## **Dell Wyse Management Suite**

Version 2.0 High Availability Guide



#### Notes, cautions, and warnings

(i) NOTE: A NOTE indicates important information that helps you make better use of your product.

CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

MARNING: A WARNING indicates a potential for property damage, personal injury, or death.

© 2020 Dell Inc. or its subsidiaries. All rights reserved. Dell, EMC, and other trademarks are trademarks of Dell Inc. or its subsidiaries. Other trademarks may be trademarks of their respective owners.

2020 - 03

## Contents

1 Introduction	5
High availability overview	5
	-
2 High availability architecture	
System requirements for high availability	6
3 High availability on Windows Server 2012 R2/2016/2019	8
Creating clustered roles	8
4 Achieve high availability on Windows Server 2012 R2/2016/2019	
Add failover cluster feature on Windows Server 2012 R2/2016/2019	
Create file share witness	
Configure cluster quorum settings	
Creating clustered roles	19
5 Achieve high availability for MySQL InnoDB	22
High availability with MySQL InnoDB	
Install MySQL InnoDB database	
Check MySQL InnoDB server instances	
Create a cluster instance for MySQL InnoDB	
Add server instance to MySQL InnoDB cluster	
Configure MySQL Router	
Create database and users on MySQL InnoDB server	56
6 Achieve high availability on MongoDB	57
Install MongoDB	
Create replica servers for MongoDB database	
Create stratus user	
Create database user	
Create DBadmin user for MongoDB	59
Edit mongod.cfg file	59
Initiate replication on the servers	
7 Achieve high availability for Teradici devices	64
Install and configure HAProxy	
8 Install Wyse Management Suite on Windows Server 2012 R2/2016/2019	66
9 Post installation checks	
10 Upgrade Wyse Management Suite version 1.3 to 1.4	73
11 Upgrading from Wyse Management Suite version1.4/1.4.1 to Wyse Management Suite	e version 2.081

## Introduction

Wyse Management Suite is the next generation management solution and enables you to configure, monitor, manage, and optimize your Dell Wyse thin clients. This helps you to deploy and manage thin clients on a high availability set-up with improved performance.

It offers advanced feature options such as cloud versus on-premises deployment, manage-from-anywhere by using a mobile application, and enhanced security such as BIOS configuration and port lockdown. Other features include device discovery and registration, asset and inventory management, configuration management, operating system and applications deployment, real-time commands, monitoring, alerts, reports, and troubleshooting of endpoints.

Wyse Management Suite version supports high availability and significantly minimizes the system downtime. The solution also protects the system from unplanned downtime and helps you to achieve the required availability to meet the business goals.

This guide describes the solution architecture and explains how to set up, configure, and maintain high availability clusters at the application and database level.

## **High availability overview**

#### About this task

The high availability solution for Wyse Management Suite version includes the following sections:

#### Steps

- 1. Review the high availability requirements—see System requirements to set up high availability.
- Deploy high availability on Microsoft Windows Server 2012 R2/2016/2019—see Deploy high availability on Windows Server 2012 R2/2016/2019.
- 3. Deploy high availability on MySQL InnoDB servers—see Deploy high availability on MySQL InnoDB.
- 4. Deploy high availability on MongoDB—see Deploy high availability on MongoDB.
- 5. Configure high availability proxy (for Teradici devices)—see Deploy high availability for Teradici servers.
- Install Wyse Management version on Windows Server 2012 R2/2016/2019—see Install Wyse Management Suite on Windows Server 2012 R2/2016/2019.
- 7. Review the post installation checks—see Post installation checks.
- 8. Troubleshooting issues with workaround—see Troubleshooting.

## High availability architecture

The Dell Wyse Management Suite architecture consists of Windows Server 2012 R2/2016/2019 with failover cluster enabled. The Windows cluster contains a main computer that supports other applications and ensures minimum downtime by harnessing the redundant. This is used for application failover for Tomcat, Memcache, MQTT services. MongoDB database cluster helps in the event of primary database failure the secondary database will take over. MySQL InnoDB database cluster has an inbuilt database clustering mechanism and secondary database will take over in case of primary read write database fail. Linux Server with HA Proxy is a load balancer and high availability server for EMSDK (Teradici) server. Local repository is created as part of the shared path that contains the applications, images, packages, and will not be part of the cluster set up.

#### i NOTE: The high availability system requirements may change depending on the infrastructure at your work site.

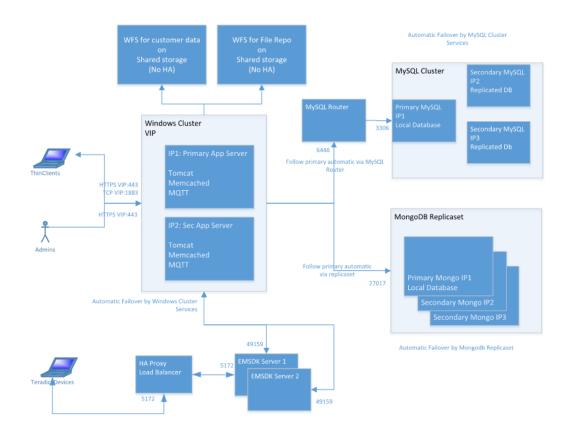


Figure 1. High availability architecture

## System requirements for high availability

The table lists the minimum hardware and software requirement and supports up to 10,000 devices. Each instance of EMSDK can support a maximum of 5,000 devices. The deployment can be on individual servers or on a hypervisor environment, depending on the requirement.

The hardware and software requirements to set up high availability for Wyse Management Suite are:

#### Table 1. System requirements

Product	Port	Protocol	Description
Microsoft Windows Server 2012 R2/2016/2019	<ul> <li>Network communication ports:</li> <li>UDP:3343</li> <li>TCP:3342</li> <li>UDP:137</li> </ul>	<ul> <li>Minimum disk space—40 GB</li> <li>Minimum number of systems—2</li> <li>Minimum memory (RAM)—8 GB</li> <li>Minimum CPU requirements—4</li> </ul>	Server where Wyse Management Suite is hosted. Supports English, French, Italian, German, and Spanish languages.
MySQL Cluster	Network communication port— TCP:3306	<ul> <li>Minimum disk space—40 GB</li> <li>Minimum number of systems—3</li> <li>Minimum memory (RAM)—8 GB</li> <li>Minimum CPU requirements—4</li> </ul>	Server in the high availability setup.
MySQL Router	Network communication ports: 6446 6447         6447	<ul> <li>Minimum disk space—40 GB</li> <li>Minimum number of systems—2</li> <li>Minimum memory (RAM)—8 GB</li> <li>Minimum CPU requirements—4</li> </ul>	Establishes communication in the high availability setup.
MongoDB	Network communication port— TCP: 27017	<ul> <li>Minimum disk space—40 GB</li> <li>Minimum number of systems—3</li> <li>Minimum memory (RAM)—8 GB</li> <li>Minimum CPU requirements—4</li> </ul>	Database
EMSDK	<ul> <li>Network communication port— TCP: 5172</li> <li>TCP 49159</li> </ul>	<ul> <li>Minimum disk space—40 GB</li> <li>Minimum number of systems—2</li> <li>Minimum memory (RAM)—8 GB</li> <li>Minimum CPU requirements—4</li> </ul>	Enterprise SDK server
HAProxy	Network communication port— TCP: 5172	<ul> <li>Minimum disk space—40 GB</li> <li>Minimum number of systems—1</li> <li>Minimum memory (RAM)—4 GB</li> <li>Minimum CPU requirements—2</li> </ul>	Load balancer in the high availability setup. Ubuntu version 12.04 and later.

(i) NOTE: Ensure that you add the TCP ports 443, 8080 and 1883 to the firewall exception list during high availability setup.

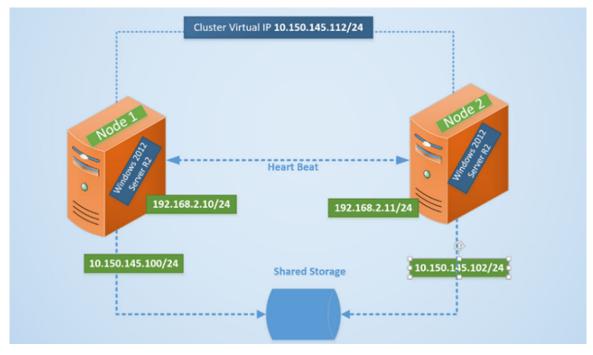
## High availability on Windows Server 2012 R2/2016/2019

A failover cluster is a group of independent systems that increases the availability and scalability of clustered roles. This feature supports multiple workloads running clusters on hardware or on virtual machines.

A failover cluster is a group of systems that are independent and increases the availability and scalability of clustered roles. The clustered servers are the nodes that are connected to one another as a network. If one or more of the cluster nodes fail, other nodes become active and prevents failover of the systems in the network. The clustered roles that are created during cluster setup monitor to verify that the systems are working in the clustered network. If any of the systems are not working, they are restarted or moved to another node.

The failover cluster network for high availability on Windows Server 2012 R2/2016/2019 contains two nodes, Node 1 and Node 2 that are configured on systems running Windows Server 2012 R2/2016/2019. In the failover cluster network, if Node 1 that is working as the primary node fails, Node 2 starts working automatically as the primary node. After Node 1 becomes active, it automatically becomes the secondary node. The systems have a shared storage space that is connected in a network.







## **Creating clustered roles**

#### Prerequisites

After you create the failover cluster, you can create clustered roles to host cluster workloads. Ensure that Wyse Management Suite is installed on the servers and point to the remote database before you create clustered roles.

#### Steps

- 1. In Windows Server 2012, right-click the Start menu and then select Server Manager to launch the Server Manager dashboard
- 2. Click Failover Cluster Manager to launch the cluster manager.

3. Right-click Roles and then select Configure Role to display the High Availability Wizard screen.

物	High Availability Wiz	zard	X
to Select Ro	ole		
Before You Begin Select Role	Select the role that you want to configure for high av	ailability:	
Select Service Client Access Point Select Storage Replicate Registry Settings Confirmation Configure High Availability Summary	DFS Namespace Server DHCP Server Distributed Transaction Coordinator (DTC) File Server Generic Application Generic Service Hyper-V Replica Broker CSCSI Target Server		Vious

#### Figure 3. High availability wizard

4. Select Generic Service and then click Next to view the Select Service screen.

New Resource V			>
Select Service	Select the service you want to use from the list:		
Confirmation Configure Generic Service Summary	Name Data Sharing Service DataCollectionPublishingService	Description Provides data brokering between applications. The DCP (Data Collection and Publishing) servi	^
	DCOM Server Process Launcher Dell WMS: Tomcat Service Device Association Service Device Install Service Device Management Enrollment Service Device Setup Manager	The DCOMLAUNCH service launches COM an Apache Tomcat 9.0.13 Server - https://tomcat Enables pairing between the system and wired Enables a computer to recognize and adapt to Performs Device Enrollment Activities for Devic Enables the detection, download and installatio	
	DevQuerv Backomund Discoverv Broker	Enables anns to discover devices with a backo	~
		Next > Cancel	

#### Figure 4. Select service

5. Select **Dell WMS: Tomcat Service** and then click **Next**.

## i NOTE: You can add the Wyse Management Suite related services to the cluster only after you install Wyse Management Suite.

The **High Availability Wizard** screen is displayed where you need to create the client access point and establish connectivity between the Windows server 2012 and Wyse Management Suite.

6. Type a network name in the Name field and then click Next. The Confirmation screen is displayed with the network name and IP address details of the server.

<b>3</b> 0	H	igh Availability Wizard	X
Confirma	tion		
Before You Begin Select Role	You are ready to configure	high availability for a Generic Service.	
Select Service Client Access Point Select Storage Replicate Registry Settings Confirmation Configure High Availability Summary	Service: Network Name: OU: IP Address: Parameters:	Dell WMS: memcached (memcached) WMS132AP CN=Computers,DC=AD132,DC=COM -d runservice -p 11211	< ~
	To continue, click Next.		
		< <u>P</u> revious <u>N</u> ext >	Cancel

#### Figure 5. Confirmation

- 7. Click **Next** to complete the process.
- 8. To add other Wyse Management Suite services as part of the cluster, launch Failover Cluster Manager, and then go to ActionsRoles to display the network name that you have created.
- 9. Click on the network name, and go to Add ResourceGeneric Service.
- 10. Select the following services from the New Resource Wizard screen that needs to be added as part of the cluster:
  - a) Dell WMS: MQTT Broker
  - b) Dell WMS: memcached
- 11. Click Next to complete the task.

The Wyse Management Suite services that have been added as part of the cluster are displayed with the status Running.

# Achieve high availability on Windows Server 2012 R2/2016/2019

#### About this task

The following are the steps to achieve high availability on Windows Server 2012/2016/2019:

- Add failover cluster feature on Windows Server 2012 R2/2016/2019—see Adding failover cluster feature on Windows Server 2012 R2/2016/2019.
- 2. Create file share witness—see Create file share witness.
- **3.** Configure cluster Quorum—see Configure cluster Quorum.
- 4. Create clustered roles—see Create cluster roles.

## Add failover cluster feature on Windows Server 2012 R2/2016/2019

#### About this task

To add the failover clustering feature on the Windows server 2012/2016/2019, do the following:

#### Steps

- In Microsoft Windows Server 2012 R2/2016/2019, click Start to open the Start screen and then click Server Manager to launch the Server Manager dashboard.
  - i NOTE: Server Manager is a management console in Windows Server 2012 R2/2016/2019 that enables you to add server roles/features, manage, and deploy servers.
- 2. Click Add roles and features and select an option to configure the server based on your requirement from the Add Roles and Feature Wizard screen.

Ra	Add Roles and Features Wizard
Select installation	DESTINATION SERVER No servers are selected. Select the installation type. You can install roles and features on a running physical computer or virtual
Before You Begin Installation Type	machine, or on an offline virtual hard disk (VHD).
Server Selection Server Roles Features Confirmation Results	<ul> <li>Role-based or feature-based installation Configure a single server by adding roles, role services, and features.</li> <li>Remote Desktop Services installation Install required role services for Virtual Desktop Infrastructure (VDI) to create a virtual machine-based or session-based desktop deployment.</li> </ul>
	< Previous Next > Install Cancel

#### Figure 6. Role based selection

3. Click Installation Type and select Role-based or Feature-based installation and then click Next to view the list of servers in the Select destination server screen.

