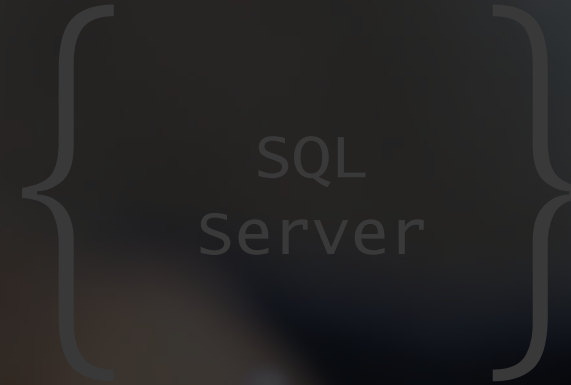




WorkshopPLUS – SQL Server: Performance Tuning and Optimization





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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 I/O and database structure
 - SQL Server memory
 - 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

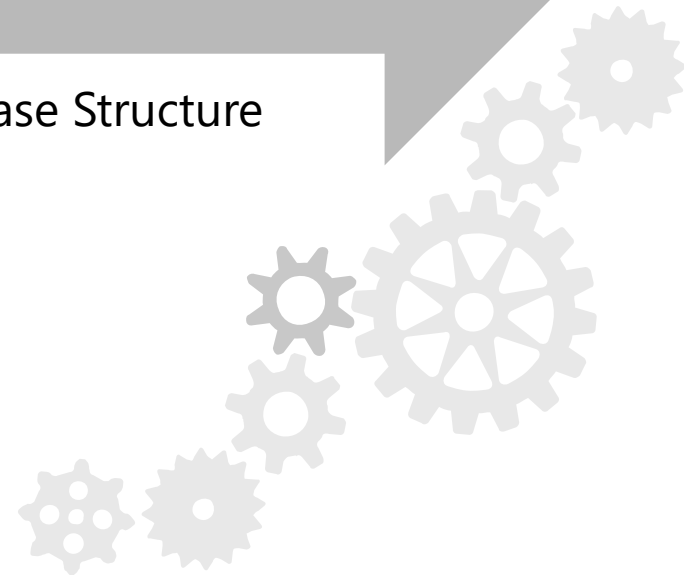
Module 1: SQL Server Architecture, Scheduling and Waits

- SQL OS
- Task Scheduling
- Waits and Queues



Module 2: SQL Server I/O and Database Structure

- Disk I/O
- Test with Diskspd
- Troubleshoot I/O
- Page Structure
- Data File Structure
- Log File Structure
- TempDB File Structure
- Troubleshoot TempDB



