SINGLE/MULTIPLE PANACIM EE – MMS INTEGRATION

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1 Overview

PanaCIM Maintenance System (MMS) is a highly efficient maintenance management system aimed to automate the maintenance activities within the factory and track them in the real time. The MMS also enables tracking the equipment related records in the factory and facilitates reactive and preventive maintenance. It can work as a stand-alone system or also in conjunction with PanaCIM and data warehouse.

This document describes the configuration settings required for single/multiple PanaCIM EE integration with MMS.

2 PanaCIM EE Integration with MMS

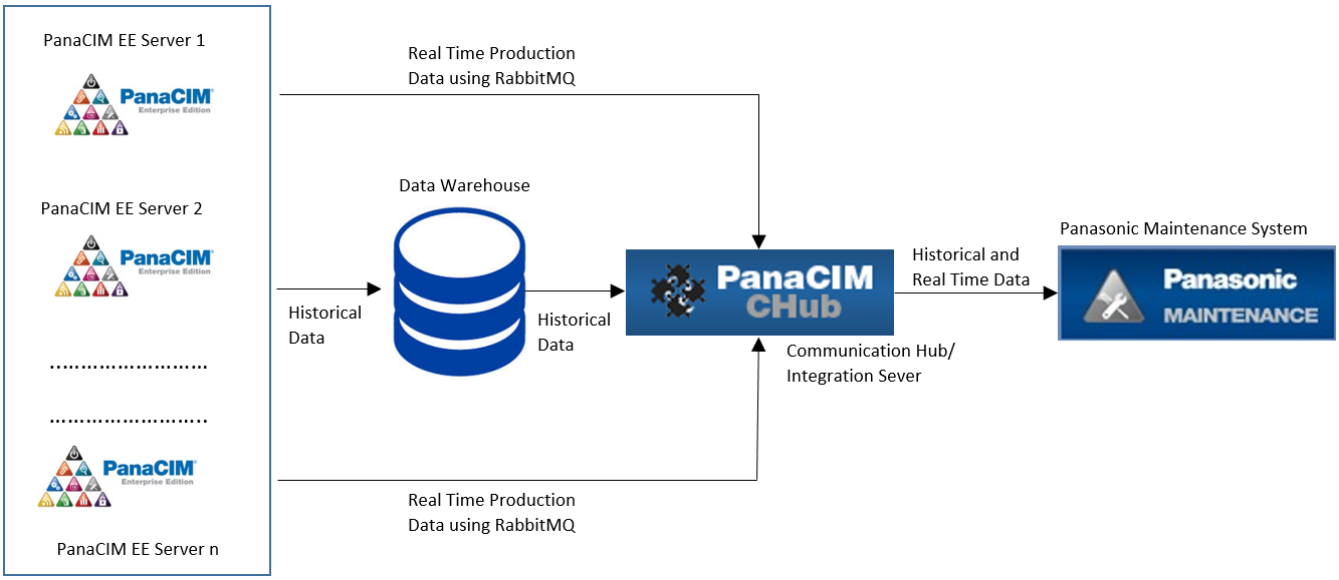
There are following two common configurations of PanaCIM EE-MMS integration.

1. **Single PanaCIM with MMS**: The single PanaCIM EE is integrated with MMS application using Communication Hub. The Communication Hub application is used as the integration server between PanaCIM EE and MMS, as shown in the following figure.

2. **Multiple PanaCIM with MMS (Using Data Warehouse)**: Multiple PanaCIM EE servers can be also integrated with MMS using a data warehouse server. In this configuration, multiple PanaCIM EE servers are integrated with a data warehouse and the data warehouse server is integrated with MMS.

In this configuration, the historical data is moved from PanaCIM EE servers to the data warehouse, and then from data warehouse to MMS using the integration server (Communication Hub). The real time data, such as scanning feeders or adding a new machine in the factory are directly transferred to MMS from multiple PanaCIM EE servers using the integration server, provided that the RabbitMQ clustering has been configured for PanaCIM EE servers and MMS.

The following figure provides an overview of multiple PanaCIM EE–MMS integration using data warehouse.