	Select a server or a virtual h	and dirk on which to inst	all roles and features
Before You Begin			
Installation Type Server Selection	<ul> <li>Select a server from the</li> <li>Select a virtual hard disk</li> </ul>		1
Server Roles	Server Pool		
	Server Foot		
	Filter:		
	Name	IP Address	Operating System
			Microsoft Windows Server 2012 R2 Standard Microsoft Windows Server 2012 R2 Standard
	2 Computer(s) found	in the second	2012
		rver Manager. Offline se	erver 2012, and that have been added by using the rvers and newly-added servers from which data

#### Figure 7. Select server destination

- 4. Select the server where you want to enable the failover cluster feature and then click Next.
- 5. Select Failover Clustering on the Features screen, and then click Next. After you enable the failover cluster on the servers, open the Failover Cluster Manager on the server at Node 1.

- 6. Click Yes to confirm installation, and enable the failover cluster feature on the selected server.
- 7. In the Failover Cluster Manager screen, click Validate Configuration to view the Validate a Configuration Wizard add the required servers or nodes to cluster.

8	Failover Cluster Manager	- D X
File Action View Help		
4 4 III III III		
Failover Cluster Manager	Fallover Cluster Manager	Actions
	Create failover clusters, validate hardware for potential failover clusters, and perform configuration changes to your failover clusters	Failover Cluster Manager
	Carlos dutes	Validate Configuration
		See Create Chuster
	* Overview	Connect to Cluster
	Afalover cluster is a set of independent computers that work together to increase the availability of server rules. The clustered servers icalled nodes) are connected by physical cables and by software. If one of the nodes fails, another node	View
	begins to provide services (a process known as fallover).	Rafresh
	* Clusters	Properties
	Construction of the second sec	Help
	<ul> <li>Management</li> </ul>	
	To begin to use failover clustering, first validate your hardware contribution, and then create a cluster. After these steps are complete, you can namage the cluster. Managing a cluster can include regreting services and applications to it from a cluster namma Validations Server 2012. Windows Server 2010 R.C. without Server 2018.	
	Webster Configuration	
	Centre Outer	
	Connectito Duster	
	Missing services and applications from a chatter	
	More Information	
	Enloyer cluster traces on the Web	
	Enloyer, chatter, communities, on the Illinity	
	B Morpert execut peak on the Web	

#### Figure 8. Failover cluster manager

- 8. Click Select servers or cluster and then click Browse to configure the servers.
- 9. ClickNext and select Run all tests from the Testing Options screen.

	Validate a Configuration Wizard	ĸ
Testing	Options	
Before You Begin Select Servers or a Cluster Testing Options Confirmation Validating Summary	Choose between running all tests or running selected tests. The tests examine the Cluster Configuration, Hyper-V Configuration, Inventory, Network, Storage, and System Configuration. Microsoft supports a cluster solution only if the complete configuration (servers, network, and storage) can pass all tests in this wizard. In addition, all hardware components in the cluster solution must be "Certified for Windows Server 2012."	
	Run all tests (recommended)     Run only tests I select <u>More about cluster validation tests</u>	
	< Previous Next > Cancel	

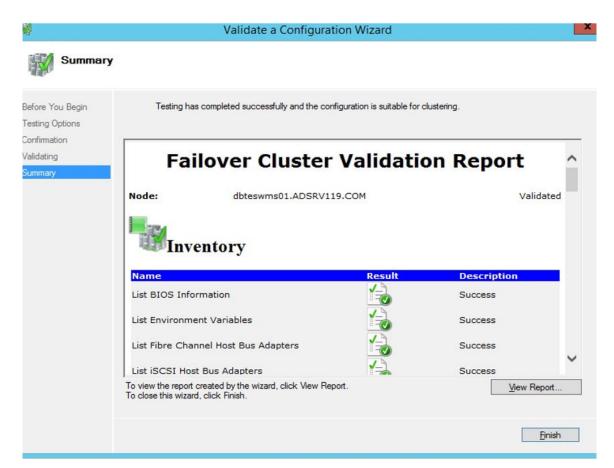
#### Figure 9. Testing options

10. Click Next. The Confirmation screen is displayed with the list of selected servers.

Ø	Validate a Configuration V	Wizard	
Confirme	ation		
Before You Begin Select Servers or a Cluster	You are ready to start validation. Please confirm that the following settings are correct:		
Testing Options	Servers to Test		
Test Selection	21WMS01.AD132.COM		$\sim$
	22WMS02.AD132.COM		
Confirmation			_
/alidating	Tests Selected by the User	Category	
ummary	List Fibre Channel Host Bus Adapters	Inventory	
	List iSCSI Host Bus Adapters	Inventory	
	List SAS Host Bus Adapters	Inventory	
	List BIOS Information	Inventory	~
	List Environment Variables	Inventory	
	To continue, click Next.		
		< Previous Next >	Cancel

#### Figure 10. Confirmation

**11.** Click **Next**. The **Summary** screen is displayed with the failover cluster validation report.



#### Figure 11. Test summary details

12. Click View Report to check the report. If the status is **Passed**, you can proceed with the next step. If the status is **Failed**, you must fix the errors before you proceed with the next step.

#### (i) NOTE: The Create Cluster Wizard screen is displayed if there are no validation errors.

- 13. Click Next and type a name for the cluster in the Cluster Name field and then select the IP address of the system.
- 14. Click Next and the Confirmation screen is displayed.
- 15. Click Next to create the cluster on all the selected clustered nodes and then click View Report to view the warning messages.
- 16. Click Finish to create the failover cluster.

## **Create file share witness**

A file share witness is a basic file share that the cluster computer has read/write access. The file share must be on a separate Windows Server 2012 in the same domain where the cluster resides.

#### About this task

To create a file share witness, do the following:

#### Steps

- 1. In Microsoft Windows Server 2012, Right-click the **Start** Menu and then select **Server Manager** to launch the Server Manager dashboard
- 2. Click the Server Manager icon to access the server manager.
- 3. Go to Files and Storage ServicesShares and then click Tasks.
- 4. Click New Share. The New Share Wizard is displayed.
- 5. Click Select Profile to create a file share and then click Next.
- 6. On the Share location screen, select the server and share location for the file share and then click Next.
- 7. On the Share Name screen, type a name in the Share name field and then click Next until the Confirmation screen is displayed.

- 8. Click **Create** to create the file share and the **View results** screen is displayed with the status as **Completed** which indicates that the file share witness is created without any errors.
- 9. Click Close to exit.

### **Configure cluster quorum settings**

The cluster configuration database, also called the quorum, contains details as to which server should be active at any given time in a cluster set-up.

#### About this task

To configure the cluster quorum settings, do the following:

#### Steps

- 1. In Microsoft Windows Server 2012, click **Start** to open the **Start** screen and then click **Server Manager** to launch the Server Manager dashboard.
- 2. Click the Server Manager icon to access the server manager and then click Failover Cluster Manager to launch the cluster manager.
- 3. Right-click the cluster node, and go to More ActionsConfigure Cluster Quorum Settings to display the Configure Cluster Quorum Wizard screen.
- 4. Click Next. Select Select the quorum witness from the Select Quorum Configuration Option screen.

體	Configure Cluster Quorum Wizard	x
Select Q	uorum Configuration Option	
Before You Begin Select Quorum Configuration Option Witness Confirmation Configure Cluster Quorum Settings Summary	Select a quorum configuration for your cluster.         Use default quorum configuration         The cluster determines quorum management options, including the quorum witness.         Select the quorum witness         You can add or change the quorum witness. The cluster determines the other quorum management options.         Advanced quorum configuration         You determine the quorum management options, including the quorum witness.	

#### Figure 12. Quorum cluster wizard

5. Click Next. Select All Nodes from the Select Voting Configuration screen.

巃	Configure Cluster Quorum Wizard	x
Select Ve	oting Configuration	
Before You Begin Select Quorum Configuration Option	Assign or remove node votes in your cluster. By explicitly removing a node's vote, you can adjust the quorum of votes required for the cluster to continue running. In Nodes	
Select Voting Configuration	○ Select Nodes	
Select Quorum Witness Configure File Share Witness	Name         Status           ✓         1	-
Confirmation	Clear All	7
Configure Cluster Quorum Settings Summary	<ul> <li>No Nodes</li> <li>You must configure a quorum disk witness. The cluster will stop running if the disk witness fails.</li> </ul> <u>Configuring and Managing Quorum Votes</u>	
	< Previous Next > Cancel	]

#### Figure 13. Select voting configuration

- 6. Click Next . Select Configure a file share witness from the Select Quorum Witness screen.
- 7. Click Next and then type the share path in the File Share Path field from the Configure a file share witness screen.

巃	Configure Cluster Quorum Wizard	x
Configure	e File Share Witness	
Before You Begin Select Quorum Configuration Option Select Voting Configuration	Please select a file share that will be used by the file share witness resource. This file share must not be hosted by this cluster. It can be made more available by hosting it on another cluster. File Share Fath:	
Select Quorum Witness	Browse	
Configure File Share Witness		
Confirmation		
Configure Cluster Quorum Settings		
Summary		_
	< Previous Next > Cancel	

#### Figure 14. Configure file share witness

8. Click Next . The Summary screen is displayed with the configured quorum settings.

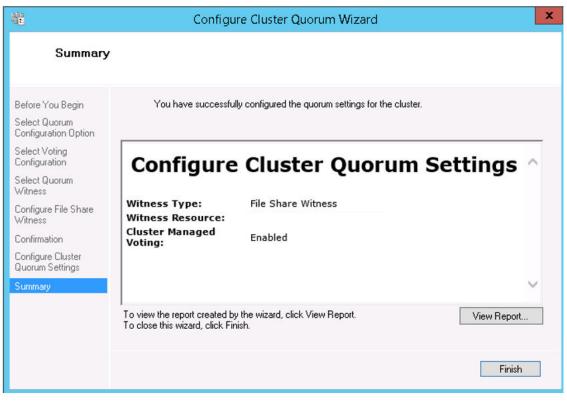


Figure 15. Summary of the quorum settings

9. Click **Finish** to complete the quorum settings.

## **Creating clustered roles**

#### Prerequisites

After you create the failover cluster, you can create clustered roles to host cluster workloads. Ensure that Wyse Management Suite is installed on the servers and point to the remote database before you create clustered roles.

#### Steps

- 1. In Windows Server 2012, right-click the Start menu and then select Server Manager to launch the Server Manager dashboard
- 2. Click Failover Cluster Manager to launch the cluster manager.
- 3. Right-click Roles and then select Configure Role to display the High Availability Wizard screen.

Select the role that you want to configure for high av	ailability:	
-	ailability:	
DES Namespace Server DES Namespace Server DES Namespace Server Distributed Transaction Coordinator (DTC) File Server Generic Application Generic Script Generic Service Hyper-V Replica Broker SiSCSI Target Server		Description: You can configure high availability for some services that were not originally designed to run on a cluster. For more information, see <u>Configuring Generic</u> <u>Applications</u> , <u>Scripts</u> , and <u>Services</u> .
	File Server Generic Application Generic Script Generic Service Hyper-V Replica Broker	File Server Generic Application Generic Script Generic Service Hyper-V Replica Broker

#### Figure 16. High availability wizard

4. Select Generic Service and then click Next to view the Select Service screen.

New Resource V			×
Select Service	Select the service you want to use from the list:		
Confirmation Configure Generic Service Summary	Name Data Sharing Service DataCollectionPublishingService DCOM Server Process Launcher	Description Provides data brokering between applications. The DCP (Data Collection and Publishing) servi The DCOMLAUNCH service launches COM an	^
	Dell WMS: Tomcat Service Device Association Service Device Install Service Device Management Enrollment Service Device Setup Manager DevQuery Background Discovery Broker	Apache Tomcat 9.0.13 Server - https://tomcat Enables pairing between the system and wired Enables a computer to recognize and adapt to Performs Device Enrollment Activities for Devic Enables the detection, download and installatio Enables apps to discover devices with a backg	v
		Next > Cancel	

#### Figure 17. Select service

- 5. Select Dell WMS: Tomcat Service and then click Next.
  - i NOTE: You can add the Wyse Management Suite related services to the cluster only after you install Wyse Management Suite.

The **High Availability Wizard** screen is displayed where you need to create the client access point and establish connectivity between the Windows server 2012 and Wyse Management Suite.

6. Type a network name in the Name field and then click Next. The Confirmation screen is displayed with the network name and IP address details of the server.

刻	H	igh Availability Wizard	X
Confirma	tion		
Before You Begin Select Role	You are ready to configure	high availability for a Generic Service.	
Select Service Client Access Point Select Storage Replicate Registry Settings Confirmation Configure High Availability Summary	Service: Network Name: OU: IP Address: Parameters:	Dell WMS: memcached (memcached) WMS132AP CN=Computers,DC=AD132,DC=COM -d runservice -p 11211	~
	To continue, click Next.		
		< <u>P</u> revious <u>N</u> ext >	Cancel

#### Figure 18. Confirmation

- 7. Click Next to complete the process.
- 8. To add other Wyse Management Suite services as part of the cluster, launch Failover Cluster Manager, and then go to ActionsRoles to display the network name that you have created.
- 9. Click on the network name, and go to Add ResourceGeneric Service.
- 10. Select the following services from the New Resource Wizard screen that needs to be added as part of the cluster:
  - a) Dell WMS: MQTT Broker
  - b) Dell WMS: memcached
- 11. Click Next to complete the task.

The Wyse Management Suite services that have been added as part of the cluster are displayed with the status Running.

## Achieve high availability for MySQL InnoDB

#### About this task

The following steps explain how to achieve high availability for MySQL InnoDB:

#### Steps

- 1. Check MySQL InnoDB server instance—see Create MySQL InnoDB cluster.
- 2. Add server or node to MySQL InnoDB—see Adding server or node to MySQL InnoDB cluster.
- 3. Create MySQL Router—see Creating MySQL Router

## High availability with MySQL InnoDB

The MySQL InnoDB cluster provides a complete high availability solution for MySQL. The client application is connected to the primary node by using the MySQL router. If the primary node fails, a secondary node is automatically promoted to the role of primary node, and the MySQL router routes the requests to the new primary node.

