

STANDARD OPERATING PROCEDURE

Standard Operating Procedure		Date	02 nd August 2025
SOP Title	SQL Server Managemen	t studio (SSMS) v21 (Online Installation
SOP Number	SNIPPYGUY_SOP_SSMS_	ONLINE_INSTALLATION	ON(v21)_1.0
SOP Location			
Department	MSSQL Database Admin	istration (DBA)	
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SOP Prepared By (Author)	Sayan Dey		
SOP Creation Date	02 nd August 2025		
SOP Reviewed By			
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SOP Effective From	02 nd August 2025	Last Update Date	02 nd August 2025
SOP Signed Off By		Signed Off Date	

CHANGE HISTORY

SOP Number	Effective Date	Significant Changes	Previous SOP Number
SNIPPYGUY_SOP_SSMS_ONLINE_INSTALLATION(v21)_1.0	02 nd August 2025	Initial Creation	

SOP Number	Author	Reviewer
SNIPPYGUY_SOP_SSMS_ONLINE_INSTALLATION(v21)_1.0	Sayan Dey	

Introduction

This Standard Operating Procedure (SOP) outlines the step-by-step process for installing Microsoft SQL Server Management Studio (SSMS) version 21 to ensure consistent, secure, and reliable deployment across all supported systems.

The current **general availability (GA)** release of SQL Server Management Studio (SSMS) is **version 21**. This version is built on a Visual Studio-based solution and *includes features such as 64-bit support, Copilot in SSMS (Preview), and initial dark theme support. It is the recommended release for use with SQL Server 2025 Preview.*

As of **August 2025**, version **21.4.8** was noted as the most recent, and updates are delivered through the Visual Studio Installer.

The SSMS v21 installer is a bootstrap file, which means it is a lightweight setup that downloads the required components during installation. Therefore, network connectivity is required throughout the installation process.

SOP Purpose

The purpose of this Standard Operating Procedure (SOP) is to provide a clear and standardized process for installing Microsoft SQL Server Management Studio (SSMS) version 21. This ensures that all installations are performed consistently, securely, and in compliance with organizational IT standards. The SOP is intended to guide IT personnel, database administrators, and support teams in performing the installation with minimal errors and ensuring compatibility with enterprise SQL Server environments.

Scope

This SOP provides guidelines to install Microsoft SQL Server Management Studio (SSMS) version 21 on Windows-based systems across the organization. It applies to all IT personnel, database administrators, and support staff responsible for managing or accessing SQL Server environments. The procedure covers the download, installation, and initial launch of SSMS, ensuring uniformity and compliance with organizational standards.

This SOP does not apply to:

- Installation on non-Windows operating systems (e.g., Linux or macOS).
- Installation of older or beta versions of SSMS.
- SQL Server engine installation or configuration.
- Troubleshooting post-installation issues or advanced SSMS configurations.

Potential Problems

This procedure addresses the following potential problems that may arise during or due to improper installation of Microsoft SQL Server Management Studio (SSMS) version 21:

- **Incorrect Installation Steps** Without a standardized guide, users may miss essential steps, leading to incomplete or faulty installations.
- **Version Mismatch** Installing an outdated or incorrect version can result in compatibility issues with SQL Server instances or unsupported features.
- **Installation on Unsupported Platforms** Attempting installation on non-Windows systems or unsupported configurations may lead to failure or instability.
- **Security Vulnerabilities** Downloading SSMS from unofficial sources increases the risk of introducing malware or compromised software into the environment.
- **Permission and Access Errors** Failure to run the installer with appropriate privileges may result in access restrictions or functionality limitations post-installation.
- Lack of Documentation for Troubleshooting Inconsistent or undocumented installation processes make it difficult to resolve issues or audit system changes.
- **User Delays and Downtime** Uncoordinated or failed installations can delay database access for users, impacting productivity and service availability.

