

# SQL Server 2019 (TP) on Windows Server 2016

2025

**TECHNICAL PAPERS** 





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## Installing Sql Server 2019 (Tp) On The Failover Cluster

This configuration part assumes that the Windows Server 2016 hosts are configured and Failover Cluster is created on top of StarWind HA storage.

NOTE: The installation process will be performed on the first node of the cluster, SQLNODE1.

1. Run setup.exe from the SQL Server 2019 installation media to launch SQL Server Installation Center.

2. Click on the New SQL Server failover cluster installation link to run the SQL Server 2019 setup Wizard.



3. In the Product Key dialog box, enter the product key that came with the installation media and click Next.



髋 Install a SQL Server Failover Clust	er — — X
<ul> <li>Install a SQL Server Failover Clust</li> <li>Product Key</li> <li>Specify the edition of SQL Server</li> <li>Product Key</li> <li>License Terms</li> <li>Global Rules</li> <li>Microsoft Update</li> <li>Product Updates</li> <li>Install Setup Files</li> <li>Install Setup Files</li> <li>Install Failover Cluster Rules</li> <li>Feature Selection</li> </ul>	er vNext CTP2.0 to install. Validate this instance of SQL Server vNext CTP2.0 by entering the 25-character key from the Microsoft certificate of authenticity or product packaging. You can also specify a free edition of SQL Server: Developer, Evaluation, or Express. Evaluation has the largest set of SQL Server features, as documented in SQL Server Books Online, and is activated with a 180-day expiration. Developer edition does not have an expiration, has the same set of features found in Evaluation, but is licensed for non-production database application development only. To upgrade from one installed edition to another, run the Edition Upgrade Wizard.
Feature Rules Feature Configuration Rules Ready to Install Installation Progress Complete	Evaluation
	< Back: Next > Cancel

4. Read the License Terms dialog box and enable the I accept the license terms. Click Next.

5. In the Global Rules dialog box, validate that the tests return successful results and click Next.



髕 Install a SQL Server Failover Clus	er	- 🗆 X
Global Rules		
Setup Global Rules identify pro corrected before Setup can cor	blems that might occur when you install SQL Server Setup support files. Failures must b tinue.	ie
Product Key	Operation completed. Passed: 8. Failed 0. Warning 0. Skipped 0.	
License Terms		
Global Rules		
Microsoft Update	Hide details <<	Re-run
Product Updates	View detailed report	
Install Setup Files		
Install Failover Cluster Rules	Rule Status	
Feature Selection	Setup administrator Passed	
Feature Rules	Setup account privileges Passed	
Feature Configuration Rules	Restart computer Passed	
Ready to Install	Windows Management Instrumentation (WMI) service Passed	
Installation Progress	Consistency validation for SQL Server registry keys Passed	
Complete	Long path names to files on SQL Server installation media	
	SQL Server Setup Product Incompatibility Passed	
	.NET 2.0 and .NET 3.5 Service Pack 1 update for Windows 2008 Passed	
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6. In the Microsoft Update dialog box, click Next.

7. In the Install Failover Cluster Rules dialog box, validate that the tests return successful results. If the tests return warnings, make sure they are fixed before proceeding with the installation. Click Next.



🐮 Install a SQL Server Failover Clust	er		_		$\times$
Install Failover Cluster	Rules				
Setup rules identify potential p can continue.	roblems that	might occur while running Setup. Failures must be corrected befo	ore Setup		
Product Key	Operation	completed. Passed: 18. Failed 0. Warning 1. Skipped 0.			
License Terms					
Global Rules					
Microsoft Update	Hide det	ails <<		Re-	run
Install Setup Files	View detai	iled report			
Install Failover Cluster Rules			1		
Feature Selection	Result	Rule	Status		^
Feature Rules		Cluster Node	Passed		
Feature Configuration Rules		Windows Management Instrumentation (WMI) service (SW-DE	Passed		
Ready to Install		Cluster Remote Access (SW-DEMO-HPV-01)	Passed		
Installation Progress		Cluster nodes name length verification	Passed		
Complete		Cluster service verification	Passed		
		Distributed Transaction Coordinator (MSDTC) installed (SW-DE	Passed		
		Distributed Transaction Coordinator (MSDTC) service	Passed		
		Microsoft Cluster Service (MSCS) cluster verification errors	Passed		
		Microsoft Cluster Service (MSCS) cluster verification warnings	Warning		
		Remote registry service (SW-DEMO-HPV-01)	Passed		
		Domain controller	Passed		- v
		< Back	Next >	Cance	el

