

Dell Wyse Management Suite

Version 2.x Deployment Guide



Notes, cautions, and warnings

 **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.

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

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Introduction

Dell Wyse Management Suite is the next generation management solution that lets you centrally configure, monitor, manage, and optimize your Dell Wyse thin clients. The new Suite makes it easier to deploy and manage thin clients with high functionality and performance, and ease of use. It also offers advanced feature options such as cloud versus on-premises deployment, remote management by using a mobile application, 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 reporting, and troubleshooting of endpoints.

This document provides a deployment strategy of Wyse Management Suite in a single virtual machine or server on a private cloud to support management of up to 120,000 devices.

Hardware requirements

The following table lists the hardware requirements:

Table 1. Hardware requirements

Description	10000 devices or less	50,000 devices or less	120,000 devices or less	Wyse Management Suite – Software repository
Operating system	Windows Server 2012 R2, Windows Server 2016 or Windows Server 2019. Supported language pack—English, French, Italian, German, Spanish, Japanese, and Chinese (preview release)			
Minimum disk space	40 GB	120 GB	200 GB	120 GB
Minimum memory (RAM)	8 GB	16 GB	32 GB	16 GB
Minimum CPU requirements	4	4	16	4
Network communication ports	<p>The Wyse Management Suite installer adds TCP ports 443 and 1883 to the firewall exception list. The ports are added to access the Wyse Management Suite console, and to send the push notifications to the thin clients.</p> <ul style="list-style-type: none"> • TCP 443—HTTPS communication • TCP 1883—MQTT communication • TCP 3306—MariaDB (optional if remote) • TCP 27017—MongoDB (optional if remote) • TCP 11211—Memcached • TCP 5172, 49159—End-User Management Software Development Kit (EMSDK)—optional and required only to manage Teradici devices <p>The default ports that are used by the installer may be changed to an alternative port during installation.</p>			<p>The Wyse Management Suite repository installer adds TCP port 443 to the firewall exception list. The port is added to access the operating system images and application images that are managed by Wyse Management Suite.</p>
Supported browsers	<p>Microsoft Internet Explorer version 11</p> <p>Google Chrome version 58.0 and later</p> <p>Mozilla Firefox version 52.0 and later</p> <p>Microsoft Edge browser on Windows—English only</p>			

NOTE: Wyse Management Suite can be installed on a physical or a virtual machine.

NOTE: The software repository and the Wyse Management Suite server must have the same operating system.

Wyse Management Suite deployment architecture

The following are the Wyse Management Suite installer components to deploy at the work place:

- WMS Web Application—Application Server that hosts Wyse Management Suite.
- Memcached—Used to Cache data for performance and scalability.
- MQTT—Used to push notifications to thin clients.
- MongoDB—No SQL database for performance and scalability.
- MariaDB—Relational database for structured data and normalization.
- EMSDK—SDK to manage Teradici devices.

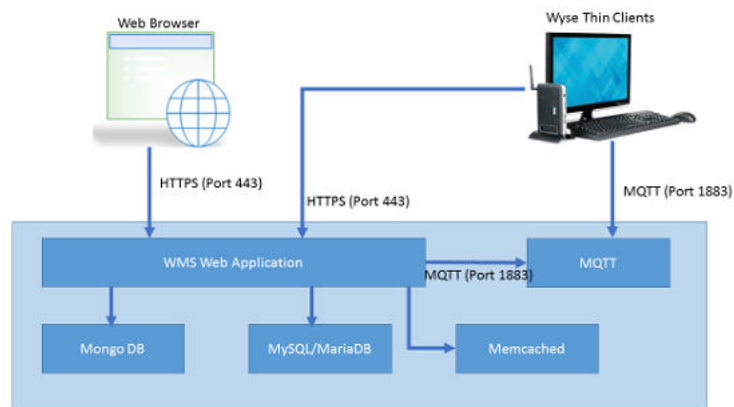


Figure 1. Wyse Management Suite architecture

Deployment details

This chapter contains the deployment architecture details for Wyse Management Suite.

The Wyse Management Suite supports up to 120,000 connected devices.

Single server deployment is easier to maintain, however, you have an option to deploy Wyse Management Suite on multiple servers as per your preference.