Definition	ons	
Sr. No.	Term	Definition
1	SQL Server	A relational database management system (RDBMS) developed by Microsoft for storing, managing, and retrieving data as requested by other software applications.
2	SSMS	A Microsoft-provided integrated environment used to manage SQL Server infrastructure, including configuration, query execution, and database administration tasks.
3	Installer	The executable file used to initiate the installation process of the SSMS application on a system.
4	Windows Authentication	A method of connecting to SQL Server using the current user's Windows credentials, eliminating the need for separate login credentials.
5	System Requirements	The minimum hardware and software specifications required for successful installation and optimal performance of SSMS.
6	Administrator Privileges	Elevated system permissions required to install or modify software and system settings.
7	Official Source	Microsoft's verified website or distribution channel from which software is downloaded to ensure authenticity and security.

Roles & Responsibilities	
Roles	Responsibilities
IT Support Staff / System Administrator/ Windows Team	 Verify system prerequisites (Windows version, .NET Framework, disk space, permissions). Download the approved SSMS installer from Microsoft's official site or internal repository. Validate installer integrity (checksum/signature). Execute the SSMS installation (GUI or silent mode) with administrative privileges.

	 Monitor installation logs and troubleshoot errors if they occur.
	 Perform cleanup of temporary installation files.
Database Administrator (DBA)	 Verify system requirements and prerequisites Install SSMS using administrator privileges Confirm successful installation and initial launch Validate SSMS functionality post-installation Test connectivity to SQL Server instances Ensure compatibility with existing database systems Confirm the business requirement for SSMS installation (new setup, upgrade, or reinstallation). Provide technical guidance on SSMS version compatibility with SQL Server instances. Backup and restore SSMS configurations if upgrading from an older version. Perform post-installation validation by connecting to SQL Server instances. Report any installation-related issues to IT support
Security / Compliance Team	or vendor as needed.Review and approve installation as per IT policies
Security / Compliance ream	Confirm installer is from a trusted source
	 Ensure compliance with security standards
Change Manager / IT Compliance Officer (if applicable)	 Approve change requests for SSMS installation in line with ITIL/change management process. Ensure installation activity complies with
	organizational policies, license agreements, and audit requirements.
	 Maintain records of installation in CMDB/asset management systems.
End User (Developer, Analyst, DBA using SSMS)	 Request SSMS installation via service request/change request.
	 Confirm successful installation by launching SSMS and validating required features.
	 Report any post-installation issues (connectivity, missing plugins, UI errors) to DBA/IT Support.

SSMS Version Details	
SSMS Major Version	21
Release Number	21.4.8
Release Date	8 th July 2025

Procedure

Step 1: Pre-requisite Checks

This version of SSMS works with SQL Server 2014 (12.x) and later versions. It provides the most significant support for working with the latest cloud features in Azure SQL Database, Azure Synapse Analytics, and Microsoft Fabric. Additionally, SQL Server Management Studio 21 can be installed alongside SSMS 20.x, SSMS 19.x, SSMS 18.x, SSMS 17.x, and SSMS 16.x. For SQL Server Integration Services (SSIS), SSMS 17.x and later versions don't support connecting to the legacy SQL Server Integration Services service. Before installing SSMS v21, ensure the following:

- OS: Windows 10 or later, Windows Server 2016 or later 64-bit operating systems Only, Windows 11 minimum supported OS version or higher: Home, Pro, Pro Education, Pro for Workstations, Enterprise, and Education, Windows 10 minimum supported OS version or higher: Home, Professional, Education, and Enterprise, Windows Server 2025: Standard and Datacentre, Windows Server 2022: Standard and Datacentre, Windows Server 2019: Standard and Datacentre, Windows Server 2016: Standard and Datacentre.
- **Processor:** x64 processor; Quad-core or better recommended.
- **Memory:** Minimum of 4 GB of RAM. Many factors affect resources used; recommend 16-GB RAM for typical professional solutions.
- **Disk Space:** Hard disk space: Minimum of 4 GB up to 50 GB of available space, depending on features installed; typical installations require 20 to 50 GB of free space. We recommend installing Windows and SSMS on a solid-state drive (SSD) to increase performance.
- Video Card: Video card that supports a minimum display resolution of WXGA (1366 by 768); SSMS works best at a resolution of 1920 by 1080 or higher.
- .NET Framework: .NET Framework 4.7.2 or above is required to install SQL Server Management Studio 21. SQL Server Management Studio 21 requires .NET Framework 4.8 to run. If .NET Framework 4.8 isn't already installed, it's installed during setup.
- Language: SQL Server Management Studio 21 is available in English, Chinese (Simplified), Chinese (Traditional), Czech, French, German, Italian, Japanese, Korean, Polish, Portuguese (Brazil), Russian, Spanish, and Turkish. You can select the language of SSMS during installation. The Visual Studio Installer is available in the same 14 languages, and matches the language of Windows, if available.

