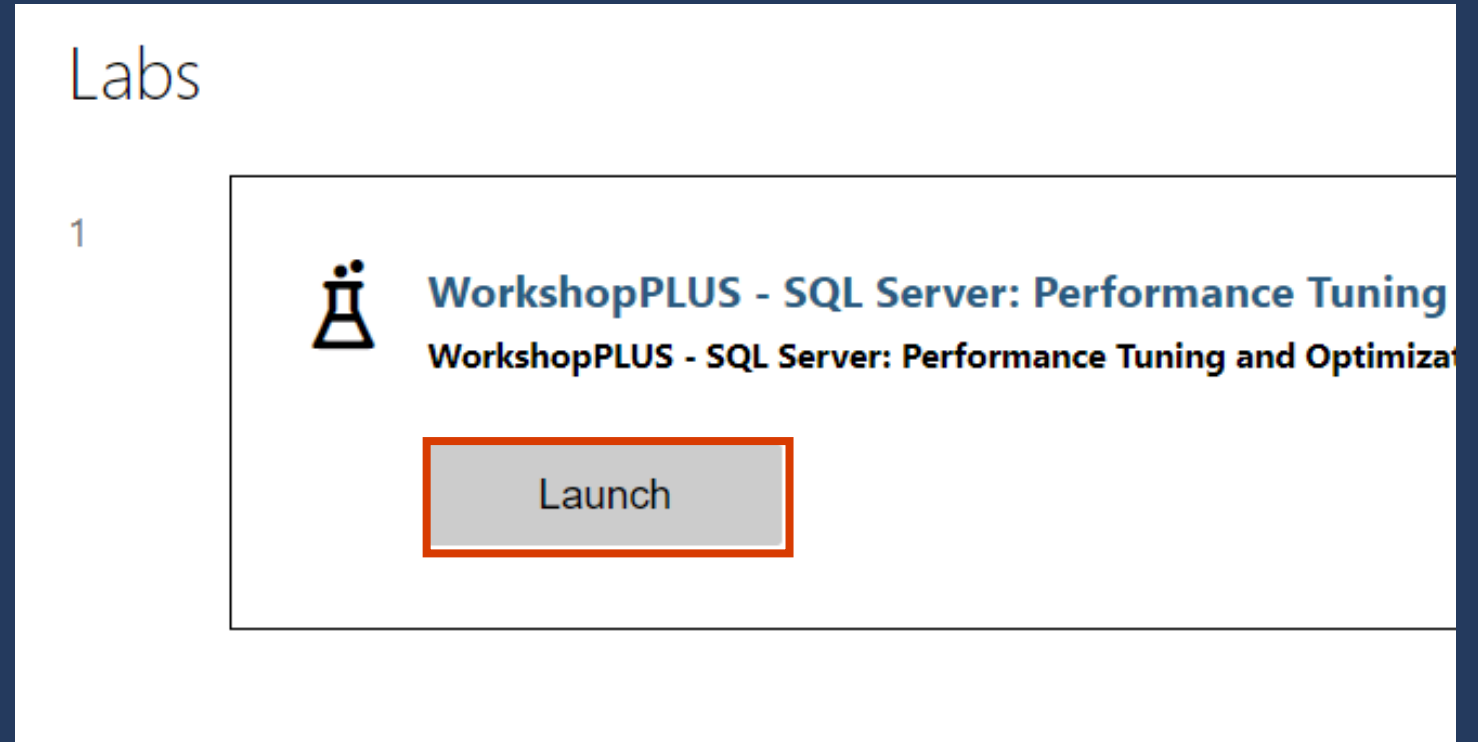


Demo Files

Launch

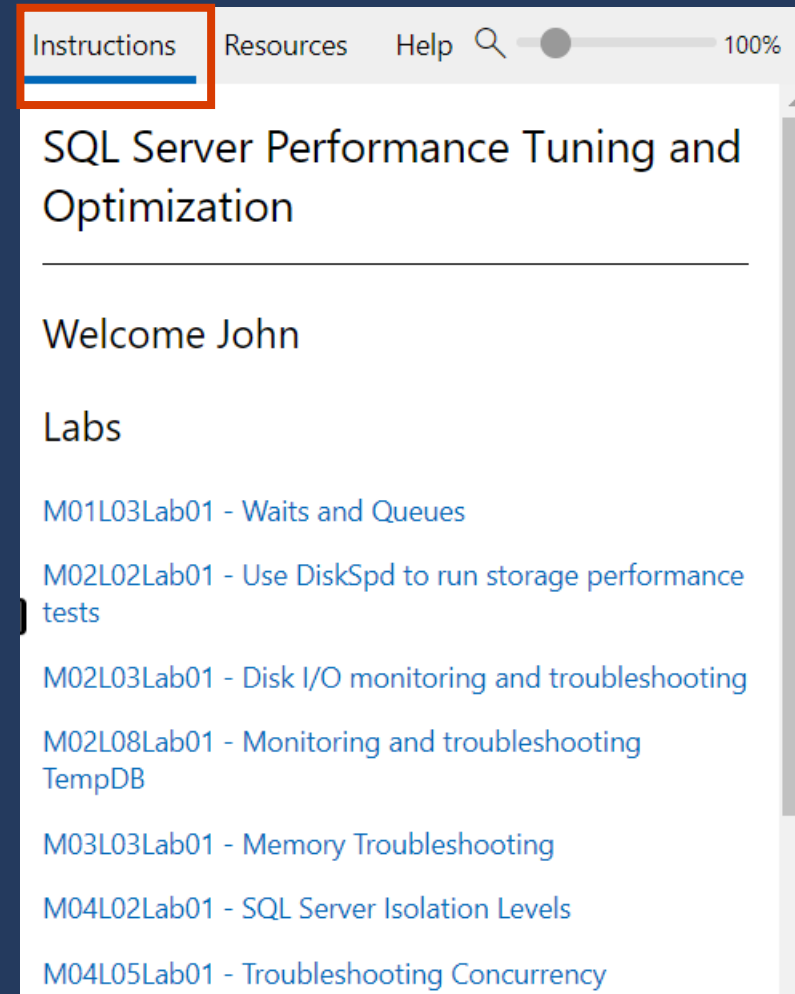
Launch Lab

In the Labs section, click Launch



Lab environment

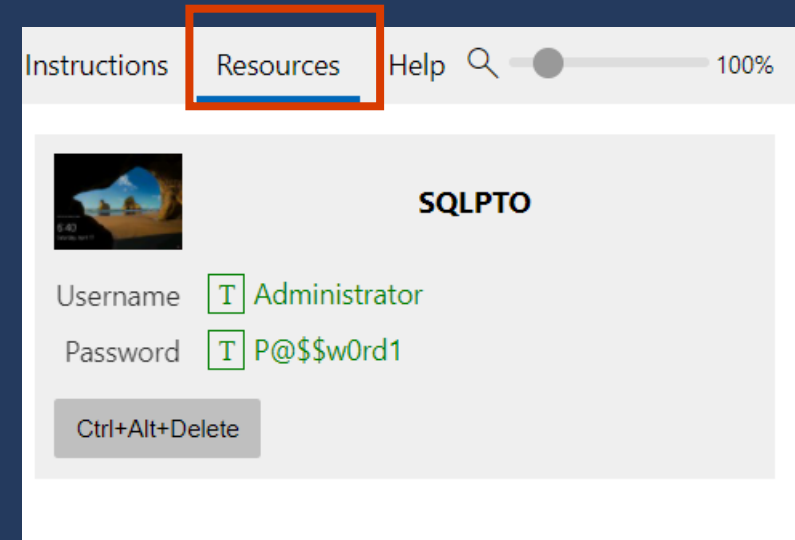
Lab Instructions are shown on the right side of the virtual machine.



Lab environment

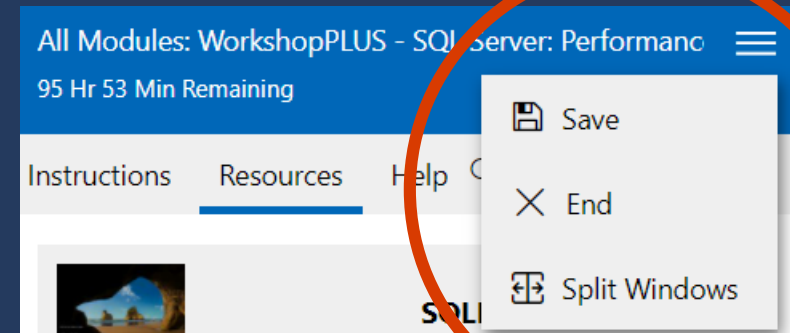
Use the Ctrl+Alt+Delete button to logon to the virtual machine.

You can click on the **T** next to Username and Password to paste in the virtual machine.



Lab Time Remaining

- Ensure you select **Save** before leaving the Lab environment.
- You can save up to 5 labs for up to 7 days.
- The lab environment is available for 180 days.
- Split Windows will allow you to move the instructions to a separate screen.



Dankie Faleminderit **Shukran** Chnorakaloutioun Hvala Blagodaria

Děkuji **Tak** Dank u Tānan Kiitos **Merci** Danke Ευχαριστώ A dank

Mahalo הודו. **Dhanyavād** Köszönöm Takk Terima kasih **Grazie** Grazzi

Thank you!

감사합니다 Paldies Choukrane Ačiū **Благодарам** ありがとうございます

谢谢 Баярлалаа **Dziękuję** Obrigado Mulțumesc **Спасибо** Ngiyabonga

Ďakujem Tack Nandri Kop khun **Teşekkür ederim** Дякую Хвала Diolch