The components of the MySQL InnoDB cluster are:

- MySQL server
- · MySQL router

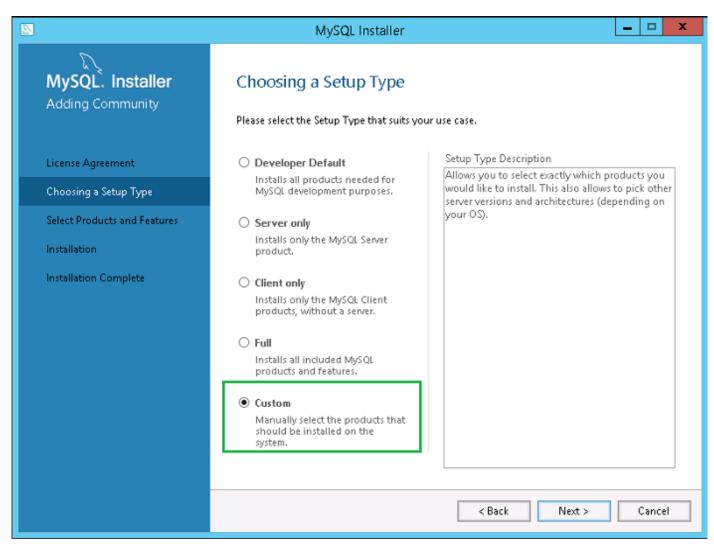
## Install MySQL InnoDB database

#### About this task

To install MySQL InnoDB database, do the following:

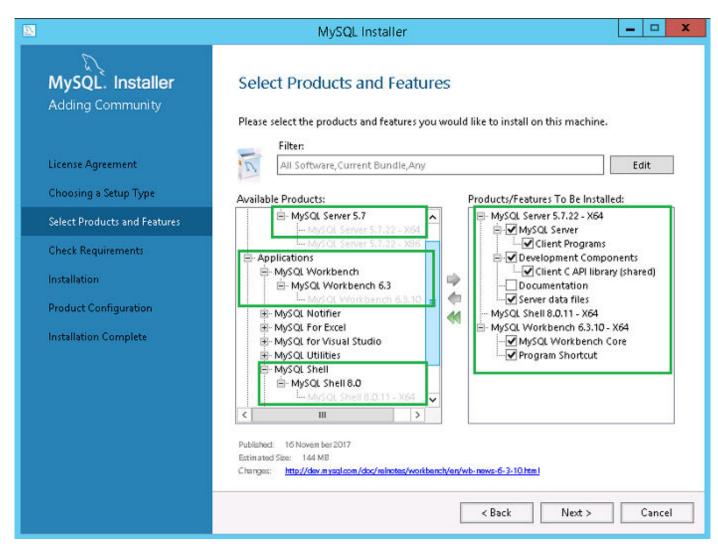
#### Steps

- 1. Double-click the MySQL installer. The MySQL Installer window is displayed.
- 2. On the License Agreement screen, read the license agreement, and click Next.
- 3. On the Choosing a Setup Type screen, click the Custom radio button, and click Next.



#### Figure 19. Setup type

4. On the Select Products and Features screen, select the MySQL Server, workbench, and shell components, and click Next.



#### Figure 20. Products and features

5. On the Check Requirements screen, select the components, and click Execute.

	MySQL Installer
MySQL. Installer Adding Community License Agreement	Check Requirements The following products have failing requirements. MySQL Installer will attempt to resolve some of this automatically. Requirements marked as manual cannot be resolved automatically. Click on those items to try and resolve them manually.
Choosing a Setup Type Select Products and Features	For Product         Requirement         Status           MySQL Server 5.7.22         Microsoft Visual C++ 2013 Redistrib           MySQL Shell 8.0.11         Microsoft Visual C++ 2015 Redistrib
Check Requirements	O MySQL Workbench 6.3.10 Microsoft Visual C++ 2015 Redistrib
Installation Product Configuration	
Installation Complete	Requirement Details MySQL Installer is trying to automatically resolve this requirement. There is nothing you need to do. Requirement: Microsoft Visual C++ 2013 Redistributable Package (x64) is not installed Status:
	< Back Execute Next > Cancel

#### Figure 21. Requirements

6. Install the required components, and click Next.

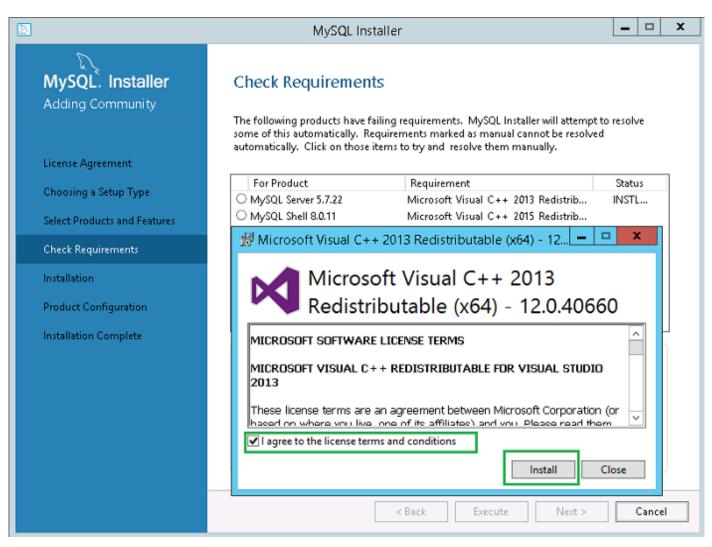


Figure 22. Components installation

]	MySQL Installer
MySQL. Installer Adding Community	Check Requirements The following products have failing requirements. MySQL Installer will attempt to resolve some of this automatically. Requirements marked as manual cannot be resolved automatically. Click on those items to try and resolve them manually.
	For Product Requirement Status
Choosing a Setup Type	SMySQL Server 5.7.22 Microsoft Visual C++ 2013 Redistrib INSTL DONE
Select Products and Features	
Check Requirements	
Installation Product Configuration Installation Complete	Requirement Details MySQL Installer is trying to automatically resolve this requirement. There is nothing you need to do. Requirement: Microsoft Visual C++ 2013 Redistributable Package (x64) is not installed Status:
	< Back Next > Cancel

Figure 23. Requirements

7. On the Installation screen, click Execute.

	MySQL Installer		- 🗆 X
MySQL. Installer Adding Community License Agreement Choosing a Setup Type Select Products and Features Check Requirements Installation Product Configuration	Press Execute to upgrade the following products.         Product         MySQL Server 5.7.22         Read         MySQL Shell 8.0.11	Status Progress dy to Install dy to Install dy to Install	Notes
Installation Complete	Click [Execute] to install or update the following packag	ges : Back Execute	Cancel

#### Figure 24. Installation

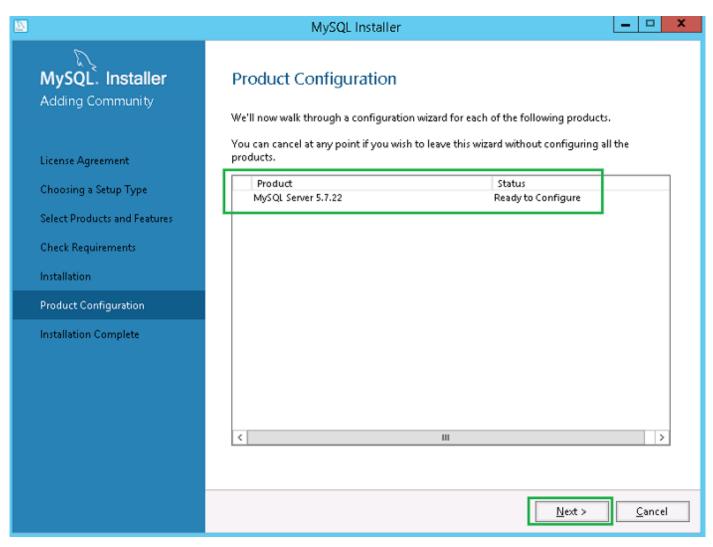
The MySQL server, workbench, and shell components are upgraded.

8. Click Next.

	MySQL Installer	_ 🗆 X
MySQL. Installer Adding Community License Agreement Choosing a Setup Type Select Products and Features Check Requirements Installation	MySQL Installer Installation Press Execute to upgrade the following products. Product Statu: Statu: MySQL Server 5.7.22 Complete MySQL Shell 8.0.11 Complete MySQL Workbench 6.3.10 Complete MySQL Workbench 6.3.10	s Progress Notes ite ite
Product Configuration Installation Complete	Show Details >	Next > Cancel

#### Figure 25. Installation

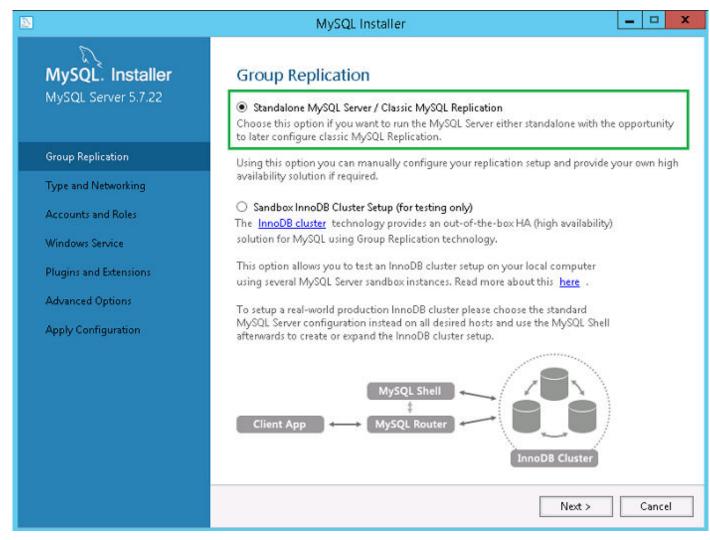
9. On the **Product Configuration** screen, the MySQL server component is displayed.



#### Figure 26. Product configuration

**10.** Click **Next** to configure the MySQL server component.

11. On the Group Replication screen, click the Standalone MySQL Server / Classic MySQL Replication radio button, and click Next.



#### Figure 27. Group replication

12. On the Type and Networking screen, select the Dedicated Computer option from the Config Type drop-down list.

	MySQL Installer
MySQL. Installer MySQL Server 5.7.22 Group Replication	Type and Networking Server Configuration Type Choose the correct server configuration type for this MySQL Server installation. This setting will define how much system resources are assigned to the MySQL Server instance. Config Type: Dedicated Computer
Type and Networking	Connectivity
Accounts and Roles Windows Service Plugins and Extensions Apply Configuration	Use the following controls to select how you would like to connect to this server.  TCP/IP Port Number: 3306  Open Windows Firewall port for network access Named Pipe Pipe Name: MYSQL Shared Memory Memory Name: MYSQL
	Advanced Configuration Select the check box below to get additional configuration page where you can set advanced options for this server instance. Show Advanced Options Kontect Content of the server instance of the server instance of the server instance of the server instance. Show Advanced Options Cancel

#### Figure 28. Type and networking

- 13. Select and configure the options in the **Connectivity** section, and click **Next**.
- 14. In the Accounts and Roles screen, enter the MySQL root password.
- 15. Click Add User.

	MySQ	L Installer	_ 🗆 X
MySQL. Installer MySQL Server 5.7.22	Accounts and R Root Account Password Enter the password for the place.	<b>oles</b> e root account. Please remember to store	e this password in a secure
Group Replication	MySQL Root Password:	•••••	
Type and Networking	Repeat Password:	Decement dramatics. Modium	
Accounts and Roles		Password strength: Medium	1
Windows Service			
Plugins and Extensions	MySQL	User Details	×
Apply Configuration	-	e, password, and database role.	ple to the user that
	Visername Host Role Authentication Password Confirm Password	root       (All Hosts (%)>       DB Admin       •       •       MySQL       •       Password Strength:       Medium	Add User Edit User Delete Next > Cancel

#### Figure 29. Add user

The **MySQL User Details** window is displayed.

16. Enter the credentials and click **Ok**.

The newly added user account is displayed in the MySQL User Accounts section.

MySQL. Installer MySQL Server 5.7.22	Accounts and Ro Root Account Password Enter the password for the place.		e remember to store this pa	ssword in a secure
Group Replication	MySQL Root Password:	•••••		
Type and Networking	Repeat Password:	•••••		
Accounts and Roles		Password streng	th: Medium	
Apply Configuration	Create MySQL user accour consists of a set of privile MySQL Username		d applications. Assign a role t	to the user that
	🗶 root	%	DB Admin	<u>E</u> dit User
				Delete

#### Figure 30. Accounts and roles

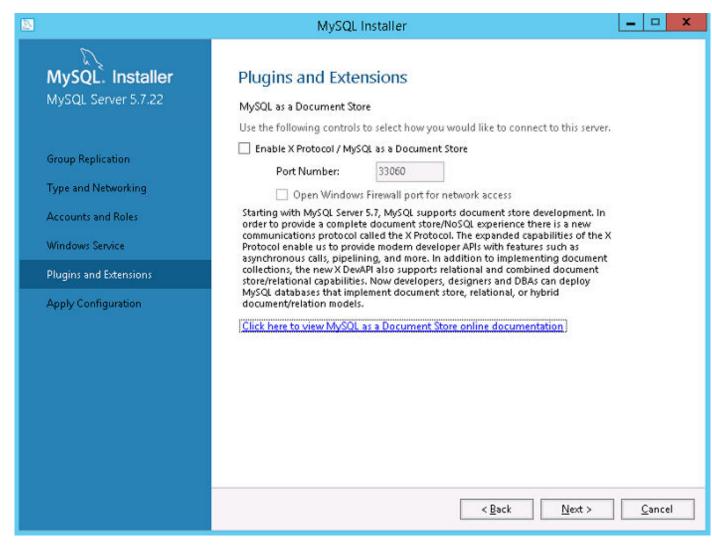
17. Click Next.