For more info please visit: https://learn.microsoft.com/en-us/ssms/system-requirements

- Make sure that the user who performs the initial installation has **administrator** permissions on the machine.
- Apply the latest Windows updates. These updates ensure that your computer has both the latest security updates and the required system components for SSMS.
- **Restart**. Restarting ensures that any pending installs or updates don't hinder your SSMS install.
- Free up space. Remove unneeded files and applications from your system drive by, for example, running the Disk Cleanup application.
- Network connectivity to download additional resources.

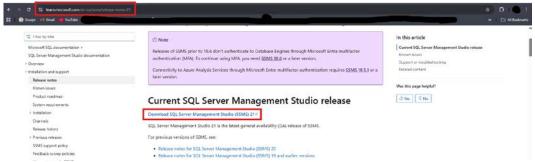
You can install SQL Server Management Studio 21 side-by-side with other versions.

Step 2: Download the SSMS Installer

• Visit the official Microsoft SSMS download page: https://learn.microsoft.com/en-us/ssms/install/install

Note: Do not download SSMS from third-party websites to avoid malware or outdated versions.

• Click "Download SSMS 21" to download the latest version of the installer (vs_SSMS.exe). It will download the bootstrap file

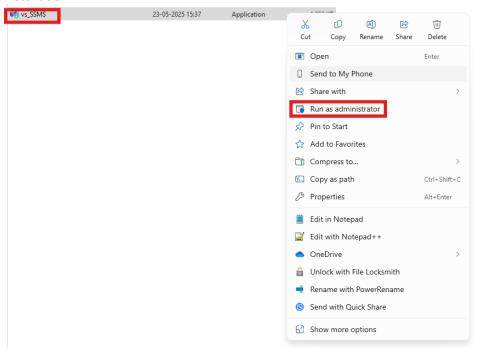


• Save the file in a secure location.

Step 3 - Initiate the installation

If you downloaded a bootstrapper file, you can use it to install SSMS. You need administrator permissions. The bootstrapper installs the latest version of the Visual Studio Installer. The installer is a separate program that provides everything you need to both install and customize SSMS.

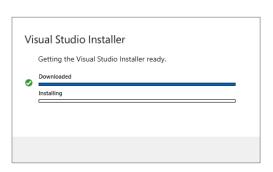
• From your Downloads folder, double-click the bootstrapper named vs_SSMS.exe to start the installation.



• If you receive a User Account Control notice (UAC), choose Yes. The dialog box asks you to acknowledge the Microsoft Privacy Statement and Microsoft Software License Terms. Choose Continue.

The Visual Studio Installer opens. In addition to SQL Server Management Studio, you can also install any product that Visual Studio Installer's Available tab offers.

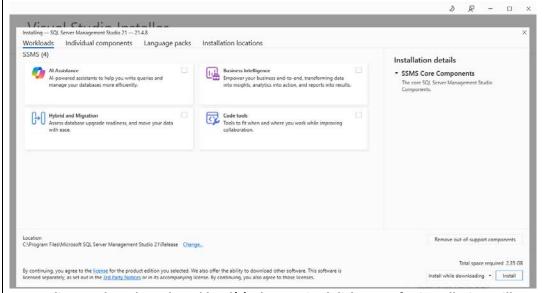




Step 4 - Choose workloads (optional)

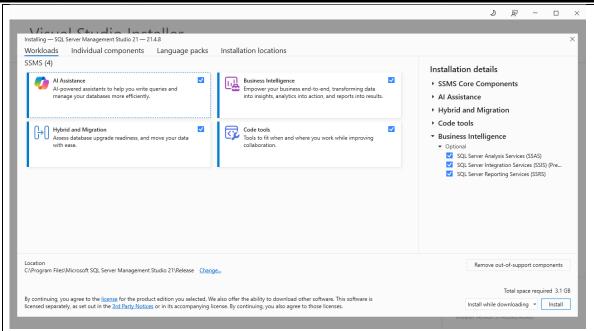
After you install the Visual Studio Installer, you can use it to customize your installation SQL Server Management Studio by selecting different options on the tabs of the installer. During the installation of SQL Server Management Studio (SSMS) v21, the term "workload" refers to the set of components, tools, and features that can be optionally installed along with the core SSMS application. Here's how.