Deployment on a single server to support 50,000 thin client devices

The minimum hardware requirement on a single server for 50,000 devices is:

Table 2. Hardware specification

Application	Hardware specification
Wyse Management Suite	<ul style="list-style-type: none"> • 4 CPUs • 16 GB RAM • 120 GB HDD

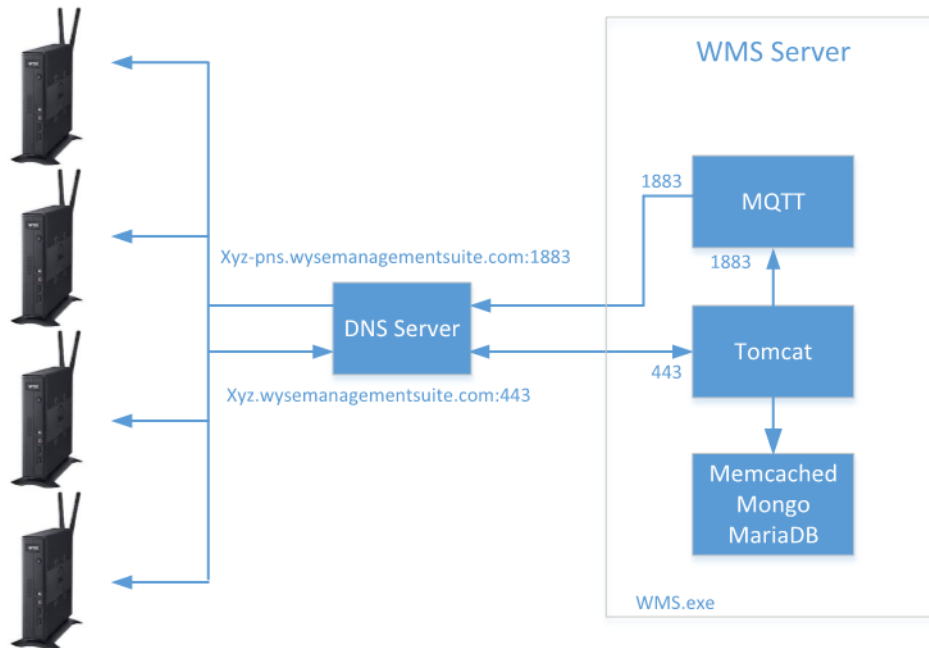
Deployment on a single server to support 120,000 thin client devices

The minimum hardware requirement on a single server for 120,000 devices is:

Table 3. Hardware specification

Application	Hardware specification
Wyse Management Suite	<ul style="list-style-type: none"> • 16 CPUs • 32 GB RAM • 200 GB HDD

The following diagram explains deployment of Wyse Management Suite on a single server:



**Deployment Architecture of Wyse Management Suite
on a single VM**

Figure 2. Wyse Management Suite on a single server

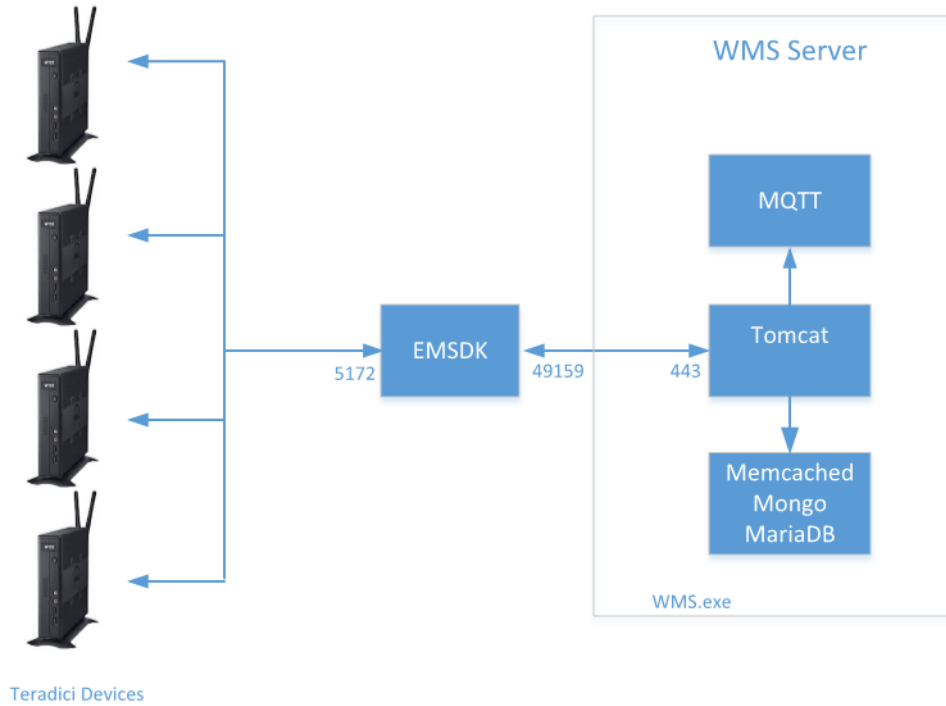
Deployment details to support Teradici devices

EMSDK software component must be installed with Wyse Management Suite, to support Teradici devices. EMSDK components are included in `wms.exe` installer, however the installation is optional.

EMSDK can be installed locally on Wyse Management Suite server or on a separate VM or server. Wyse Management Suite deployment can have multiple instances of EMSDK, however each instance must run on a separate server, and each instance can support up to 5000 Teradici devices.