18. On the Windows Service screen, enter the MySQL Windows service name, and click Next.

	MySQL Installer
MySQL. Installer MySQL Server 5.7.22 Group Replication	Windows Service Configure MySQL Server as a Windows Service Windows Service Details Please specify a Windows Service name to be used for this MySQL Server instance. A unique name is required for each instance.
Type and Networking	Windows Service Name: MySQL57
Accounts and Roles	✓ Start the MySQL Server at System Startup
Windows Service	
Plugins and Extensions Apply Configuration	<ul> <li>Run Windows Service as</li> <li>The MySQL Server needs to run under a given user account. Based on the security requirements of your system you need to pick one of the options below.</li> <li>Standard System Account Recommended for most scenarios.</li> <li>Custom User An existing user account can be selected for advanced scenarios.</li> </ul>
	< Back Next > Cancel

#### Figure 31. Windows service

19. On the  $\ensuremath{\text{Plugins}}$  and  $\ensuremath{\text{Extensions}}$  screen, click  $\ensuremath{\text{Next}}.$ 



#### Figure 32. Plugins and extensions

**20.** On the **Apply Configuration** screen, click **Execute**. The configurations are applied to the MySQL component.

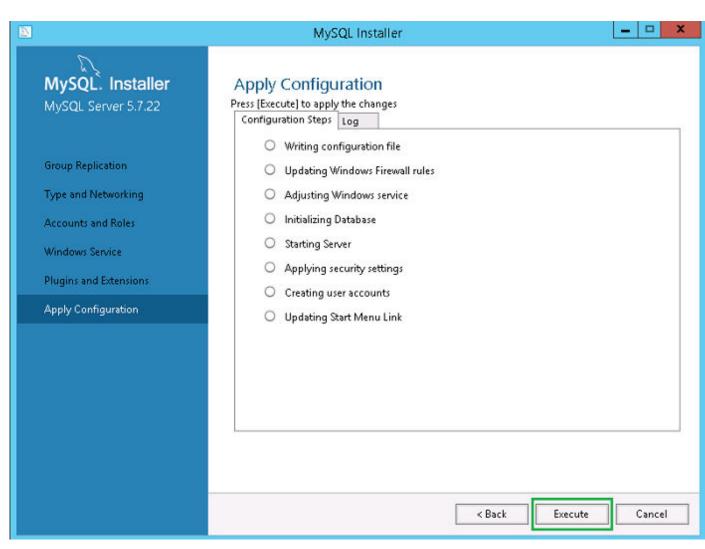
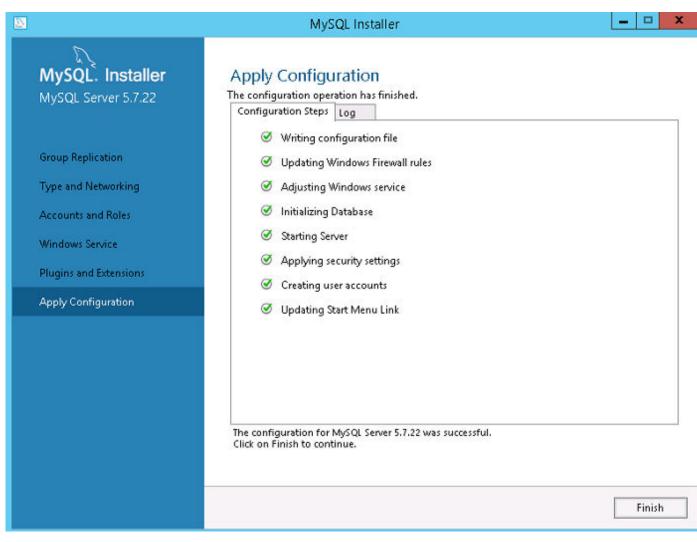


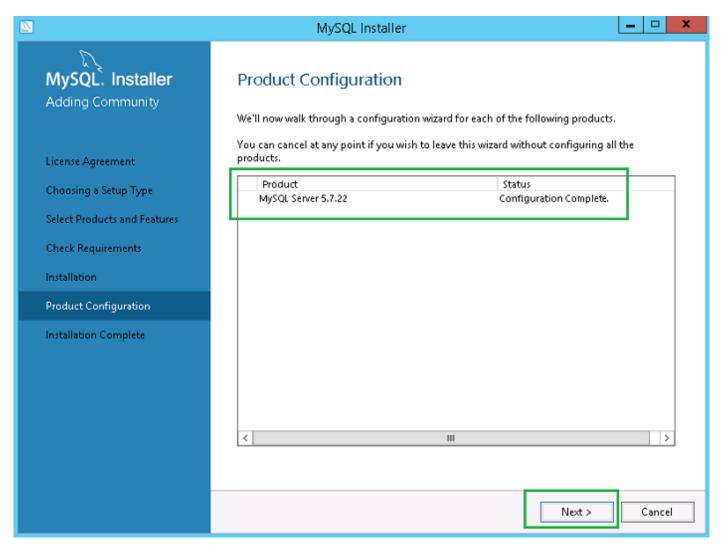
Figure 33. Apply configurations

21. Click Finish.



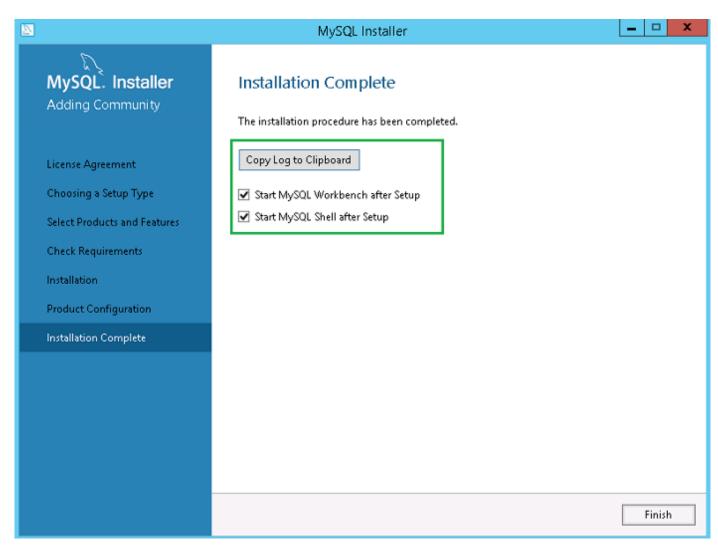
### Figure 34. Apply configurations

22. On the Product Configuration screen, click Next.



### Figure 35. Product configuration

23. On the Installation Complete screen, click Finish.



### Figure 36. Installation complete

### Next steps

Follow the procedure to install and configure MySQL server in all the three servers of the MySQL cluster.

i NOTE: To set up the environment as per the high availability setup, see dev.mysql.com.

# Check MySQL InnoDB server instances

#### About this task

Before you add MySQL InnoDB to the cluster setup, verify that MySQL InnoDB is created as per the cluster requirements. You must login as **root** user to run the commands and restart the system each time you run a set of commands. Run the following commands to verify that the MySQL InnoDB server instance meets the configured cluster requirements:

# i NOTE: The IP Address is different for each system that is used at your work place and the following commands are used only as an example.

#### Steps

- To check that the MySQL InnoDB is created as per the requirements, run the following commands at the command prompt:
- mysql-js> dba.checkInstanceConfiguration('root@IP Address1')
- mysql-js> dba.checkInstanceConfiguration('root@IP Address2')
- mysql-js> dba.checkInstanceConfiguration('root@IP Address3')

		C:\Program Files\M	ySQL\MySQL Shell 8.0\bin\mysqlsh.exe	
MySQL Shell 8.0.11				
Copyright (c) 2016, 2018, Oracle an	d∕or its affilia	tes. All rights r	eserved.	
Oracle is a registered trademark of affiliates. Other names may be trad owners.	Oracle Corporat: emarks of their p	ion and/or its respective		
Type '\help' or '\?' for help; '\qu	it' to exit.			
MySQL JS> dba.configureLocalInstanc Please provide the password for 'ro Configuring local MySQL instance li	ot010.150.132.23	:3306': мжижиния	n InnoDB cluster	
This instance reports its own addre Clients and other cluster members w ble should be changed.	ss as 23MYSQLØ1 ill communicate (	with it through t	his address by default. If this is not correct, the report_host MySQI	ı system vari
Some configuration options need to	be fixed:			
Variable	Current Value	Required Value		
log_slave_updates master_info_repository	0 FILE FILE	NONE ON 1 ON TABLE TABLE XXHASH64	Update the server variable Update read-only variable and restart the server Update read-only variable and restart the server	
The following variable needs to be Detecting the configuration file Found configuration file at standar Do you want to perform the required Configuring instance The instance '10.150.132.23:3306' w MySQL server needs to be restarted MySQL JS>	d location: C:\Pr /N]: y configuration cl as configured for	rogranData\MySQL\ hanges? [y/n]: y r cluster usage.	MySQL Server 5.7\my.ini	

### Figure 37. MySQL command prompt

To check that the MySQL InnoDB is created on all the three cluster nodes, run the following commands at the command prompt:

- mysql-js> dba.checkInstanceConfiguration('root@IPAddress1:3306')
- mysql-js> dba.checkInstanceConfiguration('root@IPAddress2:3306')
- mysql-js> dba.checkInstanceConfiguration('root@IPAddress3:3306')
   The instance "IPAddress:3306" is valid for InnoDB cluster usage; 'Status': 'ok' message is displayed.

### **Create a cluster instance for MySQL InnoDB**

### Prerequisites

After you have installed MySQL InnoDB instance on the servers, create a cluster instance.

### About this task

To create a cluster for MySQL InnoDB, do the following:

### Steps

1. Login as administrator user from the command prompt. This user account should have administrative privileges. For example, **DBadmin**. The following screen shows an example of logging in as root user.

	C:\Program Files\MySQL\MySQL Shell 8.0\bin\mysqlsh.exe
"status": "ok" D	
MySQL JS> \connect rootf10.150.132.23:3306 Creating a session to 'rootf10.150.132.23:3306' Enter password: ********** Petching schema names for autocompletion Press ^ Your MySQL connection id is ? Server version: 5.?.22-log MySQL Community Server ( No default schema selected; type \use <schema> to s</schema>	GPL>
MySQL [10.150.132.23] JS> _	

### Figure 38. Login prompt

- 2. Run the following command to create a cluster with a unique name. For example, **MySQLCluster**. MySql JS> var cluster = dba.createCluster('MySQLCluster')
- **3.** Run the following command to check the status of the cluster. MySql JS>Cluster.status()

The status of the created cluster is displayed as **ONLINE** which indicates that the cluster is created successfully.

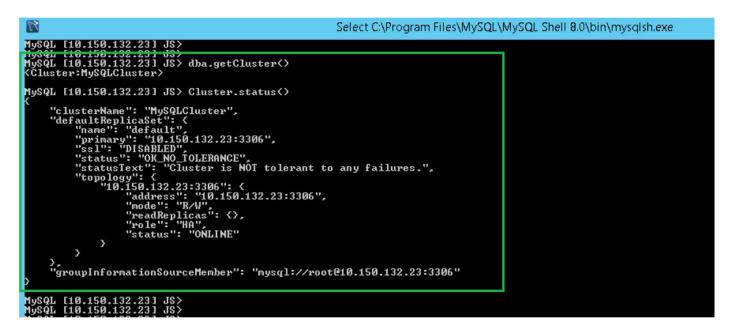


Figure 39. Confirmation screen

# Add server instance to MySQL InnoDB cluster

### Prerequisites

- Before you add servers or nodes to the clusters, change the server id to either 2 or 3 in the my.conf file in the secondary MySQL servers at C:\ProgramData\MySQL\MySQL Server 5.7.
- Only the primary MySQL server must have server ID as 1. The server ID should be unique across the SQL cluster.

### About this task

You must add server instance to the MySQL InnoDB cluster as primary or secondary.

Do the following to add a server instance to the MySQL InnoDB cluster:

- 1. Log in as DB Admin user from the command prompt on the primary server.
- 2. Run the following command to add a server instance to the MySQL InnoDB cluster:

```
cluster.addInstance('root@IPAddress2:3306')
```

```
cluster.addInstance('root@IPAddress3:3306')
```

- i NOTE: The IP address and the port numbers are only examples and varies based on the system that you are using at your work place.
- 3. Run the following command to check the status of the server instance:

cluster.status()

### (i) NOTE:

- If the server IDs are same in all the nodes, and if you try to add instances in the Cluster, the error message Server\_ID is already in used by the peer node, Result<Runtime Error> is displayed.
- All the nodes should display the status as ONLINE which indicates that the nodes have been added successfully to the MySQL InnoDB cluster setup.

	C:\Program Files\MySQL\MySQL Shell 8.0\bin\mysqlsh.exe
ySQL [10.150.132.23] JS> ySQL [10.150.132.23] JS> ySQL [10.150.132.23] JS> var cluster = dba.get( ySQL [10.150.132.23] JS> dba.getCluster() Cluster:MySQLCluster>	Cluster()
<pre>ySQL [10.150.132.23] JS&gt; Cluster.status()     "clusterName": "MySQLCluster",     "defaultReplicaSet": {         "name": "default",         "primary": "10.150.132.23:3306",         "ssl": "DISABLED",         "status": "OK",         "status": "OK",         "status": "OK",         "status": "Cluster is ONLINE and car         "topology": {</pre>	

### Figure 40. Cluster status

# **Configure MySQL Router**

### Prerequisites

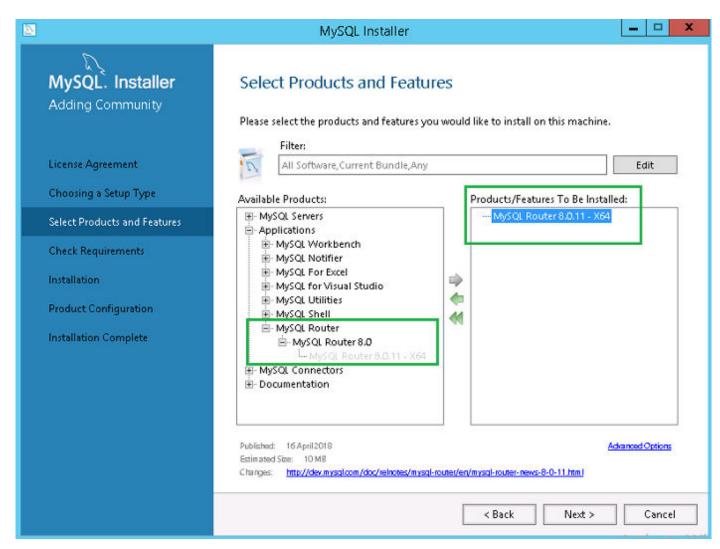
MySQL Router establishes communication network between Wyse Management Suite and MySQL InnoDB.

### About this task

To install MySQL Router, do the following:

### Steps

- 1. Log in to the Windows Server 2012/2016 to install MySQL Router. For more information, see MySQL Router Installation
- 2. Select MySQL Router from the Select Products and Features screen and then click Next .