Agenda Day 2

Module 3: SQL Server Memory

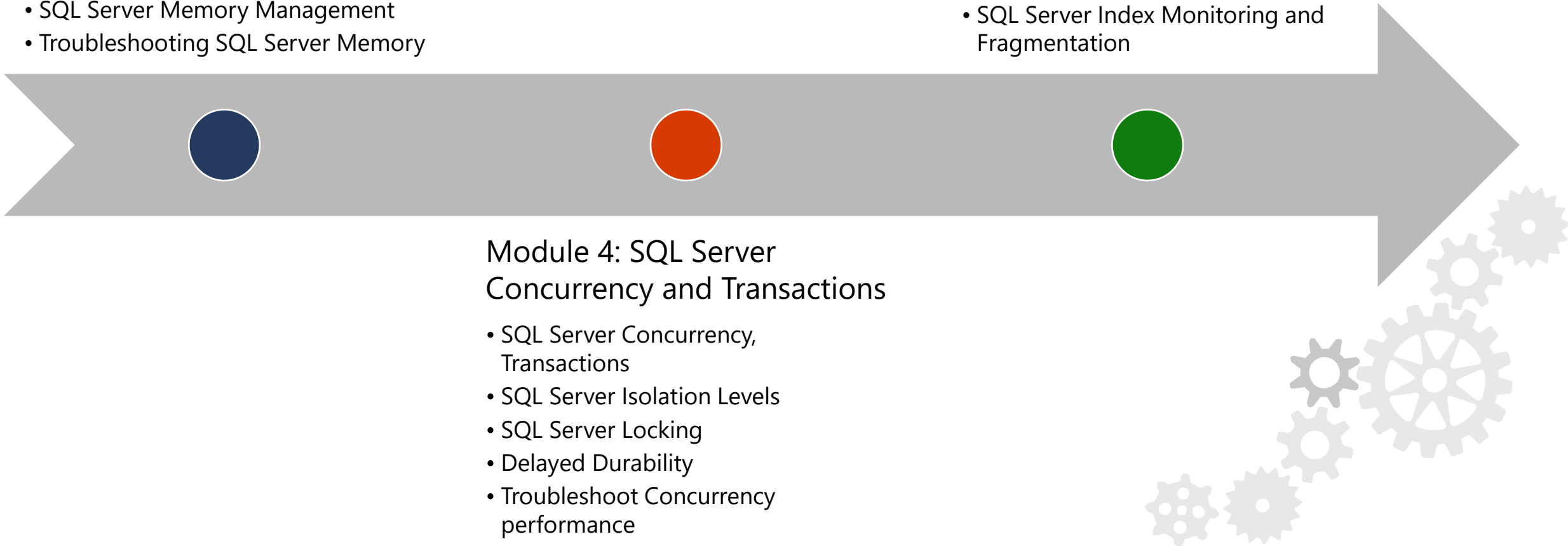
- Windows Memory Management
- SQL Server Memory Management
- Troubleshooting SQL Server Memory

Module 5: SQL Server Index Structure

- SQL Server Index Internals
- SQL Server Index Strategy
- SQL Server Partitioned Tables and Indexes
- SQL Server Index Monitoring and Fragmentation

Module 4: SQL Server Concurrency and Transactions

- SQL Server Concurrency, Transactions
- SQL Server Isolation Levels
- SQL Server Locking
- Delayed Durability
- Troubleshoot Concurrency performance



Agenda Day 3

Module 5: SQL Server Index Structure (Continued)

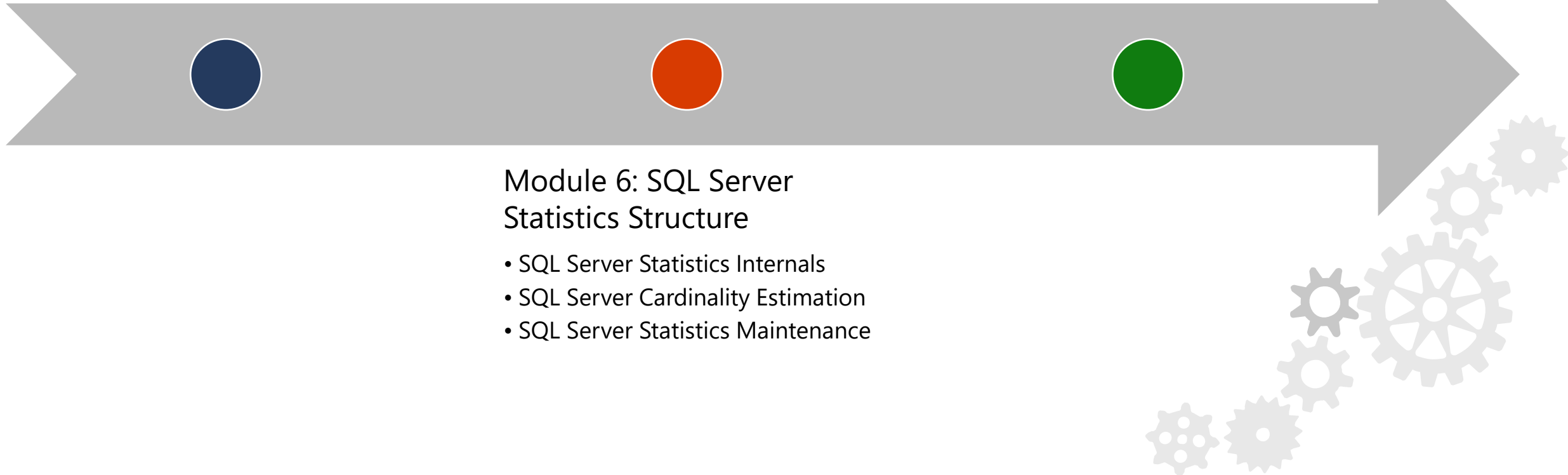
- SQL Server Columnstore Indexes
- In-Memory OLTP