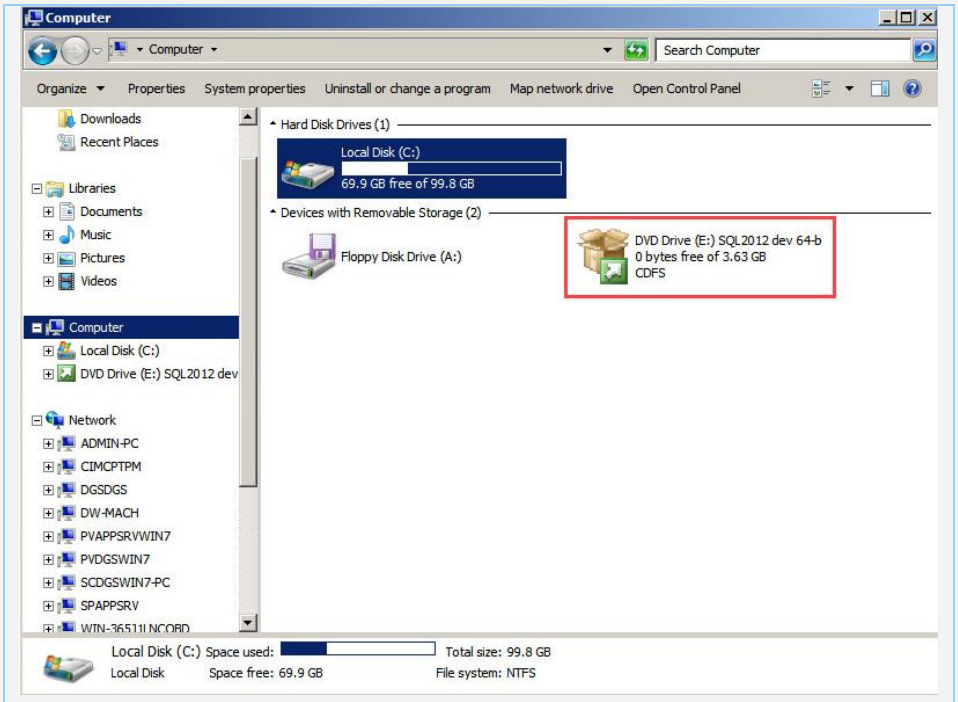
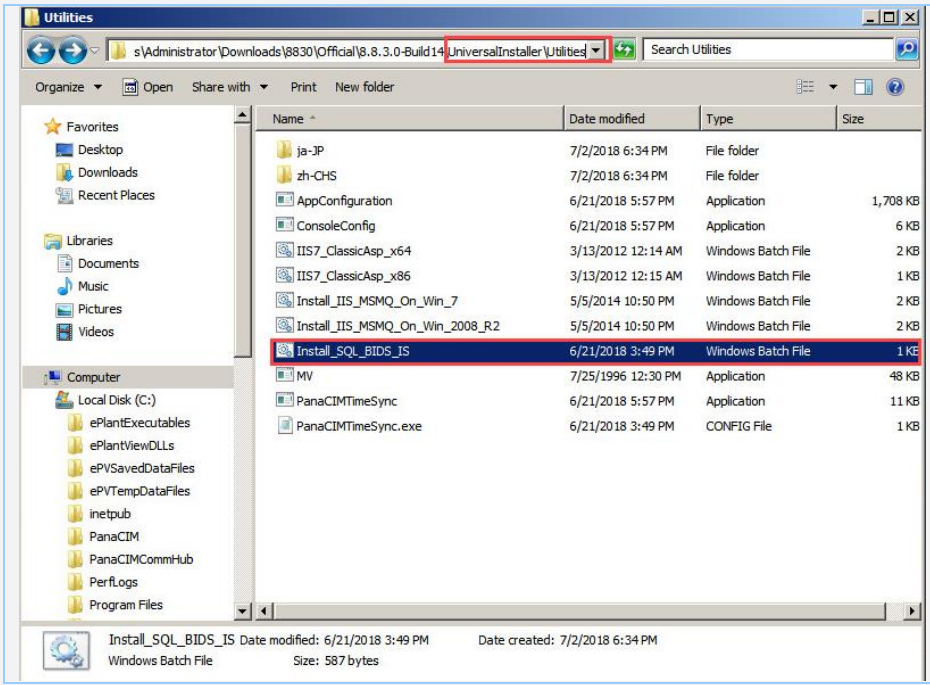
The subsequent sections describe the step-by-step procedure of integrating single/multiple PanaCIM EE servers with MMS.