8. In the Feature Selection dialog box, select Database Engine Services and Management Tools. Click Next.



🏗 Install a SQL Server Failover Cluste	er		- 0	×
Feature Selection Select the Evaluation features to	install.			
Product Key	Looking for Reporting Servi	ces? Download it fro	om the web	
Global Rules	Features:		Feature description:	
Microsoft Update Install Setup Files Install Failover Cluster Rules	Instance Features Database Engine Services SQL Server Replication	n	The configuration and operation of each instance feature of a SQL Server instance is	\$
Feature Selection	Machine Learning Ser	vices (In-Database)	Prerequisites for selected features:	
Feature Rules Instance Configuration Cluster Resource Group	☐ K ☐ Python ☑ Full-Text and Semant ☑ Data Quality Services	ic Extractions for Sea	Already installed: Windows PowerShell 3.0 or higher Universal C Runtime in Windows Disk Space Requirements	\$
Cluster Disk Selection Cluster Network Configuration Server Configuration	Java connector for	r HDFS data sources	Drive C: 1433 MB required, 6610 MB available	Ŷ
Database Engine Configuration Feature Configuration Rules	Select All Unselect All	]		
Ready to Install	Instance root directory:	C:\Program Files\Mi	crosoft SQL Server\	
Installation Progress Complete	Shared feature directory: Shared feature directory (x86):	C:\Program Files\Mid C:\Program Files (x86	crosoft SQL Server\ 6)\Microsoft SQL Server\	
			< Back Next > Cancel	

9. In the Feature Rules dialog box, verify that all the rules have passed. If the rules return warnings, make sure they are fixed before proceeding with the installation. Click Next.



髋 Install a SQL Server Failover Clust	er	- 0	×
Feature Rules Feature rules identify problems	that might block this setup operation based on the feature	s selected.	
Product Key License Terms Global Rules Microsoft Update Install Setup Files	Operation completed. Passed: 2. Failed 0. Warning 0. S Hide details << <u>View detailed report</u>	Skipped 0. Re	e-run
Feature Selection Feature Rules Instance Configuration Cluster Resource Group Cluster Disk Selection Cluster Network Configuration Server Configuration Database Engine Configuration Feature Configuration Rules Ready to Install Installation Progress Complete	Rule         Image: Cluster supported for edition         Image: KB2919355 Installation	Status Passed Passed	
		< Back Next > Cano	el .:

10. In the Instance Configuration dialog box, enter the following details: SQL Server Network Name: type the name of the cluster Instance ID: MSSQLSERVER



髋 Install a SQL Server Failover Cluste	er							_		×
Instance Configuration										
Specify the name and instance	ID for the instance o	f SQL Sen	ver. Instance ID be	comes part	of the ir	nstallation p	ath.			
Product Key License Terms	Specify a network your failover cluste	name for er on the r	the new SQL Serve network.	er failover cl	luster. Ti	his will be th	ne nam	e used to i	dentify	
Global Rules	SQL Server Networ	k Name:	SQLCluster2019							
Microsoft Update										
Install Setup Files	Default instance	2								
Install Failover Cluster Rules	O Named instance	2	MSSOLSERVER							
Feature Selection										
Feature Rules										
Instance Configuration	Instance ID:		MSSQLSERVER							
Cluster Resource Group										
Cluster Disk Selection	SQL Server director	ry:	C:\Program Files\	Microsoft S	SQL Serv	er\MSSQL1	5.MSSC	LSERVER		
Server Configuration	Detected SQL Serv	er instanc	es and features on	this compu	iter:					
Database Engine Configuration	-	Chata	Net and News			E d'Alle e		Marian		
Feature Configuration Rules	Instance	Cluster		Features	601	Edition		version	100	Inst
Ready to Install	DEMOSQLECI	DEMO-S	QL-FCI	SQLEngin	e,SQL	Evaluation		14.0.1000	.109	MSS
Installation Progress	VEEAMSQL2012			SQLEngin	e	Express		11.3.6020	.0	MSS
Complete										
	<									>
				[	< B	ack	Next	>	Cance	