Deployment on a single server to support 5000 Teradici devices

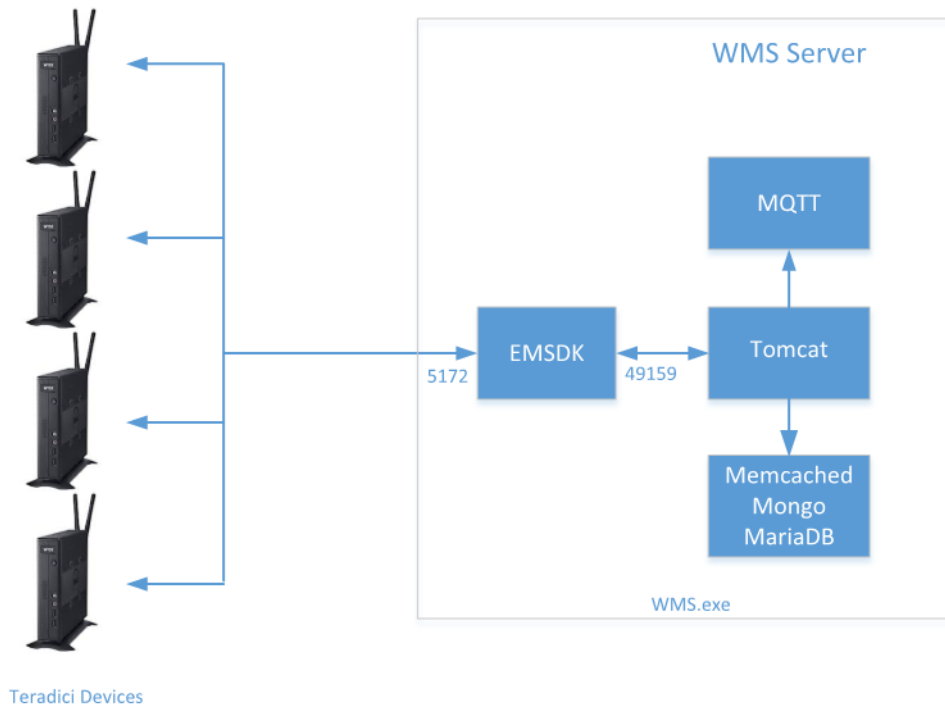
The following diagram explains deployment architecture of Wyse Management Suite on a single VM with remote EMSDK:



**Deployment Architecture of Wyse Management Suite
on a single VM with remote EMSDK
(supports up to 5000 Teradici devices)**

Figure 3. Wyse Management Suite on a single VM with remote EMSDK

The following diagram explains deployment architecture of Wyse Management Suite with EMSDK on a single VM :