### Figure 41. Select products and features

3. On the Check Requirements screen, click Execute.

	MySQL Installer
MySQL. Installer Adding Community License Agreement	Check Requirements The following products have failing requirements. MySQL Installer will attempt to resolve some of this automatically. Requirements marked as manual cannot be resolved automatically. Click on those items to try and resolve them manually.
Choosing a Setup Type Select Products and Features	For Product         Requirement         Status           MySQL Router 8.0.11         Microsoft Visual C++ 2015 Redistrib
Check Requirements Installation Product Configuration	
Installation Complete	Requirement Details MySQL Installer is trying to automatically resolve this requirement. There is nothing you need to do. Requirement: Microsoft Visual C++ 2015 Redistributable Package (x64) is not installed Status: Cancel
	< Back Execute Next > Cancel

### Figure 42. Check requirements

4. Install the required components, and click Next.

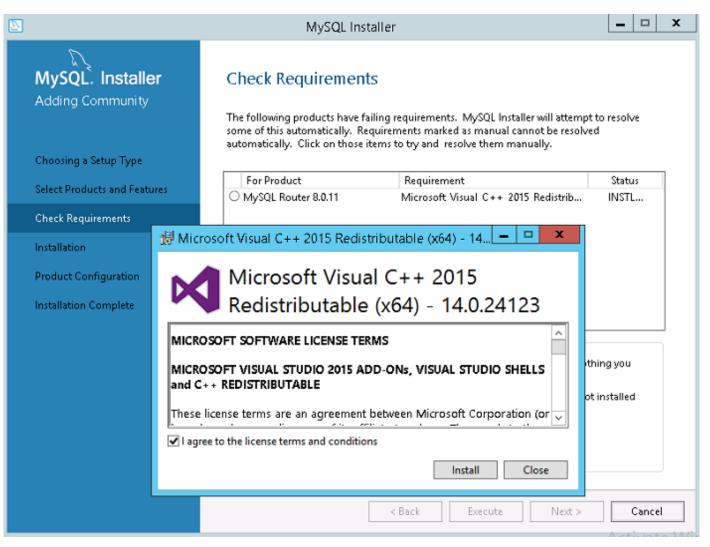


Figure 43. Components install

2	MySQL Installer 📃 🗖 🗙
MySQL. Installer Adding Community License Agreement Choosing a Setup Type	Check Requirements The following products have failing requirements. MySQL Installer will attempt to resolve some of this automatically. Requirements marked as manual cannot be resolved automatically. Click on those items to try and resolve them manually. For Product Requirement Status Ø MySQL Router 8.0.11 Microsoft Visual C++ 2015 Redistrib INSTL DONE
Select Products and Features	L
Check Requirements	
Installation	
Product Configuration	
Installation Complete	Requirement Details MySQL Installer is trying to automatically resolve this requirement. There is nothing you need to do. Requirement: Microsoft Visual C++ 2015 Redistributable Package (x64) is not installed Status:
	< Back Next > Cancel

Figure 44. Check requirements

5. On the Installation screen, click Execute.

	MySQL Installer		×
MySQL. Installer Adding Community	Installation		
	Press Execute to upgrade the following		
License Agreement	Product MySQL Router 8.0.11	Status Progress Ready to Install	Notes
Choosing a Setup Type			-
Select Products and Features			
Check Requirements			
Installation			
Product Configuration			
Installation Complete			
	Click [Execute] to install or update the	following packages	
		< <u>B</u> ack E <u>x</u> ecute	<u>C</u> ancel

### Figure 45. Installation

MySQL router component is upgraded.

6. Click Next.

	MySQL Installer					×
MySQL. Installer Adding Community	Installation Press Execute to upgrade the following	products.				
	Product	Status	Progress	Notes		
Choosing a Setup Type	MySQL Router 8.0.11	Complete				
Select Products and Features						
Check Requirements						
Installation						
Product Configuration						
Installation Complete						
	<u>Show Details &gt;</u>					
		< <u>B</u> ack	<u>N</u> ext >	<u>C</u> a	ncel	

### Figure 46. Installation

7. On the **Product Configuration** screen, the MySQL router component is displayed.

	MySQL Installer	_ <b>D</b> X
MySQL. Installer Adding Community		wizard for each of the following products. to leave this wizard without configuring all the
Choosing a Setup Type	products.	to reave and without configuring an are
Select Products and Features Check Requirements Installation Product Configuration Installation Complete	Product MySQL Router 8.0.11	Status Ready to Configure
	٢	III > Next > Cancel

### Figure 47. Product configuration

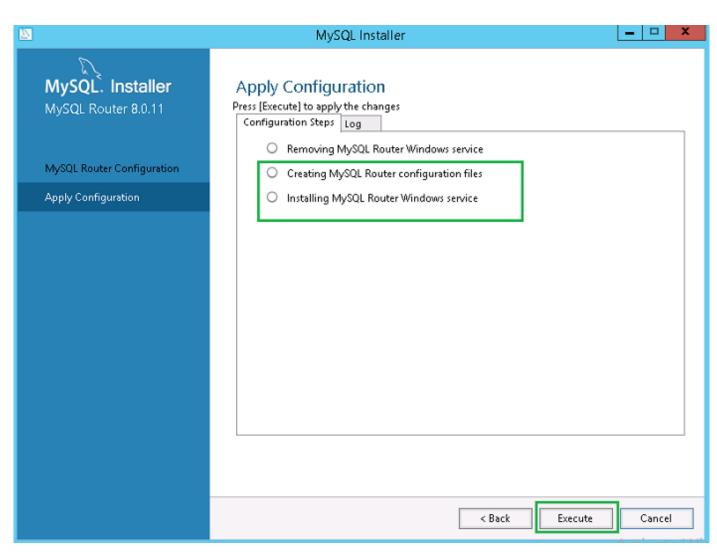
8. Click **Next** to configure the MySQL router component.

9. On the MySQL Router Configuration screen, enter the hostname, port number, management user, and password.

	MySQL Installer
MySQL. Installer MySQL Router 8.0.11 MySQL Router Configuration	MySQL Router Configuration  Configure MySQL Router for InnoDB cluster.  This wizard can bootstrap the MySQL Router to route traffic between MySQL applications and a MySQL InnoDB cluster. Applications that connect to the router will be automatically directed to an available R/W or R/O member of the cluster.  Please provide a connection to the InnoDB cluster below. In order to register the MySQL Router for monitoring, use the current Read/Write instance of the cluster.
Apply Configuration	Hostname:       .         Port:       3306         Management User:       root         Password:
	Classic MySQL protocol connections to InnoDB cluster: Read/Write: 6446 Read Only: 6447 MySQL X Protocol connections to InnoDB cluster: Read/Write: 6448 Read Only: 6449
	<u>N</u> ext > <u>C</u> ancel

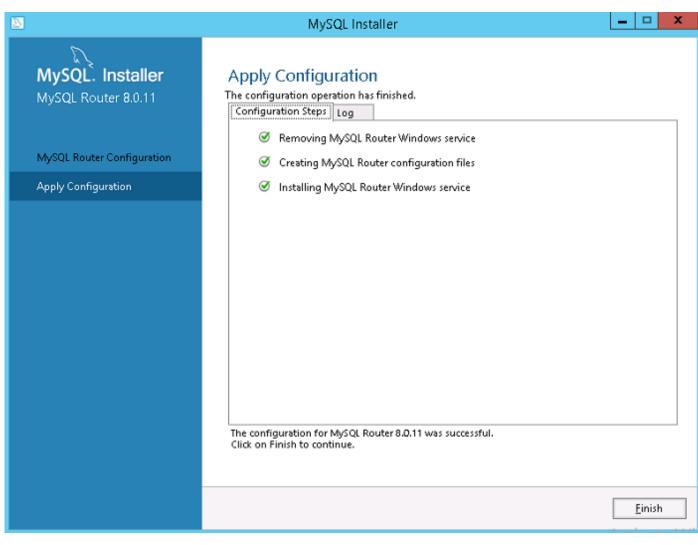
Figure 48. MySQL Router Configuration

10. On the Apply Configuration screen, click  $\ensuremath{\mathsf{Execute}}$  .



### Figure 49. Apply configuration

11. Click Finish.



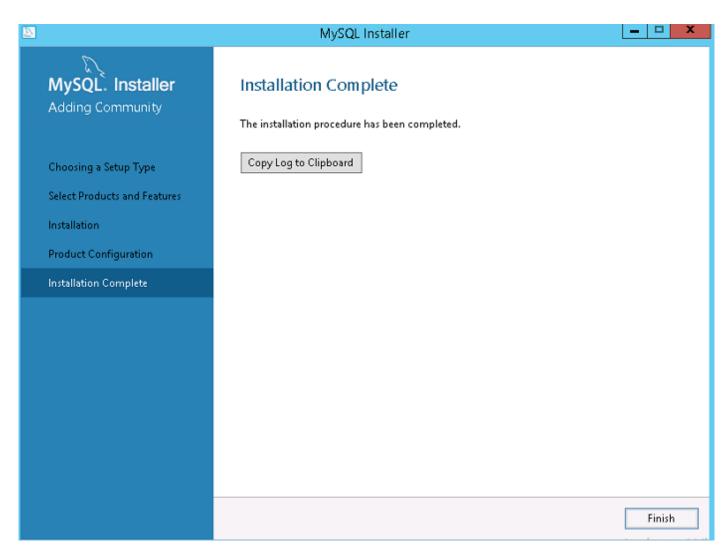
### Figure 50. Apply configurations

12. On the Product Configuration screen, click Next.

	MySQL Installer	_ <b>D</b> X
MySQL. Installer Adding Community		on wizard for each of the following products.
Choosing a Setup Type	You can cancel at any point if you wi products. Product	sh to leave this wizard without configuring all the Status
Select Products and Features	MySQL Router 8.0.11	Configuration Complete.
Product Configuration		
Installation Complete	<	III >
		<u>N</u> ext > <u>C</u> ancel

### Figure 51. Product configuration

The Installation Complete message is displayed.



### Figure 52. Installation complete

13. Click Finish.

14. Browse to \ProgramData\MySQL\MySQL Router directory, and open the file mysqlrouter.conf to check that the bootstrap property with all the configured MySQL servers are part of cluster setup.

3	mysqlrouter - Notepad	_ <b>_</b> X
File Edit Format View Help		
<pre># File automatically generated dum [DEFAULT] logging_folder=C:/ProgramData/MySQ runtime_folder=C:/ProgramData/MySQL/ data_folcer=C:/ProgramData/MySQL/ keyring_path=C:/ProgramData/MySQL, master_key_path=C:/ProgramData/MySQL, connect_timeout=30 read_timeout=30 [logger] level - INFO</pre>	L/MySQL Router/log L/MySQL Router/run MySQL Router/data MySQL Router/data/keyring	 ₹
[metadata_cache:MySQLCluster] router ic=2 bootstrap_server_addresses- user=mysci_routerz_oqjoLdzmzw3p metadata_cluster=MySQLCluster ttl=5		
<pre>[routing:MySQLCluster_default_rw] bind_address=0.0.0.0 bind_port=6446 destinations=metadata-cache://MySQ </pre>	LCluster/default?role=PRIMARY	×

Figure 53. Bootstrap server address

# Create database and users on MySQL InnoDB server

You must create the database and user accounts with administrator privileges on MySQL InnoDB server.

### About this task

To create database on MySQL InnoDB server, run the following SQL commands:

```
Create Database stratus DEFAULT CHARACTER SET utf8 DEFAULT COLLATE utf8_unicode_ci;

CREATE USER 'STRATUS'@'LOCALHOST';

CREATE USER 'STRATUS'@'IP ADDRESS';

SET PASSWORD FOR 'STRATUS'@'LOCALHOST' = PASSWORD <db_password>;

SET PASSWORD FOR 'STRATUS'@ <IP Address> = PASSWORD <db_password>;

GRANT ALL PRIVILEGES ON *.* TO 'STRATUS'@<IP_Address> IDENTIFIED BY <db_password> WITH GRANT

OPTION;

GRANT ALL PRIVILEGES ON *.* TO 'STRATUS'@'LOCALHOST' IDENTIFIED BY <db_password> WITH GRANT

OPTION;
```

i NOTE: Instead of IP Address, you can type the Wildcard for Network /Subnet or Multiple Single host entry where Wyse Management Suite application server will be installed.

# Achieve high availability on MongoDB

### About this task

The following steps explain how to achieve high availability on MongoDB:

### Steps

- 1. Install MongoDB—see Installing MongoDB.
- 2. Create replica servers—see Creating Replica servers.
- 3. Create Stratus users—see Creating Stratus user account.
- **4.** Create root user—see Creating root user for MongoDB.
- 5. Edit MongoDB configuration file—see Editing MongoDB configuration file.

# Install MongoDB

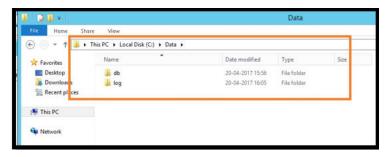
### About this task

To install MongoDB on all the three nodes, do the following:

(i) NOTE: For information on installing MongoDB see—Install MongoDB

### Steps

- 1. Copy the MongoDB installation files on a system.
- 2. Create two folders Datalog and dataldb on a secondary drive other than Drive C.



### Figure 54. Data files

3. Go to the folder where you have copied the MongoDB installation files, and create a file mongod.cfg from the command prompt.

🎉   💽 🗓 = I		3.4			
File Home Shar	e View				
€ 💿 ▾ ↑ 퉫 ▸ ་	This PC 🔸 Local Disk (C:) 🔺 Program Files	► MongoDB ► Server ► 3	3.4 ▶		
🔆 Favorites	Name	Date modified	Туре	Size	
E Desktop	퉬 bin	26-04-2017 13:27	File folder		
🚺 Downloads	GNU-AGPL-3.0	01-02-2017 20:50	0 File	35 KB	
📃 Recent places	mongod.cfg	20-04-2017 15:52	CFG File	0 KB	
	MPL-2	01-02-2017 20:50	File	17 KB	
🖳 This PC	README	01-02-2017 20:50	File	2 KB	
🙀 Network	THIRD-PARTY-NOTICES	01-02-2017 20:50	File	56 KB	

### Figure 55. mongod.cfg file

4. Open the mongod.cfg file in a text editor, and add:

```
systemLog:
    destination: file
    path: c:\data\log\mongod.log
storage:
    dbPath: c:\data\db
```

- 5. Save the file.
- 6. Open command prompt.
- 7. Run the following command to start the MongoDB service:
  - a) C:\MongoDB\bin>.\mongod.exe --config c:\Mongodb\mongod.cfg --install
  - b) C:\MongoDB\bin>net start mongodb
  - The message MongoDB service is starting is displayed.
- 8. Change the working directory to \MongoDB\bin.
- 9. Run Mongo.exe at the command prompt to complete the MongoDB installation.

### **Create replica servers for MongoDB database**

You must create replica servers to avoid any system failures. The replica servers should have the capacity to store multiple distributed read operations.

For more information to create replica servers, see Deploy a Replica Server Set at docs.mongodb.com/manual.

### Create stratus user

Create an user, for example, StratusUser using the Wyse Management Suite to access MongoDB.

i NOTE: The stratus user and password are examples and can be created using a different name and password at your work place.