- Select the workload that you want in the Visual Studio Installer.
- Review the workload summaries to decide which workload supports the features you need.
 For example, choose the Hybrid and Migration workload to assess your upgrade readiness and migrate your data.
- After you choose the workloads that you want, select Install. Status screens appear that show the progress of your SSMS installation.



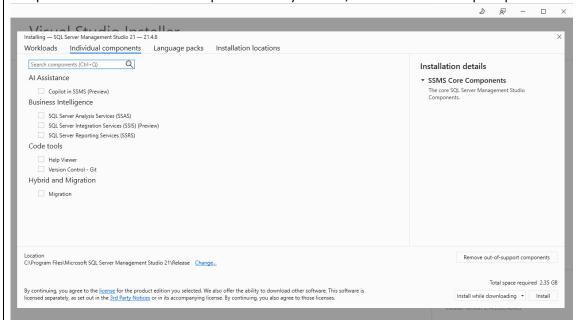
Depending on the selected workload(s), the required disk space for installation will vary.

For testing purposes, I selected all available workloads, which requires more disk space. You may choose only the workloads relevant to your role or project to save storage and reduce installation time.

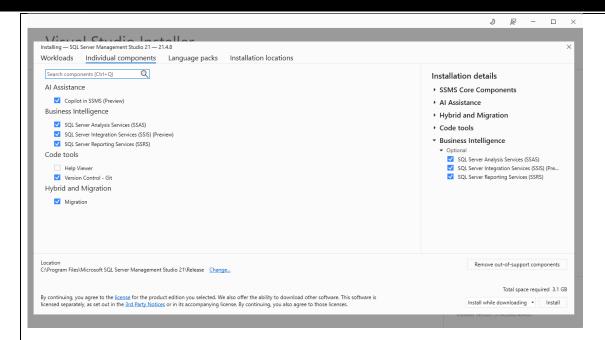


Step 5 - Choose individual components (optional)

If you don't want to use the workloads feature to customize your SSMS installation, or you want to add more components, you can install or add individual components from the Individual components tab. Choose the components that you want, and then follow the prompts.

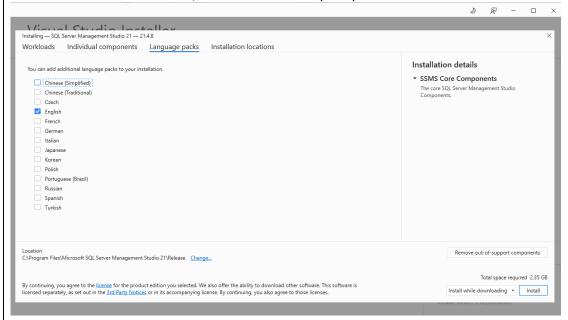


As per your workload selection, individual components will be automatically selected. Alternatively, you can manually customize the installation by selecting or deselecting specific components as needed.



Step 6 - Install language packs (optional)

By default, the installer program tries to match the language of the operating system when it runs for the first time. To install SSMS in a language of your choosing, choose the Language packs tab from the Visual Studio Installer, and then follow the prompts.

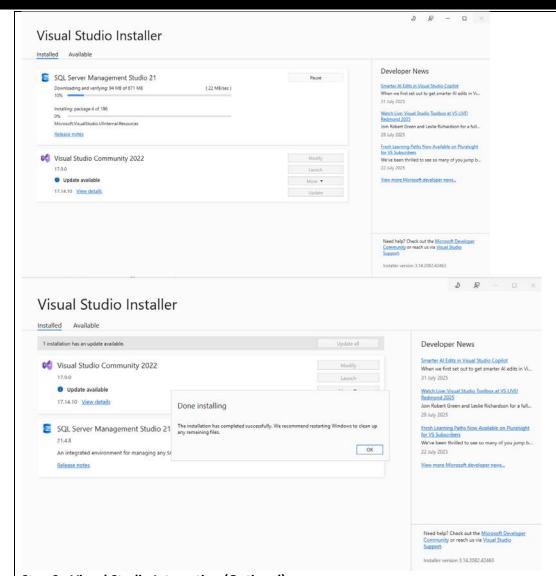


Step 7 - Select the installation location (optional)