Module 7: SQL Server Query Execution and Plans

- SQL Server Query Execution
- SQL Server Query Optimization
- SQL Server Query Plan Analysis
- SQL Server Intelligent Query Processing

Module 6: SQL Server Statistics Structure

- SQL Server Statistics Internals
- SQL Server Cardinality Estimation
- SQL Server Statistics Maintenance



Agenda Day 4

Module 8: SQL Server Plan Caching and Query Store

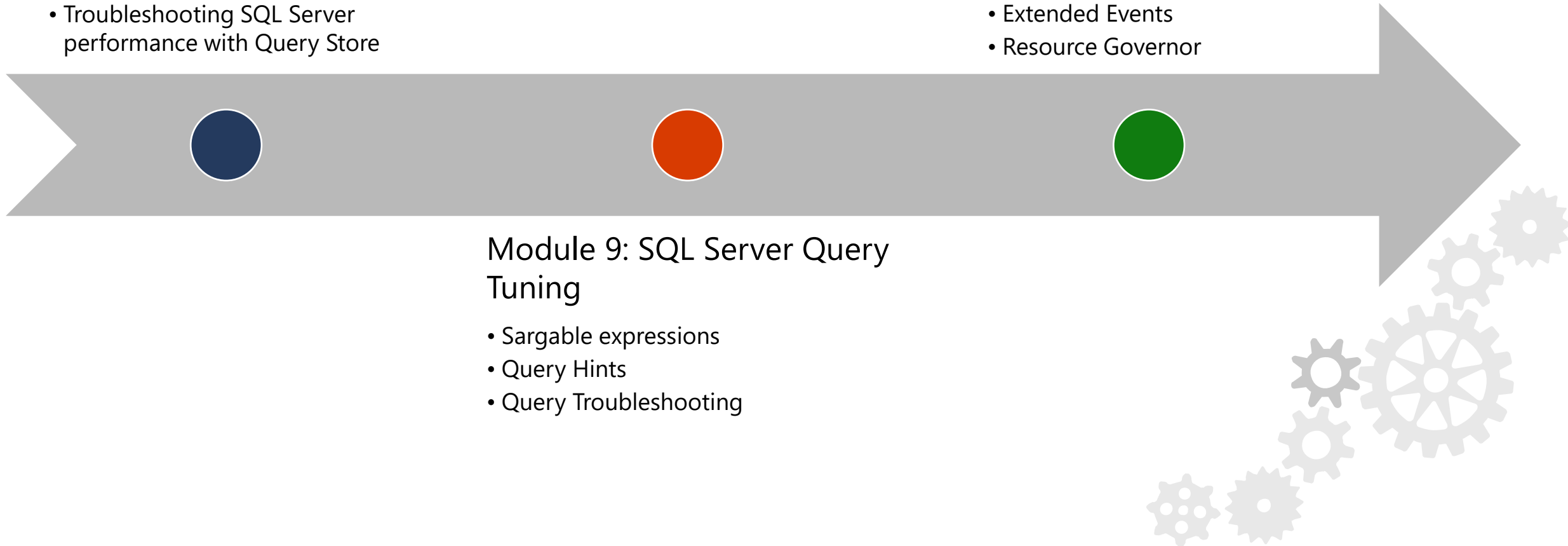
- SQL Server Plan Cache Internals
- Query Store
- Troubleshooting SQL Server performance with Query Store

Module 10: SQL Server Performance Tools

- Lightweight Query Profiler
- Extended Events
- Resource Governor

Module 9: SQL Server Query Tuning

- Sargable expressions
- Query Hints
- Query Troubleshooting



Get Ready to Participate

Close email and Update Status

Make it interactive

Check all equipment



Connect to Lab environment

Prerequisites and Overview

Using the desktop version of IE go to

- <https://aka.ms/LearningCampus>

Sign in with your Microsoft account

- Microsoft Account (Live ID).
- If you do not have one, then create it here:
- <http://live.com>