Run the following command to create the StratusUser:

```
db.createUser({
user: "stratus",
pwd: <db_password>,
roles: [ { role: "userAdminAnyDatabase", db: "admin" },
{ role: "dbAdminAnyDatabase", db: "admin" },
{ role: "readWriteAnyDatabase", db: "admin" },
{ role: "dbOwner", db: "DBUser" }]})
```

### Create database user

Create an user, for example, DBUser using the Wyse Management Suite to access MongoDB.

i NOTE: The database user and password are examples and can be created using a different name and password at your work place.

Run the following command to create the DBUser:

```
db.createUser({
user: "DBUser",
pwd: <db_password>,
roles: [ { role: "userAdminAnyDatabase", db: "admin" },
{ role: "dbAdminAnyDatabase", db: "admin" },
{ role: "readWriteAnyDatabase", db: "admin" },
{ role: "dbOwner", db: "DBUser" }]
})
```

### **Create DBadmin user for MongoDB**

Login to the MongoDB using the user account created in the previous section. The DBadmin user is created with the administrative privileges.

Run the following command to create the DBadmin user:

```
mongo -uDBUser -pPassword admin
use admin
db.createUser( {
user: "DBadmin",
pwd: <DBadmin user password>,
roles: [ { role: "DBadmin", db: "admin" } ]
})
```

### Edit mongod.cfg file

You must edit the mongod.cfg file to enable the security for the MongoDB database.

1. Login to MongoDB as root user that you have already created and run the following command:

mongo -uroot -<root password> admin

- 2. Go to \data\bin\mongod.cfg directory, and open mongod.cfg file in a text editor.
- 3. Edit mongod.cfg file as shown in the following command:

	mongod - Notepad
File Edit Format View Help	
<pre>systemLog: destination: file path: c:\data\log\mongod.log</pre>	
<pre>storage: dbPath: c:\data\db</pre>	
net: port: 27017	
security: authorization: enabled	

### Figure 56. Edit mongod.cfg

```
systemLog:
destination: file
path: c:\data\log\mongod.log
storage:
dbPath: c:\data\db\Mongo
```

```
net:
bindIp: x.x.x.x, 0.0.0.0
port: 27017
security:
authorization: enabled
```

(i) NOTE: The port numbers will change depending on the system at the work place.

**4.** Save mongod.cfg and exit.

### Initiate replication on the servers

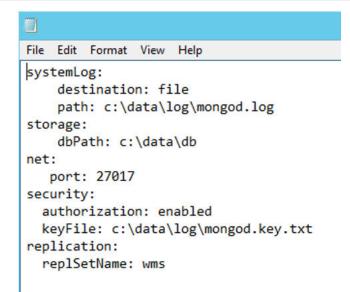
Ensure that you disable firewall on Windows and stop Tomcat servers if they are running.

1. Login to MongoDB as root user that you have already created and run the following command:

```
mongo -uroot -<root password> admin
```

- 2. Go to \data\bin\mongod.cfg directory, and open mongod.cfg file in a text editor.
- **3.** Add the following three lines in the mongod.cfg file:

```
systemLog:
    destination: file
    path: c:\data\log\mongod.log
storage:
    dbPath: c:\data\db\Mongo
net:
    bindIp: X.X.X.X, 0.0.0.0
    port: 27017
security:
    authorization: enabled
    keyFile: c:\data\log\mongod.key.txt
replication:
    replSetName: wms
```



#### Figure 57. Enabling security

4. Create mongod.key.txt file and copy on all the three servers.

(i) NOTE: Ensure that the mongod.key.txt file content or key is the same in all the three servers.

ile Home Shar	e View				
) 💿 🔹 🕇 🚺 🕨	This PC → Local Disk (C:) → Data → log		~ ¢	Search log	9
Favorites	Name	Date modified	Туре	S	ize
E Desktop	mongod.key	03-04-2018 00:57	Text Docume	ent	1 KB
〕 Downloads	mongod	06-08-2018 12:56	Text Docume	ent	8 KB
Recent places	mongod.log.2018-08-06T06-28-34	06-08-2018 11:58	2018-08-06T0	06-28	1 KB
💺 This PC					

### Figure 58. Copy the mongod key file

5. After you copy the file, stop the mongod service by running the following command:

net stop mongodb

- 6. Start the mongod service by running the following command:
  - net start mongodb

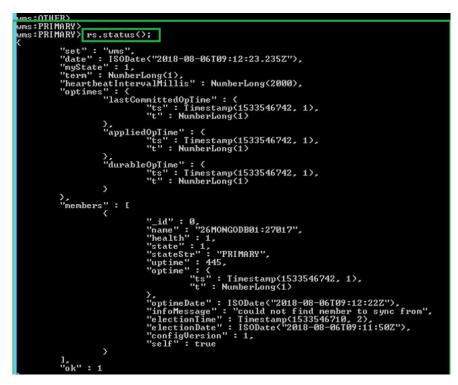
rs.initiate();

- 7. Repeat the steps from 1 to 6 in all the three nodes of MongoDB servers.
- 8. Initiate replication on the primary node of the MongoDB cluster logging in using DBadmin user and then run the following command:

```
C:\Mongo\bin>mongo.exe -u root -p x` admin
MongoDB shell version v4.2.1
connecting to: mongodb://127.0.0.1:27017/admin?
compressors=disabled&gssapiServiceName=mongodb
Implicit session: session { "id" : UUID("952f322c-1eb4-46c4-9b5e-bd536e2c1e7e") }
MongoDB server version: 4.2.1
MongoDB Enterprise > use admin
switched to db admin
MongoDB Enterprise > use admin
switched to db admin
MongoDB Enterprise > mongoDB Enterprise > rs.initiate();
{
"info2" : "no configuration specified. Using a default configuration for the set",
"me" : "10.150.132.37:27017",
"ok" : 1
}
```

9. Check the replication status by running the following command:

```
rs.status();
```



### Figure 59. Replication status

10. Start mongod service and add the secondary nodes to the second and third nodes in the MongoDB cluster:

```
rs.add("IPAddress2:27017")
rs.add("IPAddress3:27017")
MongoDB Enterprise wms20:PRIMARY> rs.add("10.150.132.36:27017")
{
    "ok" : 1,
    "$clusterTime" : {
    "clusterTime" : Timestamp(1579600528, 1),
    "signature" : {
    "hash" : BinData(0,"8N3uo25khebgbY+PsFxJZvMaI1g="),
    "keyId" : NumberLong("6784332217662308354")
    },
    "operationTime" : Timestamp(1579600528, 1)
}
```

### i NOTE: The port numbers will differ based on the systems at your network and systems.

**11.** After you add the nodes in the MongoDB cluster, check the replication status by running the following commands for the primary and secondary nodes:

rs.status();



Figure 60. Status in primary server

	"configUersion" : 3, "self" : true		
<i>.</i>	<pre>"_id"::1, "name"::10.150.132.27:27017", "state":2, "stateStr":: "yptime"::14, "optime"::14, "optime"::14, "optimeDurable"::1inestamp(1533547215, 1),</pre>	SECONDARY MONGO DB Servers' Detail	
	<pre>"_id": 2, "name": "10.150.132.28:27017", "bealth": 1, "state": 2, "stateStr": ["SECONDARY", "uptime": 6 "optime": 6 "optimeDurable": ( "ts": Timestamp(1533547215, 1), "t": NumberLong(1) ), "optimeDurable": ( "optimeDate": IsODate("2018-08-06T09:20:15Z"), "optimeDate": ISODate("2018-08-06T09:20:15Z"), "lastHeartbeat": ISODate("2018-08-06T09:20:22.013Z"), "lastHeartbeat": ISODate("2018-08-06T09:20:22.013Z"), "lastHeartbeat": ISODate("2018-08-06T09:20:22.013Z"), "configUersion": 3</pre>	°≁ Acti	

Figure 61. Secondary server status

# Achieve high availability for Teradici devices

Wyse Management Suite uses the HAProxy hosted on the Ubuntu server 16.04.1 LTS to perform load balancing between the EMSDK servers. HAProxy is a load balancer proxy that can also provide high availability based on how it is configured. It is a popular open source software for TCP/HTTP Load Balancer, and proxy solution which runs on Linux operating system. The most common use is to improve the performance and reliability of a server environment by distributing the workload across multiple servers.

### About this task

The following points explains how to achieve high availability for Teradici devices using HAProxy on Linux operating system:

- · There will be only one instance of Teradici server as part of high availability with Wyse Management Suite.
- Teradici device support requires installation of EMSDK. EMSDK is a software component provided by Teradici that is integrated into Wyse Management Suite. Wyse Management Suite Installer installs EMSDK can be installed on Wyse Management Suite server or on a separate server. You need minimum of two instances of EMSDK to support more than 5000 devices, and all EMSDK servers should be on remote servers.
- Only one instance of EMSDK can be installer per server.
- · Teradici Device support requires a PRO license.
- High availability of Teradici will be provided through HAProxy.
- If Teradici server goes down, device will reconnect automatically to the next available EMSDK server.

### Install and configure HAProxy

#### About this task

HAProxy which is the load balancer for ThreadX 5x devices is configured on Ubuntu Linux version 16.04.1 with HAproxy version 1.6.

Do the following to install and configure HAProxy on Ubuntu Linux system:

- 1. Log in to Ubuntu system using the user credentials used during the installation of Ubuntu operating system.
- 2. Run the following commands to install HAProxy

sudo apt-get install software-properties-common

sudo add-apt-repository ppa:vbernat/haproxy-1.6

sudo apt-get update

sudo apt-get install haproxy

- 3. Run the following command to take backup of the original configuration:
- sudo cp /etc/haproxy/haproxy.cfg /etc/haproxy/ haproxy.cfg.original4. Edit the HAProxy configuration file in a suitable text editor by running the following commands:

sudo nano /etc/haproxy/haproxy.cfg

Add the following entries in the configuration file:

Global section: Maxconn <maximum number of connections>

Frontend tcp-in: bind :5172

Back end servers: server :5172

maxconn <maximum number of connections per Teradici device proxy server>

# i NOTE: Administrator must add additional back end servers beyond the total number of client's capacity to have seamless failover.

5. Save the changes to the haproxy.cfg file by typing CTRL+O.

The following text is a sample HAProxy configuration file:

```
qlobal
             log /dev/log
                               local0
             log /dev/log
                               local1 notice
             chroot /var/lib/haproxy
             daemon
             #maxconn is maximum allowed connections
            maxconn 60000
    defaults
             loq
                     global
             mode
                     tcp
             timeout connect 5000ms
             timeout client 50000ms
timeout server 50000ms
             errorfile 400 /etc/haproxy/errors/400.http
             errorfile 403 /etc/haproxy/errors/403.http
             errorfile 408 /etc/haproxy/errors/408.http
             errorfile 500 /etc/haproxy/errors/500.http
             errorfile 502 /etc/haproxy/errors/502.http
             errorfile 503 /etc/haproxy/errors/503.http
             errorfile 504 /etc/haproxy/errors/504.http
    frontend fe teradici 5172
      bind :5172
      mode tcp
      backlog 4096
maxconn 70000
      default backend be teradici 5172
    backend be teradici 5172
      mode tcp
      option log-health-checks
      option tcplog
      balance leastconn
      server emsdk1 :5172 check server emsdk2 5172 check : timeout queue 5s timeout server
    86400s
      option srvtcpka
    #frontend fe teradici 5172
    #replace IP \overline{\mathrm{w}}ith IP of your Linux proxy machine bind Eg: 10.150.105.119:5172
    #default backend servers
    #backend servers
    #Add your multiple back end windows machine ip with 5172 as port
    # maxconn represents number of connection- replace 10 with limit #(below 20000)
# "server1" "server2" are just names and not keywords
    #server server1 10.150.105.121:5172 maxconn 20000 check
    #server server2 10.150.105.124:5172 maxconn 20000 check
6. Validate the HAProxy configuration by running the following command:
   sudo haproxy -f /etc/haproxy/haproxy.cfg -c
   If the confiration is valid, the message Configuration is Valid is displayed.
```

- 7. Restart HAProxy servce by running the following command:
- Sudo service haproxy restart
- 8. Stop HAProxy by running the following command:

serviceSudo service haproxy stop

# 8

# Install Wyse Management Suite on Windows Server 2012 R2/2016/2019

### Prerequisites

Ensure that the following servers are configured before installation of Wyse Management Suite application:

- · Windows Fail over Cluster on Two Nodes
- MongoDB Server Running with replica set
- MySQL Server InnoDB Cluster up running
- MySQL Router installed on the two Nodes

### About this task

### Installation of Wyse Management Suite 1.3 or higher on both the Nodes in Windows Cluster

#### Steps

1. Launch the Wyse Management Suite installer.

Wyse Managem	ent Suite Installer
Welcome	Welcome to Dell Wyse Management Suite
Setup Type Configuration	This wizard guides you through the complete installation of Dell Wyse Management Suite 13 on your system. You will be able to choose your licensing options later.
Destination Summary Install	By installing or using this product, you agree to the following: Dell End User License Agreement
instail	ID-1107 Important Notice Pless see the Dell Wyse Management Suite Quick Start Guide to make sure that your thin client devices have the correct version of the Wyse Device Agent to communicate with the WMS Cloud.

#### Figure 62. Welcome screen

**2.** Select Custom type installation.

✓ Welcome	Setup Type
Setup Type	✓ Wyse Management Suite
Configuration	C Typical Requires minimum user interaction. Installs embedded databases.
Destination	• Custom
Summary	Requires maximum user interactions. Recommended for advanced users.
Install	🔽 Teradici EM SDK
	Select this option to enable Teradici device management
	Turn off IE Enhanced Security Configuration.
	IE Enhanced Security Configuration must be turned off to access all features of Wyse Management Suite Web Console. Please see quick start quide for more details.

### Figure 63. Setup type

**3.** Select the External Remote Mongo database option (MongoDB Cluster with Replica set created). Ensure to provide the remote primary Mongo DB server information and port number; and Mongo DB username and password.

	Dell Wyse Mana	gement Suite 1.3		
😡 Wyse Management	Suite Installer			- ×
✓ Welcome	Mongo Databas	e Server		
<ul> <li>Setup Type</li> <li>Configuration</li> <li>Destination</li> <li>Summary</li> <li>Install</li> </ul>	<ul> <li>C Embedded Mo</li> <li>I External Mong</li> <li>Database Name</li> <li>stratus</li> <li>Username</li> <li>stratus</li> </ul>	20 T. C	Port 27017	
			Back	Next

#### Figure 64. Configuration

4. Select the External MariaDB option for MySQL. Provide MySQL router address (Local Host if it is installed on Wyse Management Suite server node) in the External Maria DB Server fields with the port number(Default 6446). You must type the MySQL database user account information that was created initially.