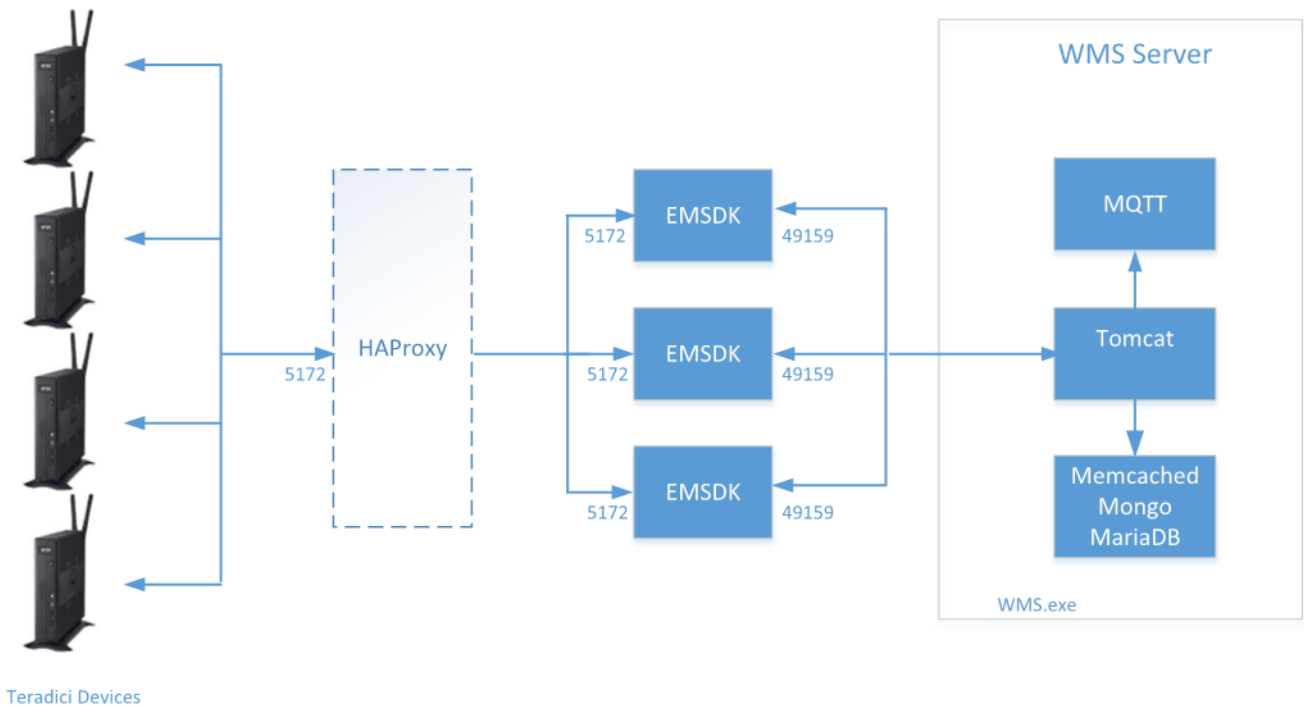


**Deployment Architecture of Wyse Management Suite
with EMSDK on a single VM
(supports up to 5000 Teradici devices)**

Figure 4. Wyse Management Suite with EMSDK on a single VM

Deployment to support more than 5000 Teradici devices

The following diagram explains deployment architecture of Wyse Management Suite on a single VM with multiple remote EMSDKs:



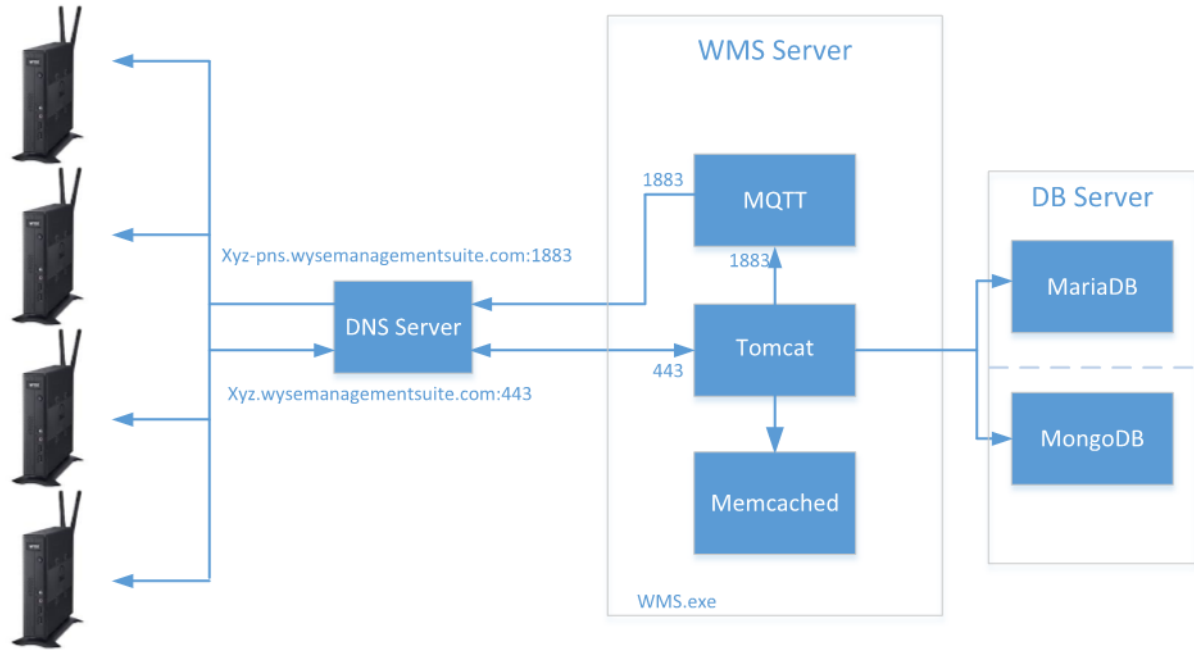
Deployment Architecture of Wyse Management Suite on a single VM with multiple remote EMSDK's
 (Each instance of EMSDK supports up to 5000 Teradici devices)
 HAProxy is optional for non-HA Deployment

Figure 5. Wyse Management Suite on a single VM with multiple remote EMSDKs

Wyse Management Suite on a separate database server

This section explains the deployment architecture of Wyse Management Suite on a separate database server. MongoDB and MariaDB may be on the same server or on separate servers.

The following diagram depicts the deployment architecture of Wyse Management Suite on a separate database server.



Deployment Architecture of Wyse Management Suite on a single VM with Remote Database

Figure 6. Wyse Management Suite on a separate database server

Custom port configurations

Wyse Management Suite uses the following port as the default port for the applications that are installed:

- Apache Tomcat: 443
- MariaDB database: 3306
- Mongo database: 27017
- MQTT Broker: 1883
- Memcached: 11211
- EMSDK: 5172, 49159—optional and required only to manage Teradici devices

It is recommended that you use the default port for one or more of the preceding services. If you have a port conflict and are unable to use the default port, Wyse Management Suite enables you to change the default port during installation.