Training Key


- WorkshopPLUS -> My Training (Select at the top)
- Select Redeem Training Key
- Enter Training Key

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

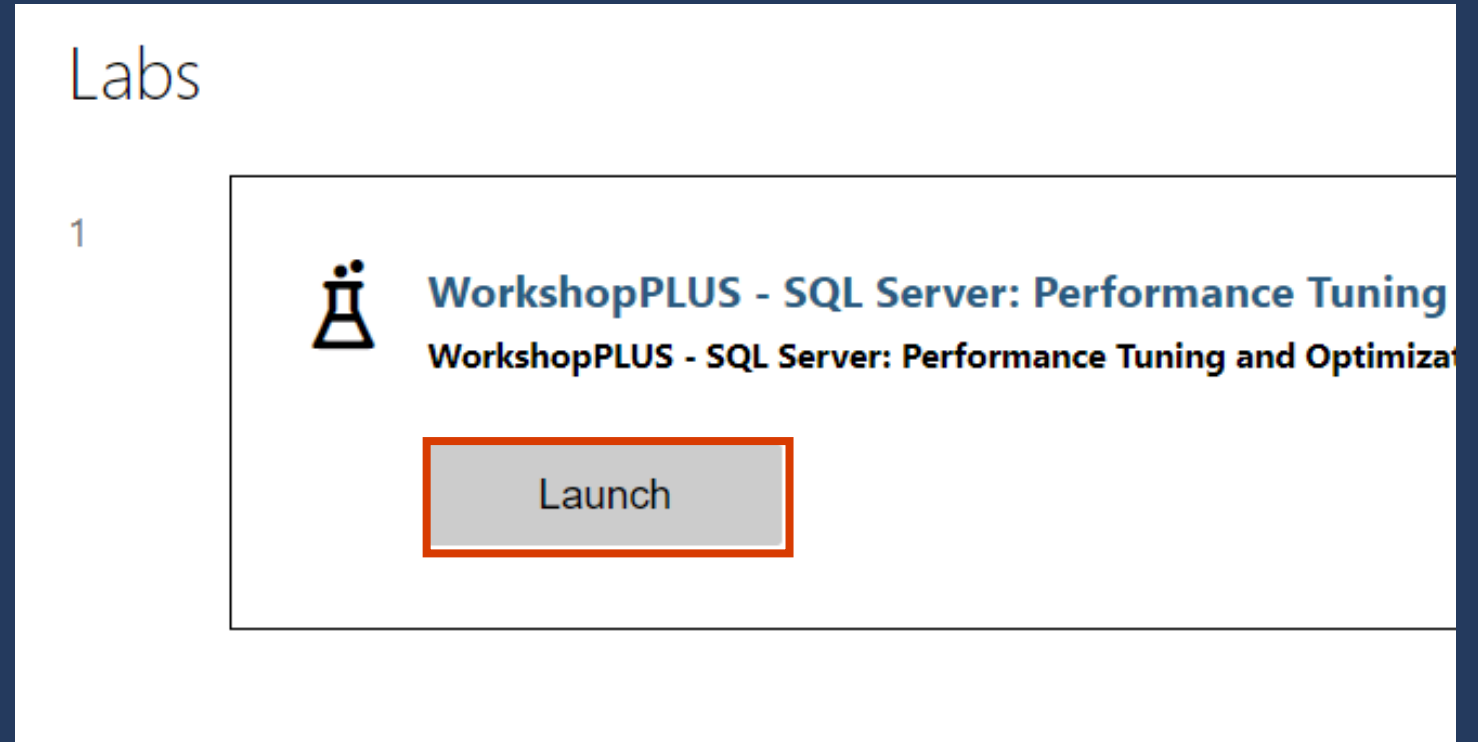
3

 **Demo Files**

Launch