You can reduce the installation footprint of SSMS on your system drive. You can select a different drive for SQL Server Management Studio or Download cache only when you first install SSMS. If you already installed it and want to change drives (default is recommended), you must uninstall SSMS and then reinstall it.

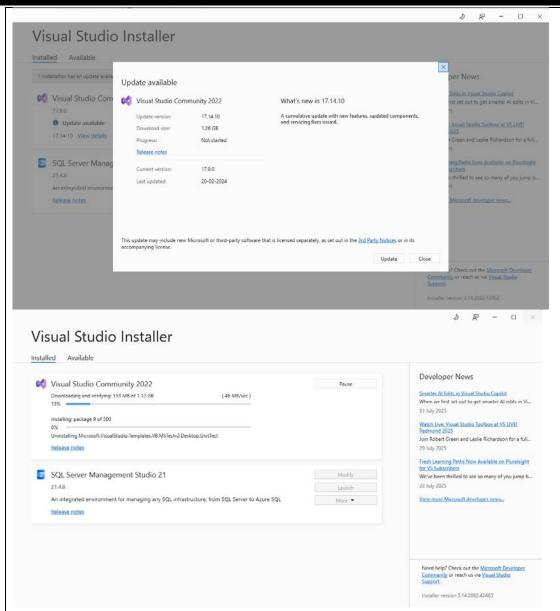
If SSMS or Visual Studio is already installed on your computer, you can't change the Shared components, tools, and SDKs path. It appears greyed out. This location is shared by all installations of SSMS and Visual Studio.

Step 8 - Click "Install" to begin the installation process.



Step 9 - Visual Studio Integration (Optional)

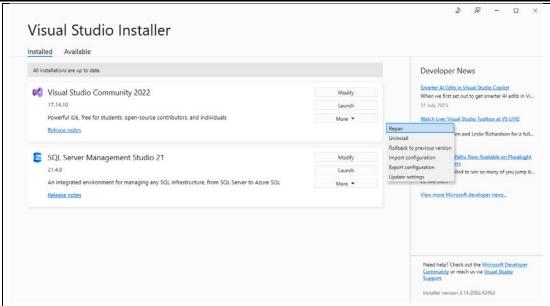
Based on your requirement, you may choose to install or update Visual Studio if you're using SSMS alongside SQL Server Data Tools (SSDT) or other integrated development tasks. In my case, I updated Visual Studio to the latest version to ensure full compatibility with SSMS and related SQL development features. This step is optional and should be performed only if Visual Studio integration is needed for your workflow.



Post-Installation Options

After the successful installation of SSMS v21, the setup wizard provides the following options:

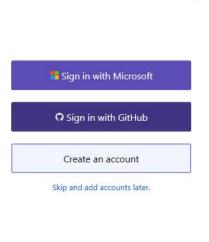
- Launch Start SQL Server Management Studio immediately.
- Modify Change the installed components or workloads.
- More Access options like Uninstall, Repair, or Change Configuration.



Step 10 - Sign in to your account (optional)

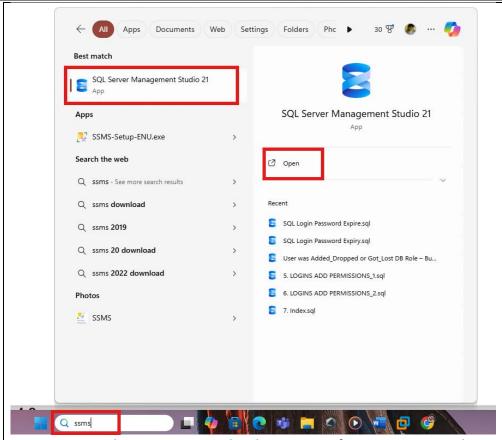
While you don't have to sign in, there are many advantages to doing so, such as synchronizing your settings across devices.