To use a non-default port for one or more of the preceding services, use **Custom** install option during Wyse Management Suite installation. The option that is listed in the following screen enables you to use the local database for MongoDB and MariaDB or use the remotely installed database:

NOTE: You can configure only the Tomcat connection port 49159 for Teradici. You cannot configure the device port 5172.

For more information about the custom installation, see the Custom installation section in *Dell Wyse Management Suite 2.x Quick Start Guide* at support.dell.com/manuals.

Topics:

- [Change the Tomcat service port](#)
- [Change the MQTT port](#)
- [Change the MariaDB port](#)
- [Change the MongoDB database port](#)
- [Remote repository](#)

Change the Tomcat service port

This section explains how to change the port after installing Wyse Management Suite. Reinstall using Custom installation mode to change ports. If reinstallation is not an option, the following sections explain the procedure to change the ports manually:

To change the Tomcat service port, do the following:

1. Stop the Tomcat service. The Tomcat service is identified by **Dell WMS: Tomcat Service** entry.
2. Edit the file `<INSTALLDIR>\Tomcat-9\conf\server.xml` in a text editor.
3. Find and replace all occurrences of port entry 443 with the port number you need to use. It is optional to change the references to port 8443.
4. Save the `server.xml` file and exit.
5. Start the Tomcat service.
6. Enter the port number in the URL (default port 443 can be omitted from the URL). For example, **https://xyz.wysemanagementsuite.com:553/ccm-web**. The port that is specified in the URL must be used for both portal access and for device registration.

NOTE: The Memcached port can be changed during Wyse Management Suite installation. Dell recommends not to change the Memcached port detail after installation.

Change the MQTT port

1. Stop the Tomcat and MQTT services.
2. Perform the following steps to configure the MQTT broker service:
 - a) Edit the file `<INSTALLDIR>\wmsmqtt\mqtt.conf` in a text editor.

b) Note the following entries:

```
# Port to use for the default listener
#port 1883
```

c) Uncomment the `port 1883` entry and change the port number to your preferred port. For example, `port 2883`.

d) Save the file, and start the MQTT broker service.

e) Check the following entry to confirm that the MQTT broker service is running on the new port:

```
ps> get-nettcpconnection -LocalPort 2883
```

3. To configure Tomcat, do the following:

a) Open a command prompt session, and go to `cd C:\Program Files\DELL\WMS\MongoDB\bin`.

b) Run the following command at the command prompt:

```
>mongo stratus -u stratus -p <mongodbPassword> -eval
"db.bootstrapProperties.update({'name': 'mqtt.server.url'}, {'name': 'mqtt.server.url',
'value' : 'tcp://xyz-pns.wysemagementsuite.com:2883', 'isActive' : 'true', 'committed' :
'true'}, {upsert:true})"
```

c) Start Tomcat Service identified in **Local Services** as Dell WMS: Tomcat Service and re-register all the devices, so that the MQTT URL is referring to the new port.

Change the MariaDB port

1. Start the Tomcat service and stop the MariaDB service. To configure the MariaDB, do the following:

a) Edit the file `<INSTALLDIR>\Database\SQL\my.ini` in a text editor.

b) Change the port number for both `mysqld` and `client` to your preferred port. The port numbers should be of the same value. For example:

```
[mysqld]
datadir=C:/Program Files/DELL/WMS/Database/SQL
port=3308
[client]
port=3308
```

c) Save the file, and start the MariaDB service.

2. To configure Tomcat, do the following:

a) Edit the file `<INSTALLDIR>\Tomcat-8\webapps\ccm-web\WEB-INF\classes\bootstrap.properties` in a text editor.

b) Update the properties in the file with your preferred port number details. For example:

```
jpa.connection.url=jdbc:mysql://localhost:3308/stratus?useUnicode
=true&characterEncoding=utf-8&useLegacyDatetimeCode=false&serverTimezone=America/
Los_Angeles
jpa.connection.port=3308
```

c) Save the file, and start the Tomcat service. Verify that the services are running on the configured port. For example:

```
ps>get-nettcpconnection -LocalPort 3308
```

Change the MongoDB database port

1. Stop the Tomcat and MongoDB services.

2. To configure the MongoDB port entry, do the following:

a) Edit the file `<INSTALLDIR>\MongoDB\mongod.cfg` in a text editor.

b) Update the property in the file with your preferred port number. For example: `port=27027`.

c) Save the file, and start the MongoDB service. Confirm that it is running on the new port.

3. To configure Tomcat, do the following:

a) Edit the file `<INSTALLDIR>\Tomcat-8\webapps\ccm-web\WEB-INF\classes\bootstrap.properties` in a text editor.

b) Update the properties in the file with your preferred port number. For example: `mongodb.seedList=localhost:27027`.

c) Save the file, and start the Tomcat service. Verify that the service is running on the required port. For example: `ps>get-nettcpconnection -LocalPort 27027`.