# i NOTE: Ensure that the "Stratus" Database is created and "DB User" account(stratus) with appropriate Privileges is created on MySQL server.

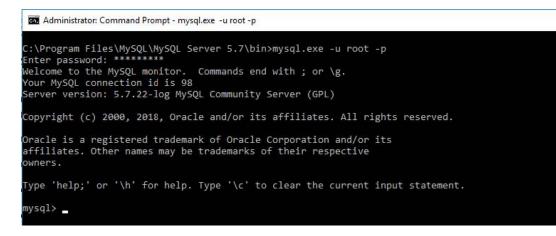
The following commands are to be started in the Primary Node or R/W MySQL DB Server:

- a. Open command prompt with Admin mode, go to "C:\Program Files\MariaDB 10.0\bin>" and start command, "C:\Program Files \MariaDB 10.0\bin>mysql.exe -u root -p"
- b. Provide the root password which was created during My SQL server installation to log in into DB server.

Administrator: Command Prompt - mysql.exe -u root -p	22
C:\Program Files\MySQL\MySQL Server 5.7\bin≻mysql.exe -u root -p Enter password: ******** Welcome to the MySQL monitor. Commands end with ; or \g. Your MySQL connection id is 98 Server version: 5.7.22-log MySQL Community Server (GPL)	
Copyright (c) 2000, 2018, Oracle and/or its affiliates. All rights reserved.	
Oracle is a registered trademark of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners.	
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.	
mysql> CREATE DATABASE stratus DEFAULT CHARACTER SET utf8 DEFAULT COLLATE utf8_unicode_ci; Query OK, 1 row affected (0.01 sec)	
mysql>	

#### Figure 65. Root password

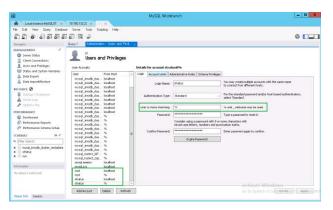
**c.** Execute the command, CREATE DATABASE stratus DEFAULT CHARACTER SET utf8 DEFAULT COLLATE utf8\_unicode\_ci to create DB.



### Figure 66. Database command

- d. Execute following commands to create and Stratus User account and privileges:
  - · Create user 'stratus'@'localhost'
  - · Create user 'stratus'@'10.150.132.21'
  - Set password for 'stratus'@'localhost' = password ('PASSWORD')
  - Set password for 'stratus'@'IP ADDRESS'= password ('PASSWORD')
  - Grant all privileges on \*.\* to 'stratus'@'IP ADDRESS' identified by 'PASSWORD' with grant option.
  - Grant all privileges on \*.\* to 'stratus'@'localhost' identified by 'PASSWORD' with grant option.
- e. Provide MySQL router information in the External Maria DB Server fields with port number and MySQL DB user account information.

## i NOTE: The above commands can be started through the MySQL workbench for creating users and privileges with wildcards.



### Figure 67. MySQL workbench

8		MySQL Workbench	D X
Local Instance My/SiLS7 ×     Local View Direct Database     Directory     Directory     Directory     Manual Contents		0	
Server Status     Olent Connections     Users and Prinkeges	Users and Privileges	Betails for account stratuoithe	
Data and System Variables     Data Dapat     Data Dapat     Data Dapat     Data Dapat     Data Dapat     Data Data Data     Data Data Data	Use Provident	Top:         Disputation         Advance-Index         States/Mage           Index         Concentration         Gladin human           Index         Concentration         Concentration           Index         Concentrati	n
Dashboard     Dechtonards Reports     Stretomanos Scheme Setup     Commany     Dechtomanos Scheme Setup     Commany     Dechtomanos     Dechtomanos	nysid_mode_dat% nysid_mode_dat% nysid_mode_dat% nysid_mode_dat% nysid_mode_dat% nysid_mode_dat% nysid_mode_dat% nysid_mode_dat%	VE         Stillenuter         vyffit is media and menans ingraves myckani         VE         CRUIT VEIrr           VE         Insplace/scale         vyffit is media and myckani         VEIrr	
<ul> <li>         royaj jenab "duster_metadata         stratus      </li> <li>         sys      </li> </ul>	nysg_nedb_tas% nysg_nedb_tas% nysg_nedb_137% nysg_nedb_137% nysg_nedb_2ggl% nysg_nedb_2ggl% nysg_nesen kcahot pysg_nes	V BARK V DOD MARS V LOO MARS V MUTANIS V MUTANIS V MUTANIS	
No slojert selected	root locahost root % Wratur locahost	C IN PROVINCE OF THE CASE OF T	w.
Object Info Section	Add Accurd Delete Refresh	Activate Windows Control Systems in Control Systems	Apple 1

### Figure 68. MySQL workbench

5. Provide ports information for Wyse Management Suite related Services in "Port Selection" window.

/ Welcome	Port selection	
<ul> <li>Setup Type</li> </ul>	Please select the port numbers to be used with	the following:
Configuration	Apache Tomcat \$43	
Destination	MariaDB database 6446	
Summary	Mongo database 27017	
Install	MQTT v3.1 Broker 1883 Memcached 11211	

### Figure 69. Configuration

6. Provide administrator credentials and email address information.

	Dell Wyse Mar	nagement Suite 1.3	
www. Wyse Managemen	<b>it Suite</b> Installer		_ ×
✓ Welcome	Credentials		
🖌 Setup Type	Administrator	Credentials	
Configuration	First Name	Last Name	Email address
Destination	Password	Confirm Password	
Summary	•••••	••••••	
Install		ed will be used as your userna these credentials to log into \	
			Back

### Figure 70. Configuration

7. Provide Teradici EM SDK Port information and CIFS User Account information.

	Dell Wyse Ma	nagement Suite 1.3	
ᇞ Wyse Managemen	t Suite Installer		<u></u>
<ul> <li>Welcome</li> <li>Setup Type</li> <li>Configuration</li> <li>Destination</li> <li>Summary</li> <li>Install</li> </ul>	Teradici EM SI Port 49159 CIFS User Crec O Use an Existin O Create a New Username	lentials ng User	Confirm Password
			Back

### Figure 71. Teradici EM SDK

8. Provide 'Destination Installation folder path' and 'Shared UNC path' for Local repository.

	Dell Wyse Management Suite 1.3	
www. Wyse Manageme	nt Suite Installer	_ ×
✓ Welcome	Destination	
🗸 Setup Type	Select a destination where you want to install Dell Wyse	Management Suite
<ul> <li>Configuration</li> </ul>	C:\Program Files\DELL\WMS	Browse
Destination	Select a local repository to store Applications, OS Image Please note that you can't change path of local reposito	
Summary	selected.	Browse
Install		
		Back Next

### Figure 72. Destination

- 9. Recheck the Installation Summary information before we proceed with the Wyse Management Suite installation.
- **10.** Complete the Installation on both the nodes.

Type the Destination Installation folder path and Shared UNC path for the local repository and then click **Next**. The message **The installation was successful** is displayed.

(i) NOTE: The shared UNC path should be kept out of both the Windows Server where Wyse Management Suite application is installed. Before you install Wyse Management Suite application on Node 2, ensure to delete the 'Data' folder present in the Wyse Management Suite Local Repository; which was created during installation on Node 1.

After 'Data' folder is deleted from the shared UNC WMS Local Repository path, you can install Wyse Management Suite Application in the Node 2 of the Windows Cluster.

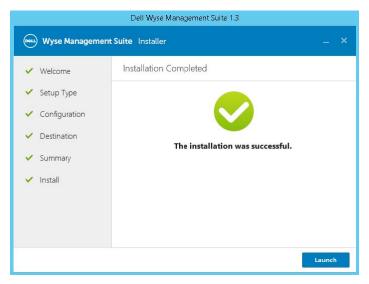


Figure 73. Installation successful

# **Post installation checks**

### About this task

Do the following to check the high availability for Wyse Management Suite:

- Launch the Wyse Management Suite administrator portal and check whether you can log in using the web interface.
- Edit the bootstrap.properties file in the Tomcat server under the \Dell\WMS\Tomcat-9\webapps\ccm-web\WEB-INF \classes folder for MongoDB as follows:

```
mongodb.seedList = MongoDBServer1_IP:27017, MongoDBServer2_IP:27017,
MongoDBServer3_IP:27017
```

Do the following to make changes in the MongoDB and MySQL DB tables:

- 1. Log in to Mongo DB using Robo 3T and update Windows Cluster Virtual IP/Hostname of Access Point values in the bootstrapProperties table with the following attributes:
  - Stratusapp.server.url
  - Stratus.external.mqtt.url
  - Memcached. Servers
  - Mqtt.server.url
- 2. Update the MySQL tables and restart the Tomcat on both the nodes. Manually update mysql database table to retain the ServerIp in the ServersInCluster table to be active by running the following command:

Update serversInCluster set ServerIp = '<VIP address of Windows Cluster>';

### i NOTE: Ensure that there is only one record in serversInCluster table and if there are more than one record, delete the excess records.

Update queuelock set IpInLock = '<VIP address of Windows Cluster>';

- **3.** Connect the FQDN address of the access point to the **Memcached** registry on both nodes of the high availability setup using the following paths:
  - Registry path—HKLM\SYSTEM\CurrentControlSet\Services\Memcached\
  - Image path—C:\Program Files\DELL\WMS\memcached\memcached.exe -d runservice -p 11211-I <FQDN of Access Point> -U 0

# Upgrade Wyse Management Suite version 1.3 to 1.4

#### Prerequisites

Ensure that the mongodb.seedList value in the bootstrap.properties file includes backslash character (\) in the list of Mongo database servers. The bootstrap.properties file is at Tomcat-9\webapps\ccm-web\WEB-INF\classes, mongodb.seedList = MongoDBServer1\_IP\:27017, MongoDBServer2\_IP\:27017, MongoDBServer3\_IP \:27017.

	Date modified	Туре	Size		
com	15-03-2019 11:23	File folder			
org	15-03-2019 11:23	File folder			
appqueue.properties	08-10-2018 15:22	PROPERTIES File	3 KB	21	
bootstrap.properties	15-03-2019 11:25	PROPERTIES File	2 KB		
rei mongodb.authenticat build.number=40983 dbcpTestOnBorrow=tr mongodb.write.optio dbcpInitialSize=16 mongodb.socketKeepA dbcpMinEvictableId1	n=1 live=true				
public.cloud.url.us	=https\://us1.wysemana				
mongodb.seedList=10	.150.132.46\:27017,10 er_class=org.mariadb. :00		17,10.150.132.	48\:27017	

#### Figure 74. Prerequisite

Ensure that the primary (active) Mongo database server with read and write access is the first entry in the mongodb.seedList. This is because the installer uses only the first entry as the primary server in the MongoDB cluster.

### About this task

To upgrade Wyse Management Suite from version 1.4 to 2.0, do the following:

# Steps

- 1. Double-click the Wyse Management Suite 1.4 installer package.
- 2. On the Welcome screen, read the license agreement and click Next.

) Wyse Managen	nent Suite Installer
Welcome	Welcome to Dell Wyse Management Suite
Upgrade	This wizard guides you to upgrade your setup to Dell Wyse Management Suite 1.4 on your system.
	By installing or using this product, you agree to the following: Dell End User License Agreement
	<b>Important Notice</b> Please see the Dell Wyse Management Suite Quick Start Guide to make sure that your thin client devices have the correct version of the Wyse Device Agent to communicate with the WMS Cloud.

# Figure 75. Welcome screen

3. On the Upgrade page, click Next to upgrade Wyse Management Suite .

# Dell Wyse Management Suite 1.4

🚾 Wyse Managemer	n <b>t Suite</b> InstallerX
✓ Welcome	Upgrade
Upgrade	Dell Wyse Management Suite 1.3 will be upgraded to 1.4. Please make sure WMS console is closed for ensuring a smooth upgrade.
	Back

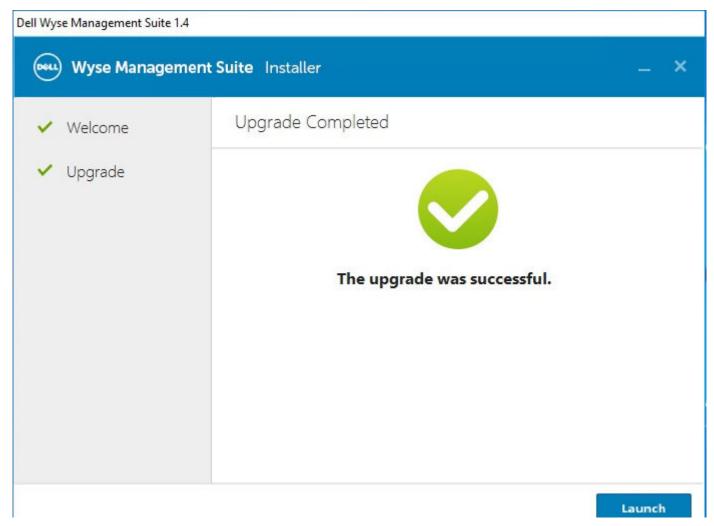
Figure 76. Upgrade

# Dell Wyse Management Suite 1.4

www. Wyse Managem	ent Suite Installer
✓ Welcome	Status
Upgrade	Stopping Dell WMS: Tomcat service

# Figure 77. Upgrade

4. Click Launch to open the Wyse Management Suite web console.



### Figure 78. Launch

#### Next steps

- Ensure that Tomcat-8 folder and subfolders are deleted, and Tomcat-9 folder and subfolders are created. Also, do the following:
  - Ensure that Tomcat-9\webapps\ccm-web\WEB-INF\classes folders and subfolders are created.
  - Ensure that Tomcat-9 service is added, and Tomcat-9 service is running.
  - Ensure that the bootstrap.properties file is copied from Tomcat-8\ webapps\ccm-web\WEB-INF\classes folder to Tomcat-9\webapps\ccm-web\WEB-INF\classes folder.
  - Ensure that the mongodb.seedList value in the bootstrap.properties file includes backslash character (\) in the list of Mongo database servers. The bootstrap.properties file is at Tomcat-8\webapps\ccm-web\WEB-INF\classes, mongodb.seedList = MongoDBServer1\_IP\:27017, MongoDBServer2\_IP\:27017, MongoDBServer3\_IP \:27017.
  - Ensure that the primary and secondary MongoDB servers entries are present in the mongodb.seedList.
- In the Windows Fail-over Cluster, if the status of the access point is down due to the unavailability of the Tomcat 8 service, do the following:
- 1. Go to Failover Cluster Manager > Cluster > Roles > Access Point.
- 2. Check the status of the Wyse management Suite related services, roles, and access point.