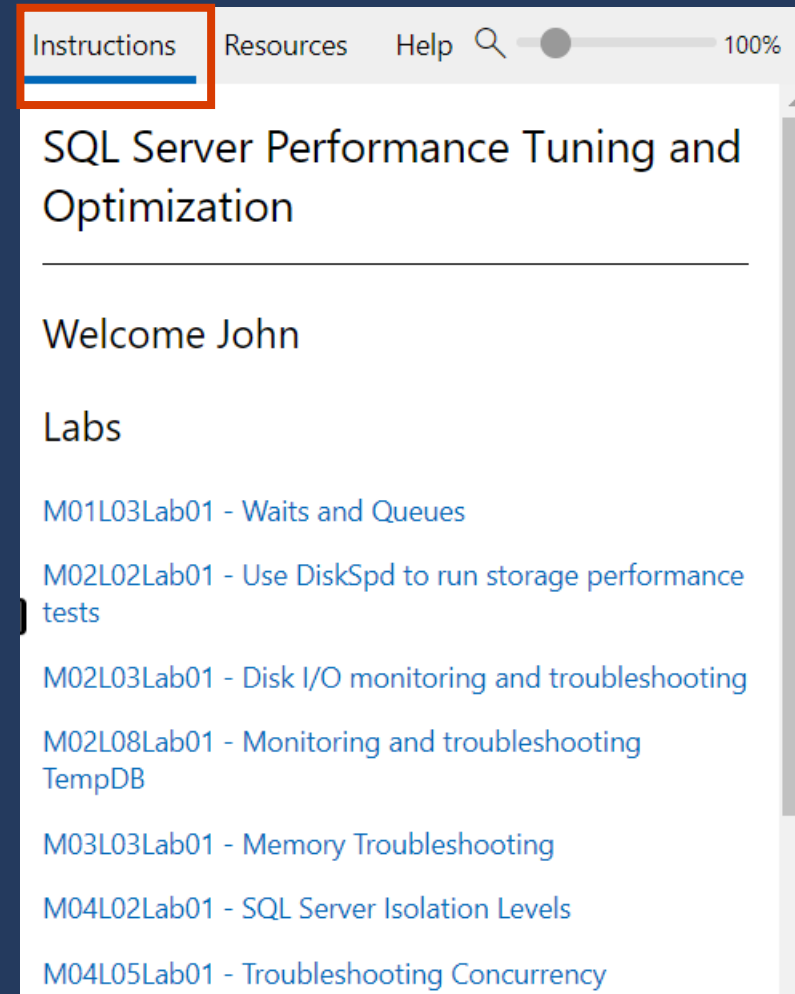
Launch Lab

In the Labs section, click Launch



Lab environment

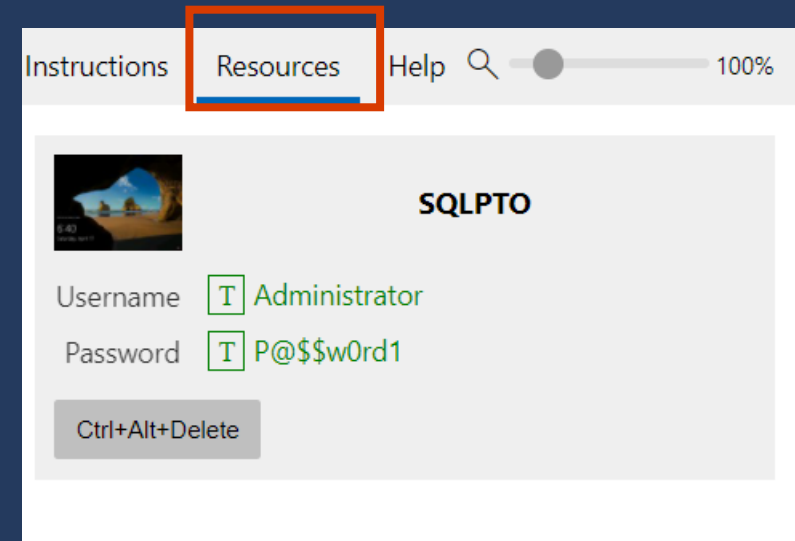
Lab Instructions are shown on the right side of the virtual machine.



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.