Step 11 – Launch SSMS

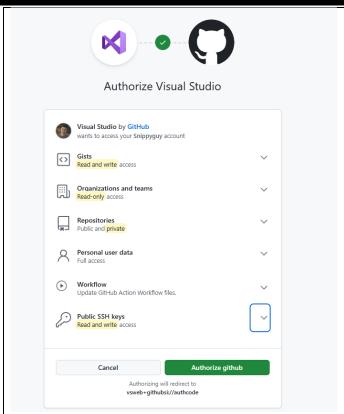
After installation is complete, click the "Launch" button from the installer, or: **Go to Start Menu** → **Search** for "**SQL Server Management Studio**" and **open** the application.



- You can choose to sign in with either a Microsoft account or a GitHub account.
- If you do not have an account, click the "Create one" link to register a new account.
- For my setup, I used my GitHub account to sign in and sync preferences across devices.

Note:

Signing in is optional, but recommended if you use features like Azure Data Studio integration, Azure SQL services, or want to sync your environment settings.



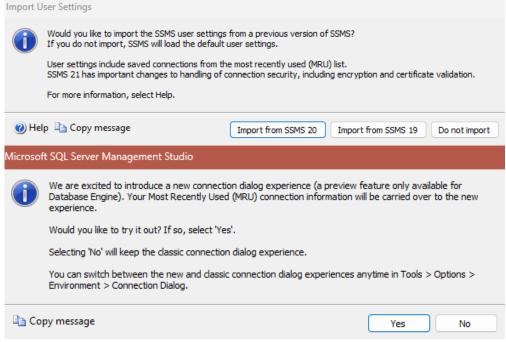
On first launch:

Wait for the splash screen to load.



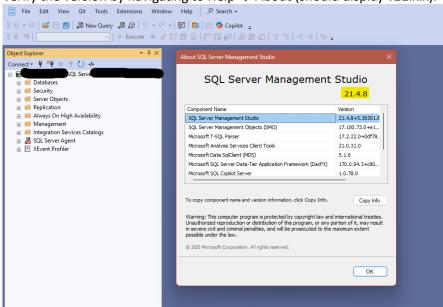
Confirm that SSMS opens without any errors.

You may be prompted to import settings from a previous version of SSMS (if available). Choose to import, skip, or start with default settings based on your preference.



Wait for the application to initialize.

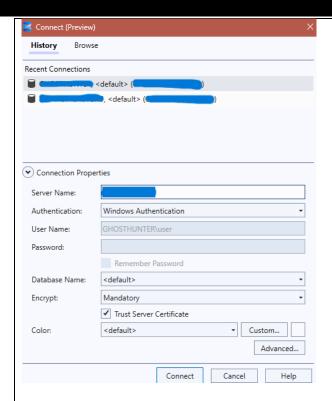
Verify the version by navigating to Help \rightarrow About (should display v21.x.x).



On the Connect to Server window:

Enter the SQL Server instance name.

Choose an appropriate Authentication method (Windows or SQL Server Authentication). Click Connect to verify a successful connection.



Step 12: Post-Installation (Optional)

- Pin SSMS to the taskbar for quick access.
- Configure default settings (fonts, colors, database connection defaults).
- Test connection to a SQL Server instance to confirm functionality.

Troubleshooting

Issue Resolution

Installer fails to start: Re-download the installer and ensure admin privileges.

SSMS does not launch after install: Reboot the system and check Windows Event Viewer for errors.

.NET Framework error: Update to the latest .NET Framework version from Microsoft.

SSMS version mismatch: Verify installer file version before installing.