11. To make sure that a new Resource Group for the SQL Server Failover Cluster Instance can be created, check the resources availability in the Cluster Resource Group dialog box. To specify an existing SQL Server cluster resource group name, use the drop-down list or type the name of a new group to create it. Accept all the defaults and click Next.



髋 Install a SQL Server Failover Clust	er						_		Х
Cluster Resource Group Create a new cluster resource g	<b>)</b> roup for your	SQL Server failover cluster.							
Product Key License Terms Global Rules Microsoft Update Install Setup Files	Specify a n failover clu or enter a n SQL Sen	ame for the SQL Server cluste ster resources will be placed. ww cluster resource group nai ver cluster resource group nan	er reso You ca me to ne: [	urce group an choose t be created. SQL Server	o. The cluster res to use an existin (MSSQLSERVER	ource group i: g cluster reso )	s where urce gro	e SQL Ser oup nam	ver e
Feature Selection Feature Rules Instance Configuration <b>Cluster Resource Group</b> Cluster Disk Selection Cluster Network Configuration Server Configuration Database Engine Configuration Feature Configuration Rules Ready to Install Installation Progress Complete	Qualified	Name Available Storage Cluster Group Placeholder VM SOFS SQL Server (DEMOSQLFCI) sw-demo-veeam-test-hpv	Me The The The The The	ssage cluster gro cluster gro cluster gro cluster gro cluster gro	up 'Available Sto up 'Cluster Grou up 'Placeholder up 'SOFS' is not up 'SQL Server ( up 'sw-demo-vo	orage' is reserv Ip' is reserved VM' is not ow online. Bring DEMOSQLFCI) team-test-hpv	red by V by Win ned by the gro ' is not ' is not	Windows dows Fai the local up onlin owned b owned b owned b	Fai lov no e t py t py t
					< Back	Next >		Cance	:I

12. In the Cluster Disk Selection dialog box, select the available disk groups that are to be used in the cluster for SQL Server 2019.



髋 Install a SQL Server Failover Clust	er					<u></u>		×
Cluster Disk Selection								
Select shared cluster disk resou	rces for your S	QL Server failover	cluster.					
Product Key License Terms Global Ruler	Specify the s used as the Services con	shared disks to be default drive for al figuration pages.	included in the SQL Server Il databases, but this can b	r resource cluster e changed on th	r group. The first e Database Engi	t drive ne or /	will be Analysis	
Microsoft Update Product Updates Install Setup Files Install Failover Cluster Rules	Cluster D	iisk 1						
Feature Selection	Available sha	ared disks:						
Instance Configuration Cluster Resource Group Cluster Disk Selection Cluster Network Configuration	Qualified	Disk Cluster Disk 1	Message					
Server Configuration Database Engine Configuration Feature Configuration Rules Ready to Install								
Installation Progress Complete							Refres	h
				< Back	Next >		Cancel	

13. In the Cluster Network Configuration dialog box, enter the virtual IP address that the SQL Server 2019 Failover Cluster Instance will use. The checkbox next to the IPv4 column will be used as a static IP address instead of the DHCP-assigned one. Click Next.

14. Type the IP address: 10.4.0.15 (similar to the virtual IP address for the virtual host name/client access point, the IP address could be any within the range of the Production subnet as long as it is available).