Remote repository

Wyse Management Suite allows you to have local and remote repositories for applications, operating system images and so on. If the user accounts are distributed across geographies, it would be efficient to have a separate local repository for each of the distributed user account so the devices can download images from its local repository. This flexibility is provided with `WMS_Repo.exe` software. The `WMS_Repo.exe` is a Wyse Management Suite file repository software that helps to create distributed remote repositories which can be registered with Wyse Management Suite. The `WMS_Repo.exe` is available only for **Pro** license subscribers only.

The server requirements to install Wyse Management Suite repository software are:

- Windows 2012 R2 or Windows 2016 Server
- 4 CPU
- 8 GB RAM
- 40 GB storage space

Do the following to install **WMS-Repo** software:

1. Download `WMS_Repo.exe` file from Dell Digital Locker.
2. Log in as **Administrator**, and install `WMS_Repo.exe` on the repository server.
3. Click **Next** and follow the instructions on the screen to complete the installation.
4. Click **Launch** to launch the **WMS Repository registration** screen on the web browser.

The screenshot shows the 'Registration' screen for the Wyse Management Suite Repository. The title is 'Wyse Management Suite Repository'. Below the title, there is a 'Registration' section with the following elements:

- Register to Public WMS Management Portal
- WMS Management Portal:
- Validate server certificate authority ⓘ
- MQTT Server URL:
- Note: This field is only required when registering to WMS Server version 1.0. Later versions automatically retrieve mqtt url from the server.
- WMS Repository URL:
- [Change Repository URL?](#)
- Admin Name:
- Admin Password:
- Repository Location:
- Version: 1.3.0-40838
-

Figure 7. Registration details

5. Click **Register** to start the registration. Select the **Register to public WMS Management Portal** if you are registering on the public cloud.

The screenshot shows a web form titled "Wyse Management Suite Repository" with a "Registration" section. The form includes a checked checkbox for "Register to Public WMS Management Portal". Below this are several input fields: "WMS Server" (a dropdown menu showing "https://...com/cm-web"), "WMS Repository URL" (a text box with "https://...com:443/wms-repo" and a "Change Repository URL?" link), "Admin Name" (a text box), "Admin Password" (a password field with dots), and "Repository Location" (a text box). At the bottom, there is a "Version: 1.3.0-40838" label and a blue "Register" button.

Figure 8. Register on a public cloud

6. Enter the following details, and click **Register**:

a) Wyse Management Suite server URL

i **NOTE: Unless you register with Wyse Management Suite v1.0, you cannot use MQTT Server URL.**

b)

c) WMS Repository URL (update the URL with the domain name)

d) Wyse Management Suite administrator login username information

e) Wyse Management Suite administrator login password information

f) Repository path information

7. If the registration is successful, the **Registration** window is displayed:

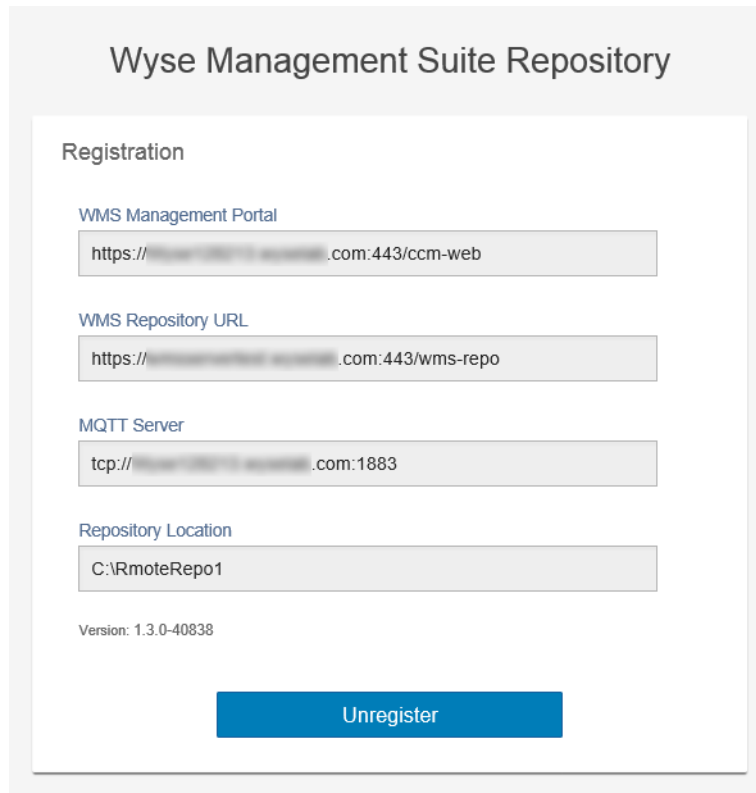


Figure 9. Registration successful

8. The following screen on the Wyse Management Suite portal confirms the successful registration of the remote repository:

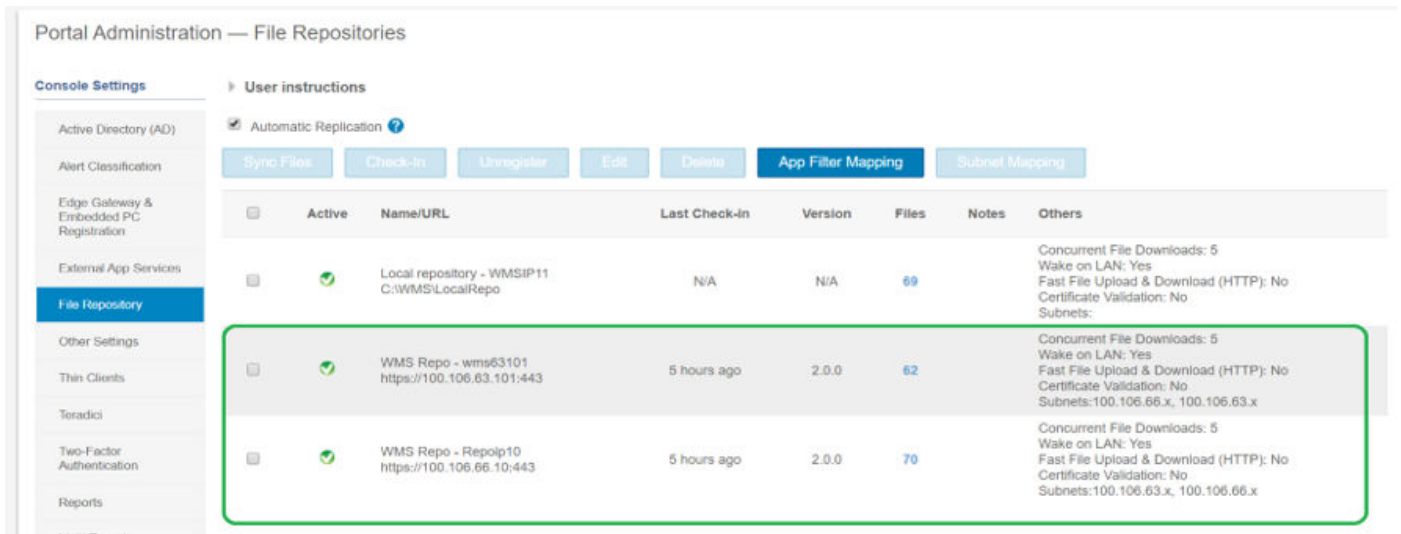


Figure 10. Registration successful on the portal

9. HTTPS is by default enabled with `WMS_Repo.exe`, and is installed with the self-signed certificate. To install your own domain-specific certificate, scroll down the registration page to upload the SSL certificates.

Server SSL Certificates: Enabled SSL Certificate Guide

Current Certificate
 Issued to: [redacted].com
 Issued from: [redacted].com
 Valid to: August 18, 2118

PKCS-12
Key/Certificate Pair

Upload HTTPS PKCS-12 (.pfx, .p12). Apache intermediate certificate is needed for IIS pfx.

PKCS-12 file
 Browse...

Password for PKCS file

Intermediate certificate ⓘ
 Browse...

Upload

Figure 11. Certificate upload

10. The server restarts, and the uploaded certificate is displayed.

Server SSL Certificates: Enabled SSL Certificate Guide

Current Certificate
 Issued to: *.com
 Issued from: SHA256 CA - G3
 Valid to: June 7, 2018

PKCS-12
Key/Certificate Pair

Upload HTTPS PKCS-12 (.pfx, .p12). Apache intermediate certificate is needed for IIS pfx.

PKCS-12 file
 Browse...

Password for PKCS file

Intermediate certificate ⓘ
 Browse...

Upload

Figure 12. SSL certificate enabled

11. If the Wyse Management Suite is enabled with self-signed or a private domain certificate, you can upload the certificate on the Wyse Management Suite repository server to validate the Wyse Management Suite CA credentials.