ager Roles (1) 132.COM Search							Dell WMS: Tomcat Serv	rice Properties		×
Name	Statue 😧 Failed	Type Genelic Service	Owner Node 42WMS02	Peorty Medium	Information		У Тура	ces Reparty F Dependencies Del WHS Tompat Service Genetic Service Falled	Replication Policies	Configure Role Virtual Machines Create Empty Role View
<ul> <li>🤹 🍪 WMS131</li> </ul>	w					1			r i	Refresh Help
Name		9	itatus .	Information			Service name:	Tomoat8		WMS: Tomcat Serv
Poles B Del WMS ex B Del WMS M		12	<ul> <li>Online</li> <li>Online</li> </ul>				Statup parameters	//RS//Tomoat8		Bring Online Take Offline Information Detail
Del WMS: To	most Service	6	S Faled	Failed to bring	the resource 'Dell In/MS. '	Tomcat Service' on				Show Critical Even
Server Name	Service	6	Online		[	Failed to bring the re	source 'Dell WMSi Torrici	nt Service' online. For more dat	a, see Informa	tion Details' etiens
Since: WMS	314AP	6	Online							Properties
1.										Help
								DK Cancel	1405	

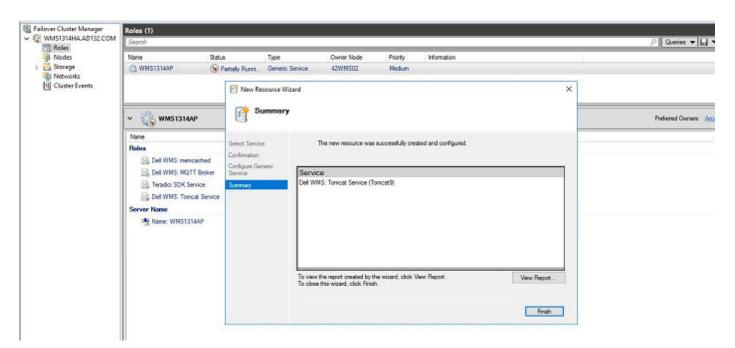
#### Figure 79. Access point

- **3.** Check the version of the Tomcat service. If the version of the Tomcat service is 8, you must manually remove Tomcat-8 and add Tomcat-9 service into the Access Point. This is because, when you upgrade Wyse Management Suite 1.4 to WMS 2.0, Tomcat-8 service is replaced with Tomcat-9.
- 4. Right-click the Tomcat-8 service, and then click **Remove**.

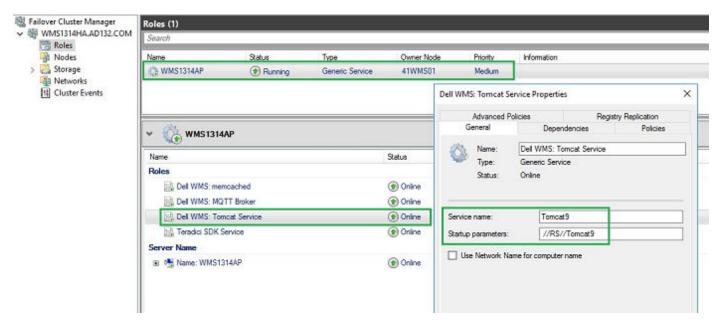
Failover Cluster Manager WMS1314HA.AD132.COM	Roles (1) Search						P Queries 🕶 🖬 🔻 🗸
Roles Nodes Storage Networks Cluster Events	Name	Status 😨 Failed	Type Generic Service	Owner Node 42WMS02	Piloty Nedum	Information	
	~ 👸 WMS1314AP						Preferred Owners: Any node
	Name			Status	Information		
	Roles						
	Del WMS mencache			Online     Online			
	Del WMS: Tomcat Se	opvine .		Raled	Failed to bring t	he resource 'Dell WMS' Torricat Service' on	1
	Teradici SDK Service	Bring Take	Online Offline	() Online			
	Mane: WM51314AP	1000	nation Details Critical Events	() Online			
		More More	Actions +				
		× Remo	N/M	I			
		Prope	rties	]			

## Figure 80. Tomcat service removal

5. Add the Tomcat-9 service to the access point.



#### Figure 81. Tomcat-9 service



#### Figure 82. Tomcat 9 service

6. Bind the FQDN address of the access point of High Availability to the Memcached registry on both nodes of the High Availability setup using the command

```
Registry Path: HKLM\SYSTEM\CurrentControlSet\Services\Memcached\
"ImagePath" = "C:\Program Files\DELL\WMS\memcached\memcached.exe" -d runservice -p -I
11211 WMS1314AP.AD132.COM -U 0"
```

Edit String X Value name:	<ul> <li>Name</li> <li>(Default)</li> <li>Description</li> <li>DisplayName</li> <li>ErrorControl</li> </ul>	Type REG_SZ REG_SZ REG_SZ REG_DWORD	Deta (value not set) memcached 1.4.4-14-g9c660c0 is a high-performa Dell WMS: memcached 0x0000001 (1)	
ImagePath	e ImagePath	REG_EXPAND_SZ	"C:\Program Files\DELL\WMS\memcached\mem	
Value data: [d'memoached.ese" -d runservice -p 11211 -l 41WM501.M0132.COM -U 0 OK Cancel	CbjectName Start WOW64	REG_SZ REG_DWORD REG_DWORD REG_DWORD	LocalSystem 0x0000003 (3) 0x00000010 (16) 0x00000001 (1)	
missimb20 - MisBridge - MisDTC - MisDTC Bridge 4.0.0.0 Mists - misgpiowin32				

Figure 83. Memcached data

# Upgrading from Wyse Management Suite version1.4/1.4.1 to Wyse Management Suite version 2.0

### Prerequisites

Ensure to perform the following tasks before upgrading to Wyse Management Suite version 2.0.

• Set the policy of the resources(tomcat,memcache,mqtt) in the access point to "if resource fails, Do not restart" though default policy "if resource fails, attempt restart on current node" is recommended, for failover scenario it does not allow the product to upgrade.

	icies Re	gistry Replication
General	Dependencies	Policies
esponse to resourc	e failure	
If resource fails	, do not restart	
) If resource fails	attempt restart on current n	ode
Period for restar	rts (mm:ss):	15:00 💠
Maximum restar	ts in the specified period:	1.0
Delay between	restarts (ss.f):	0.5 🜩
again after the	attempts fail, begin restarting specified period (hh.mm) More abou	01.00 ¢
inding timeout		
Specify the length	of time the resource can tak id Offline before the Cluster s led state.	

#### Figure 84. Tomcat Service Properties

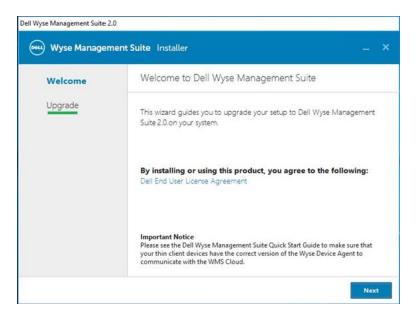
- Upgrade the MongoDB Replica Set from 3.4.1 to 4.2.1; path of Mongo DB Upgrade is 3.4.1 >> 3.6 >> 4.0 >> 4.2.1. This is because from WMS 2.0 version onwards we are supporting MongoDB version 4.2.1 due to scheme changes made to support RAPTOR 9.0 devices.
  - 1. Upgrading Replica Set from 3.4.1 to 3.6— see https://docs.mongodb.com/manual/release-notes/3.6-upgrade-replica-set/.
  - 2. Upgrading Replica Set from 3.6 to 4.0.13— see https://docs.mongodb.com/manual/release-notes/4.0-upgrade-replica-set/.
  - 3. Upgrading Replica Set from 4.0 to 4.2.1— see https://docs.mongodb.com/manual/release-notes/4.0-upgrade-replica-set/.
- The primary MongoDB server must be the first entry in the 'mongodb.seedList' value in 'bootstrap.properties' file under

"Tomcat-9\webapps\ccm-web\WEB-INF\classes ".

The MS Services Control Panel "services.msc" and any Wyse Management Suite related Files and Folder must be closed.

#### Steps

- 1. Double-click the Wyse Management Suite 2.x installer package.
- 2. On the Welcome screen, read the license agreement and click Next.



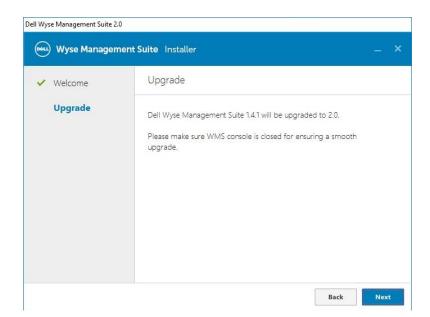
#### Figure 85. Upgrade

3. Select the **Bind Memcached to 127.0.0.1 check box** to bind the memcache to local server—127.0.0.1. If this check box is not selected, the memcache is binded to FQDN.

	Teradici EM SDK	
<ul> <li>Welcome</li> </ul>		
Upgrade		
	□ Bind Memcahced to 127.0.0.1	
	Note : Memcached is currently binded to Recommended to bind it to 127.0.0.1	

#### Figure 86. Teradici EM SDK

#### 4. Click Next.



# Figure 87. Upgrade

5. In the Dell Wyse Management Suite - InstallShield Wizard window, click Yes.

#### Figure 88. Upgrade

Wait for the installation to complete.

II Wyse Management Suite 2.	D
Wyse Managem	nent Suite Installer
🗸 Welcome	Status
Upgrade	Starting upgrade
	_

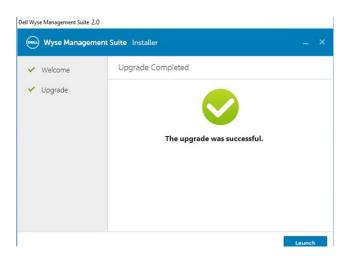
Figure 89. Upgrade

ent Suite Installer
Status
Stopping Dell WMS: Tomcat service

# Figure 90. Upgrade

Dell Wyse Management Suite 2.0					
Wyse Management Suite Installer					
✓ Welcome	Status				
Upgrade	Archiving Teradici files				

# Figure 91. Upgrade



### Figure 92. Upgrade

# Post upgrade from Wyse Management Suite version1.4/1.4.1 to Wyse Management Suite version 2.0

Ensure to change back the Access Point's service policy setting of the resources to default "if resource fails, attempt restart on current node " configuration.

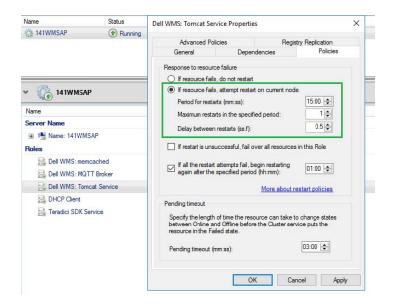


Figure 93. Access point

# Troubleshooting

#### About this task

This section provides troubleshooting information for Wyse Management Suite version 1.x for the cluster set up.

- Problem: Where is the Wyse Management Suite log file located to check server installation issues.
- Workaround: The log file is in the %temp% WMSInstall.logfolder.
- Problem: Where is the Tomcat service related log file located to check the application related issues.

Workaround: If any of the node/server in the cluster does not work and fails to be part of the MySQL cluster do the following:

- Reboot the cluster node and run the command var cluster = dba.rebootClusterFromCompleteOutage(); in the shell prompt.
- Reconfigure the local instance using the command dba.configureLocalInstance('root@ Server IPAddress:3306').
- 3. Add the instnce back to the cluster using the command cluster.addInstance('root@Server IPAddress:3306').
- Problem: If any of the server or node in the cluster stops working and is not part of the MySQL InnoDB cluster.

Workaround: Perform the following steps at the command prompt:

joining instance to cluster is displayed.

var cluster = dba.rebootClusterFromCompleteOutage(); #Reboot the cluster instance dba.configureLocalInstance('root@Server\_IPAddress:3306') #Reconfigure the local instance cluster.addInstance('root@Server\_IPAddress:3306')#Add the cluster instance back to the network My-SQL JS> cluster.rejoinInstance("root@Server IPAddress")

Problem: If the server IDs are same in all the nodes, and if we try adding instances in the Cluster, an error message ERROR: Error

100 C		C:\Program Files	MySQL\MySQL Shell 8.0\bin\mysqlsh.exe	
Some active options on server ' Please configure the instance fo The server_id 1 is already used The server_id must he different Option name	or InnoDB Cluster by peer '23MYSQL from the ones in	usage and try aga 01:3306'	in.	
server_id	<unique id=""></unique>	1	FAIL (RuntimeError)	
MySQL [10.150.132.23] JS> cluste A new instance will be added to data on the cluster this might (	the InnoDB clust	er. Depending on t	he amount of	
Please provide the password for Adding instance to the cluster		.24:3306': *******	**	
Validating instance at 10.150.13	32.24:3306			
This instance reports its own a	ddress as 24MYSQL	82		
Instance configuration is suita Cluster, addInstance: WARNING: TI ERROR: Error joining instance to Some active options on server ' Please configure the instance f. The server_id 1 is already used The server_id must be different Option name	he given '10.150. o cluster: The op 10.150.132.24:338 or InnoDB Cluster by peer '23MYSQL	eration could not 6' are incompatibl usage and try aga 01:3306'	in.	ed server_id 1 ents not being met:
server_id	<unique id=""></unique>	1	FAIL (RuntimeError)	
HySQL [10.150.132.23] JS> cluste A new instance will be added to data on the cluster this might (	the InnoDB clust	er. Depending on t	he amount of	
Please provide the password for Adding instance to the cluster		.25:3306': *******	**	
Validating instance at 10.150.13	32.25:3306			
This instance reports its own a	ddress as 25MYSQL	03		
Instance configuration is suital Cluster.addInstance: WARNING: TJ ERROR: Error joining instance t Some active options on server ' Please configure the instance fo The server_id 1 is already used The server_id must be different Option name	he given '10.150. o cluster: The op 10.150.132.25:330 or InnoDB Cluster by peer '23MYSQL	eration could not 6' are incompatibl usage and try aga 01:3306' use by the member	in.	ed server_id i ents not being met:
server_id	<unique id=""></unique>	1	FAIL (RuntimeError)	Activate V
Contraction of the second s				

Figure 94. Error message

Workaround: Change the server ID entries in the <code>my.conf</code> file located in the <code>\ProgramData\MySQL\MySQL</code> Server 5.7 directory.



Figure 95. change server ID