髋 Install a SQL Server Failover Clust	er					8 <u>-</u>	- 🗆	×
Cluster Network Config	guration							
Select network resources for vo	- our SOL Server failo	/er.clu	ster.					
Product Key	Specify the netw	ork se	ttings for this fa	ilover cluster:				
License Terms					<b>0 1 1 1</b>			_
Global Rules	P IP Iy L	нср	Address	Subnet Mask	Subnet(s)		Network	
Microsoft Update	IPv4	Ш	10.4.0.15	255.255.255.0	10.4.0.0/24		Cluster Net	work 1
Product Updates								
Install Setup Files								
Install Failover Cluster Rules								
Feature Selection								
Feature Rules								
Instance Configuration								
Cluster Resource Group								
Cluster Disk Selection								
Cluster Network Configuration								
Server Configuration								
Database Engine Configuration								
Feature Configuration Rules								
Ready to Install								
Installation Progress							-	
Complete							Re	efresh
							_	
					< Back	Next >	Cano	el

NOTE: The network adapter settings that will be displayed in this dialog box will depend on how the cluster network adapters are configured. Make sure to configure the Heartbeat-iSCSI network adapters with the Do not allow cluster network communication on this network option.

15. In the Server Configuration dialog box, use the following credentials for the SQL Server service accounts in the Service Accounts tab:

SQL Server Agent: SWTEST\sqlservice

SQL Server Database Engine: SWTEST\sqlservice

Note: Make sure that both SQL Server Agent and SQL Server Database Engine services have the Manual Startup Type. The Windows Server Failover Cluster will take care of stopping and starting the service. Also, set the Collation property for the instance according to the application requirement.



🏗 Install a SQL Server Failover Cluster				-		×
Server Configuration						
Specify the service accounts and	collation configuration.					
Product Key	Service Accounts Collation					
License Terms Global Rules	Microsoft recommends that you use	a separate account for eac	n SQL Server service	8		
Microsoft Update	Service	Account Name	Password	Startup	р Туре	
Product Updates	SQL Server Agent	SWTEST\sqlservice	•••••	Manua	I	~
Install Setup Files	SQL Server Database Engine	SWTEST\sqlservice	••••••	Manua	I.	~
Install Failover Cluster Rules	SQL Full-text Filter Daemon Launc	NT Service\MSSQLFDLa		Manua	I.	
Feature Selection	SQL Server Browser	NT AUTHORITY\LOCAL .	•	Autom	atic	~
Feature Rules Instance Configuration Cluster Resource Group Cluster Disk Selection Cluster Network Configuration Server Configuration Database Engine Configuration Feature Configuration Rules Ready to Install Installation Progress Complete	Grant Perform Volume Maintenan This privilege enables instant file i to information disclosure by allow <u>Click here for details</u>	ce Task privilege to SQL Se nitialization by avoiding ze ing deleted content to be a	rver Database Engir roing of data pages ccessed.	e Service	e y lead	
		< Ba	ck Next >		Cance	9

16. In the Database Engine Configuration dialog box, select the

appropriate Authentication Mode in the Server Configuration tab. To add the currently logged on user to the SQL Server administrators group, click the Add Current User button. Otherwise, add the appropriate domain accounts or security groups.



📸 Install a SQL Server Failover Cluste	r — 🗆	×
Database Engine Confi	guration	
Specify Database Engine auther	tication security mode, administrators, data directories and TempDB settings.	
Product Key	Server Configuration Data Directories TempDB FILESTREAM	
License Terms Global Rules	Specify the authentication mode and administrators for the Database Engine.	
Microsoft Update	Authentication Mode	
Product Updates	Windows authentication mode	
Install Setup Files	Mixed Mode (SQL Serier authentication and Windows authentication)	
Install Failover Cluster Rules	Mixed Mode (SQL Server authentication and Windows authentication)	
Feature Selection	Specify the password for the SQL Server system administrator (sa) account.	
Feature Rules	Enter password:	
Instance Configuration	Confirm parquard	
Cluster Resource Group	Confirm password:	
Cluster Disk Selection	Specify SQL Server administrators	
Cluster Network Configuration	SQL Server administr	rators
Server Configuration	have unrestricted act	cess
Database Engine Configuration	to the Database Engl	ne.
Feature Configuration Rules		
Ready to Install		
Installation Progress	Add Current User Add Remove	
Complete		
	< Back Nevt > Ca	ncel
	Court Hexty Co	

17. In the Data Directories tab, enter the following data (based on the available cluster disks):

Data root directory: J:\

User database directory: J:\MSSQL12.MSSQLSERVER\MSSQL\Data User database log directory: L:\MSSQL12.MSSQLSERVER\MSSQL\Data Temp DB directory: J:\MSSQL12.MSSQLSERVER\MSSQL\Data Temp DB log directory: L:\MSSQL12.MSSQLSERVER\MSSQL\Data Backup directory: J:\MSSQL12.MSSQLSERVER\MSSQL\Backup NOTE: For WSFC, it is recommended to store the tempdb database on a local drive instead of the replicated storage. Make sure that all the nodes in the cluster contain the same directory structure and that the SQL Server service account has Read/Write permissions for those folders.