Process	Process Steps		
Sr No.	Task	Owner	
1	Raise/approve change request (if required)	Change Manager	
2	Take snapshot backup (optional)	Windows Team	
3	Pre-requisite checks	Windows team / DBA Team	
4	Download Installer from official website	Windows team / DBA Team	
5	Copy the installer to the respective location/server	Windows team / DBA Team	
6	Backup existing SSMS configurations (if upgrading)	DBA Team	
7	Provide administrative access (if required)	Windows team	
8	Start Installation	DBA Team	
9	Monitor installation process	DBA Team	
10	Post check after Installation/ Verify successful installation	DBA Team	
11	Validate connectivity to SQL Server instances	DBA Team	
12	Clean up installation files	Windows team / DBA Team	
13	Update documentation & CMDB/asset records	Change Manager	
14	Verify Installer & process	Infosec Team	

Bug Fixes in V21.4	Bug Fixes in V21.4.8		
Feature	Details		
Always Encrypted	Fixed several issues including an issue in the Create a New Column Master Key wizard where Sort by Create Date was incorrectly sorting by String, an issue that prevented Always Encrypted set up to be completed when using SSMS with Russian localization, and an issue in the Create a New Column Master Key wizard that improperly sized the subscription and tenant dropdown boxes.		
Central Management Servers (CMS)	Addressed a bug that didn't add the server connection information to the recently used connections in the Connection Dialog.		
Copilot in SSMS (Preview)	Improved initial chat experience if Microsoft Entra authentication to Azure OpenAl doesn't occur.		
Copilot in SSMS (Preview)	Fixed issue where the current context entry was not updating if a tab was renamed.		
Connection Dialog	Fixed a bug that caused the Modern connection dialog (Preview) to clear its recent and pinned connections when multiple instances of SSMS were open. See Connections dialog forgets connections.		
Migration Assistant	Fixed an error in the Migration Assistant Assessment Wizard that caused UI elements to incorrectly display when the display resolution was set to 250%.		
Query Data Store (QDS)	Addressed an issue where Overall Resource Consumption was incorrectly aggregating data when the display time was set to Local . See <u>QDS - Overall Resource Consumption graphs return incorrect information when choosing "Time format: Local" with aggregation per day.</u>		
Results Window	Addressed an issue where scrolling multiple datasets in the results grid didn't behave as expected. See <u>SSMS 21.0 - scrolling issue in results window</u> .		
Scripting	Resolved the error given key was not present in the dictionary when running queries or scripting a table as select. See <u>SSMS 21 Preview .NET Framework error - the given key was not present in the dictionary</u> .		
View Designer	Fixed an issue that generated an error message when using CONVERT or CAST with several data types. See SSMS returns error on valid query in view designer.		

What's New in V21.	What's New in V21.4.8	
Feature	Details	
Central Management Servers (CMS)	Updated the Central Management Servers registration dialog and removed unnecessary fields.	
Copilot in SSMS (Preview)	Implemented automatic synchronization to the active query editor for the chat window using the Sync Active Editor option.	
Files	Updated the default location for File Save to %USERPROFILE%\Documents\SQL Server Management Studio 21. See File Open and File Save are using a different location to SSMS 20.	
IntelliSense	Added support for Query Store secondary replicas syntax FOR SECONDARY SET and OPERATION_MODE.	

Query Data Store	Added seconds and milliseconds to the data picker for Overall Resource
(QDS)	Consumption: SSMS - Query Store graphs configure options adding seconds
	and milliseconds to defined time interval.
Visual Studio	Updated to Visual Studio 17.14.8.

Known Iss	Known Issues		
Feature	Details	Workaround	
Arm64	SSMS isn't currently supported on Arm64.	Run SSMS on a device that isn't Arm64.	
Designer s	The JSON data type isn't available for columns when creating or editing a table in Table Designer. See SSMS 21.0 Preview 2.0 - Table Designer missing the "json" datatype.	Use T-SQL to add columns with the JSON data type, this functionality is planned for a later release.	
Designer s	Unable to use SSMS after closing the New View pane when the Add Table dialog is left open. See SSMS 21 Preview 1: New View window "Add Table" not aware I closed out of New View.	Close the Add Table dialog before closing the view pane.	
Extende d Events	The Specify Data Storage page is truncated in the Extended Events Wizard. See Extended Events Wizard is cut off on Specify Data Storage page.	Use the New Session option to create an Extended Events session.	
Intellisen se	Intellisense connection doesn't update after executing USE DATABASE command in the editor and then deleting the command. See SSMS 21: IntelliSense think the current database is another one.	Leave the USE DATABASE command in the editor, or use the database dropdown list to change database context.	
Logins	Unable to map a credential for a login. See SSMS v21 Preview 1 - Bug in Login Properties for Credentials.	Use T-SQL to map a login to a credential.	
Menu	Opening a folder from File > Recent Projects and Solutions generates one of the following errors: "System.InvalidOperationException: Can't enqueue project dependencies calculation before starting solution load" or "An exception of type NullReferenceException has been encountered." if opening the folder also opens one or more files that were open in the editor when the folder was last closed.	Closing the error allows work to continue. Alternatively, close all files in the editor before closing a folder.	