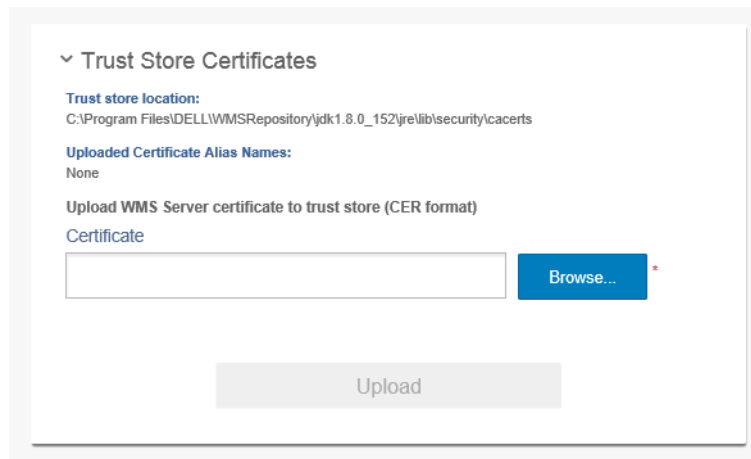
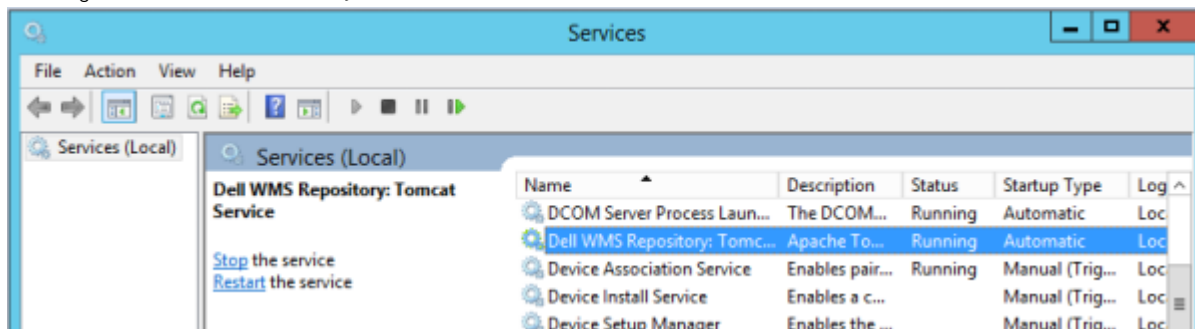


Figure 13. Trust store certificates

12. Navigate to the `C:\wmsrepo` location that you entered during registration, and you can view the folders where all the repository files are saved and managed.

Manage Wyse Management Suite repository service

Wyse Management Suite repository is displayed as **Dell WMS Repository: Tomcat Service** in the Windows Local Services window and is configured to start automatically when the server restarts as shown:



Upgrade Wyse Management Suite version 1.x to 2.x

To upgrade Wyse Management Suite from version 1.x to 2.x, do the following:

1. Double-click the Wyse Management Suite 2.x installer package.
2. On the **Welcome** screen, read the license agreement and click **Next**.
3. On the **Upgrade** page, configure the shared folder and access rights for the CIFS user. The available options are:
 - Use an Existing user—Select this option to validate credentials for the existing user.
 - Create a New user—Select this option and enter the credentials to create a new user.

NOTE:

- If EM SDK is installed on the server during the previous Wyse Management Suite installation, the Teradici EM SDK components are updated automatically.
- If EM SDK is not installed on the device during the previous installation, select the Teradici EM SDK checkbox to install and configure the Teradici EM SDK components.
- You can also install and update Teradici EM SDK using the Wyse Management Suite installer.

NOTE: For more information, see *Dell Wyse Management Suite 2.x Quick Start Guide* at support.dell.com/manuals.

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

Maintenance

This chapter describes how to take a backup of the database.

Database backup

Stop Tomcat Service before taking a backup of the database. Tomcat Service is identified as “Dell WMS: Tomcat Service” and must be stopped from Local Services.

To dump the contents of the MongoDB, run the following command:

```
mongodump --host <mongodb_host> -u stratus -p <db_password> --authenticationDatabase admin --db stratus --out ".\wsmongodump"
```

To dump the contents of the MariaDB, run the following command:

```
mysqldump --routine -h< mariadb_host> -ustratus -p<db_password> stratus > ".\wmsdump.sql"
```

Database restore

Stop Tomcat Service before restoring the database. Tomcat Service is identified as “Dell WMS: Tomcat Service” and can be stopped from Local Services.

- You must run the following command from the wsmongodump directory – parent directory of stratus database, to restore MongoDB.
 - `echo "db.dropDatabase()" | mongo -u stratus -p <db_password> --authenticationDatabase admin --host <db_host> stratus`
 - `mongorestore --host <db_host> -u stratus -p <db_password> --authenticationDatabase admin --db stratus ".\stratus"`
- You must run the following command from the wmsdump.sql directory to restore MariaDB.
 - `Mysql.exe --verbose -h< mariadb_host> -ustratus -p<db_password> -e "DROP DATABASE stratus"`
 - `Mysql.exe --verbose -h< mariadb_host> -ustratus -p<db_password> -e "CREATE DATABASE stratus DEFAULT CHARACTER SET utf8 DEFAULT COLLATE utf8_unicode_ci"`
 - `Mysql.exe --verbose -h< mariadb_host> -ustratus -p<db_password> stratus < ".\wmsdump.sql"`