18. In the Feature Configuration Rules dialog box, verify that validation tests have passed successfully.



n completed. Passed: 2, Failed 0, Warning 0, Sk etails << ailed report e 32 File System ster Resource DLL Update Restart Check	ipped 0. Status Passed Passed Passed	Re-run
e 32 File System ster Resource DLL Update Restart Check	Status Passed Passed	
32 File System ster Resource DLL Update Restart Check	Passed Passed	
ster Resource DLL Update Restart Check	Passed	
	< Back	< Back Next > Cancel

19. In the Ready to Install dialog box, verify that all configurations are correct and click Install.





20. Once the installation is finished, in the Complete dialog box, click Close.

# Adding Node To Sql Server 2019 Failover Cluster

 Run setup.exe from the installation media to launch SQL Server Installation Center.
 Click the Add node to a SQL Server failover cluster link to run the SQL Server 2019 setup wizard.





3. In the Product Key dialog box, enter the product key that came with the installation media.

4. Read and accept the License Terms.

5. In the Global Rules dialog box, validate that the tests return successful results.

6. In the Microsoft Update dialog box, click Next.

7. In the Add Node Rules dialog box, validate that the tests return successful results. If the tests return warnings, make sure to fix them before proceeding with the installation.8. In the Cluster Node Configuration dialog box, verify that the information for the existing SQL Server 2019 Failover Cluster Instance is correct.



#### 🏗 Add a Failover Cluster Node

#### **Cluster Network Configuration**

Product Key	Specify the network settings for this failover cluster:								
License Terms	☑ IP Ty	DHCP	Address	Subnet Mask	Subnet(s)	Network			
Microsoft Update	IPv4		10.4.0.15	255.255.255.0	10.4.0.0/24	Cluster Network			
Product Updates									
Install Setup Files									
Add Node Rules									
Cluster Node Configuration									
Cluster Network Configuration									
Service Accounts									
Feature Rules									
Ready to Add Node									
Add Node Progress									
Constate									

9. In the Cluster Network Configuration dialog box, review the configuration of the SQL Server Failover Cluster Instance.

10. In the Service Accounts dialog box, verify that the information of the configuration is the same as was used to configure the first node. Provide the appropriate password for the SQL Server service accounts.

髋 Add a Failover Cluster Node				
Service Accounts Specify the service accounts ar	nd collation configuration.			
Product Key License Terms Global Rules Microsoft Update Product Updates Install Setup Files Add Node Rules Cluster Note Configuration Cluster Network Configuration Service Accounts Feature Rules Ready to Add Node Add Node Progress Complete	Microsoft recommends that you use a separate acco Service SQL Full-text Filter Daemon Launcher SQL Server Database Engine SQL Server Browser SQL Server Agent Grant Perform Volume Maintenance Task privileg This privilege enables instant file initialization by <u>Click here for details</u>	unt for each SQL Server service. Account Name NT Service/MSSQLFDLauncher SWTEST\sqlservice NT AUTHORITY\LOCAL SERVICE SWTEST\sqlservice ge to SQL Server Database Engine Service avoiding zeroing of data pages. This may lead to information	Password	Startup Type Manual Automatic V Manual

11. In the Feature Rules dialog box, verify that all the rules have passed. If the rules return warnings, make sure they are fixed before proceeding with the installation. Click Next.

12. In the Ready to Add Node dialog box, verify that all settings are correct and click Install.

13. Once the installation is finished, click Close in the Complete dialog box.

14. Repeat the steps 1-13 to add other nodes to the existing SQL Server 2019 Failover Cluster.



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