Modern Connecti on Dialog (Preview)	Trying to change the password for a newly created SQL login with the MUST_CHANGE property enabled generates the error "Login failed for user. Reason: The password of the account must be changed. (Microsoft SQL Server, Error: 18488)". See Instead of Change password dialog an error pops up.	Use the Classic connection dialog to change the password.
Modern Connecti on Dialog (Preview)	Importing connection history for the new connection dialog generates the error "An error occurred while importing the connection history from the classic connection dialog. The given key was not present in the dictionary."	The error occurs when there are corrupted connections in your history, and they aren't imported into the new dialog. The error can be safely ignored.
Modern Connecti on Dialog (Preview)	Upon first use, when importing saved connections to the Modern connection dialog (Preview), saved passwords are lost.	Manually enter your passwords to save them to your connection profiles in the Modern connection dialog (Preview).
Offline installati on	Installing an offline instance of SQL Server Management Studio 21 silently fails, with a "certificate is invalid" error message in the installation log.	Download and install the Microsoft Windows Code Signing PCA 2024 certificate. For more information, see Create an offline installation of SQL Server Management Studio.
Options	Enabling Per Monitor Awareness (PMA) by checking Optimize rendering for screens with different pixel densities (requires restart) within Tools > Options can cause issues with dialogs not rendering.	Don't enable Optimize rendering for screens with different pixel densities (requires restart) within Tools > Options.
Options	Enabling Unified Settings Experience (requires restart) within Tools > Options > General > Preview Features can cause issues with dialogs not rendering.	Don't enable Unified Settings Experience (requires restart) within Tools > Options > General > Preview Features.
Options	Changing the default value for options within Tools > Options > General > Previe w Features can cause unpredictable behavior, both in terms of visual display and functionality.	Don't change the default value for any option within Tools > Options > General > Previe w Features.

Query Store	When you use any of the Query Store reports, the Replica dropdown list menu option might not populate with the correct replica name when the Query Store for readable secondaries is enabled.	Use Transact-SQL to query the Query Store data for a readable secondary where the replica_group_id for a secondary can be mapped using the sys.query_store_runtime_stats_system_catalog view, which has a foreign key relationship with the sys.query_store_replicas_system_catalog view.
Results Pane	When switching themes, if the output is set to Results to Text, the Results pane doesn't switch themes. The original theme is still applied.	To apply any theme changes to the Results pane, restart SSMS.
SQL Server Analysis Services (SSAS)	When connected to a MultiDimensional DW with Analysis Services, right-clicking on a cube and selecting Browse generates the error 'Object reference not set to an instance of an object.'. See <u>SSMS 21 Error browsing OLAP cubes</u> .	Use an earlier version of SSMS to browse a cube.
SQL Server Integrati on Services (SSIS)	Support for legacy <u>Integration Services</u> service isn't available for SQL Server 2022.	To manage the legacy Integration Services Service for SQL Server 2022, use SSMS 20.2.1 or SSMS 19.3.

FORMS/TEMPLATES TO BE USED

Internal References

External References

Release Note: https://learn.microsoft.com/en-us/ssms/release-notes-20 Support Policy: https://learn.microsoft.com/en-us/ssms/support-policy Installation Link: https://learn.microsoft.com/en-us/ssms/support-policy Installation Link: https://learn.microsoft.com/en-us/ssms/support-policy Installation Link: https://learn.microsoft.com/en-us/ssms/install/install

Workload Details Official Link: https://learn.microsoft.com/en-us/ssms/install/workload-

<u>component-ids</u>Workload Details:

 $\underline{https://github.com/Snippyguy/SQL_DBA_COOKBOOK/blob/main/SQL\%20Server\%20DBA\%20script}$

s/SSMS/SSMS%20V21%20Workload%20details.sql

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