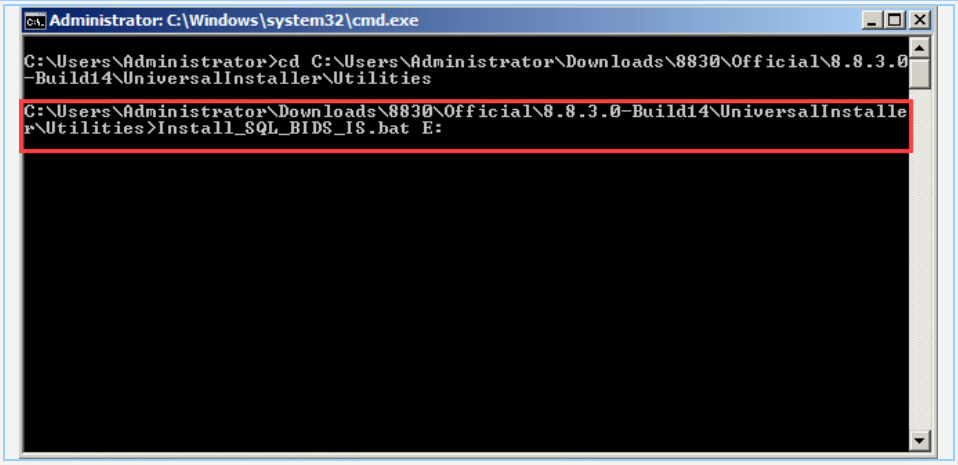
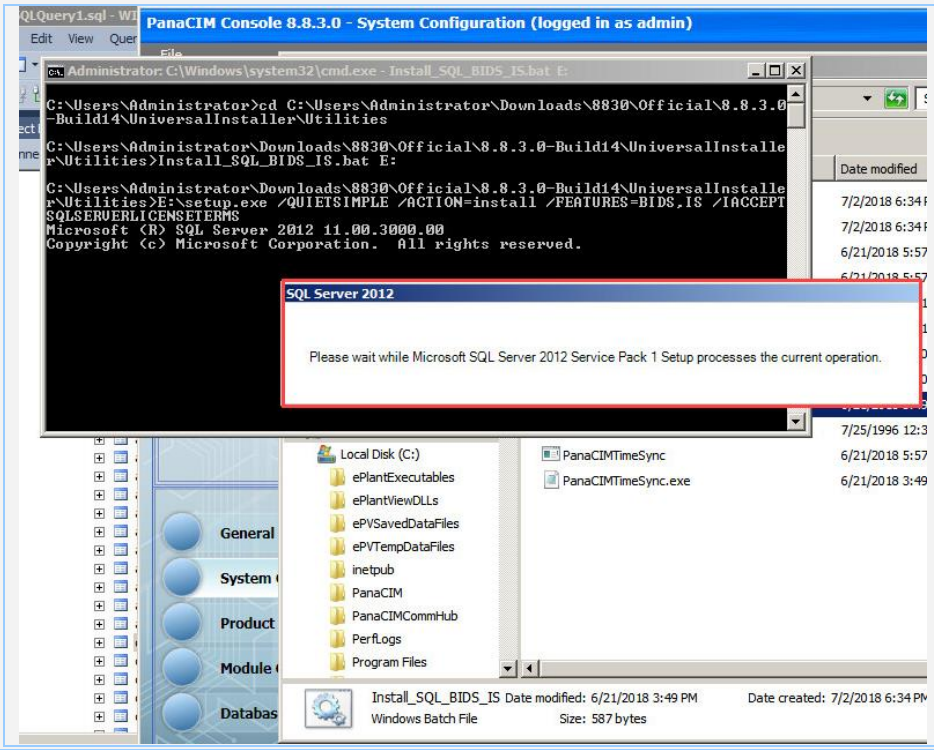
2.1 Single PanaCIM with MMS

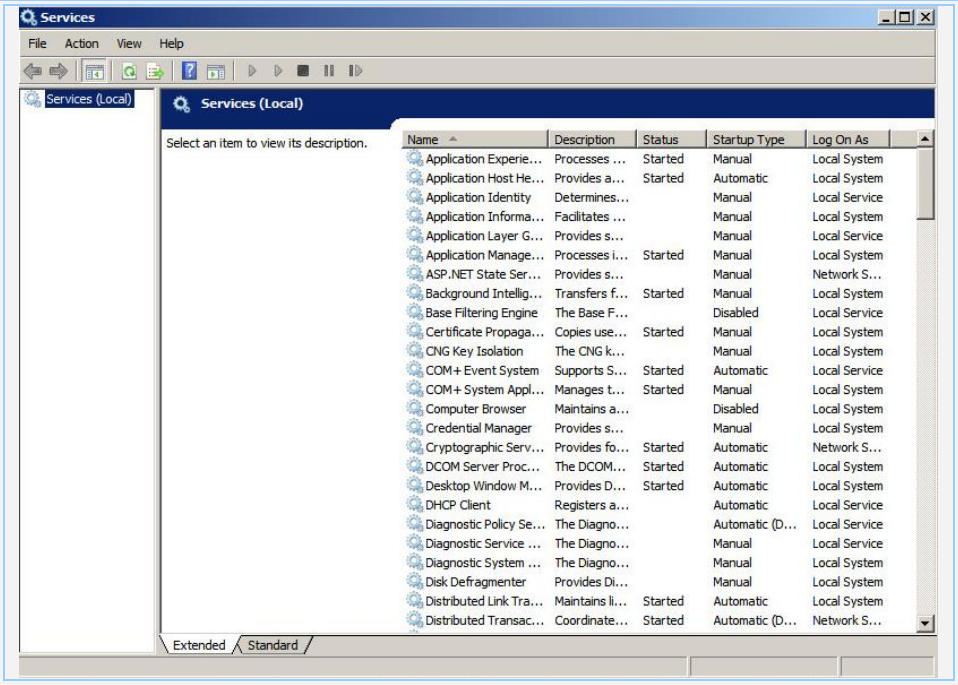
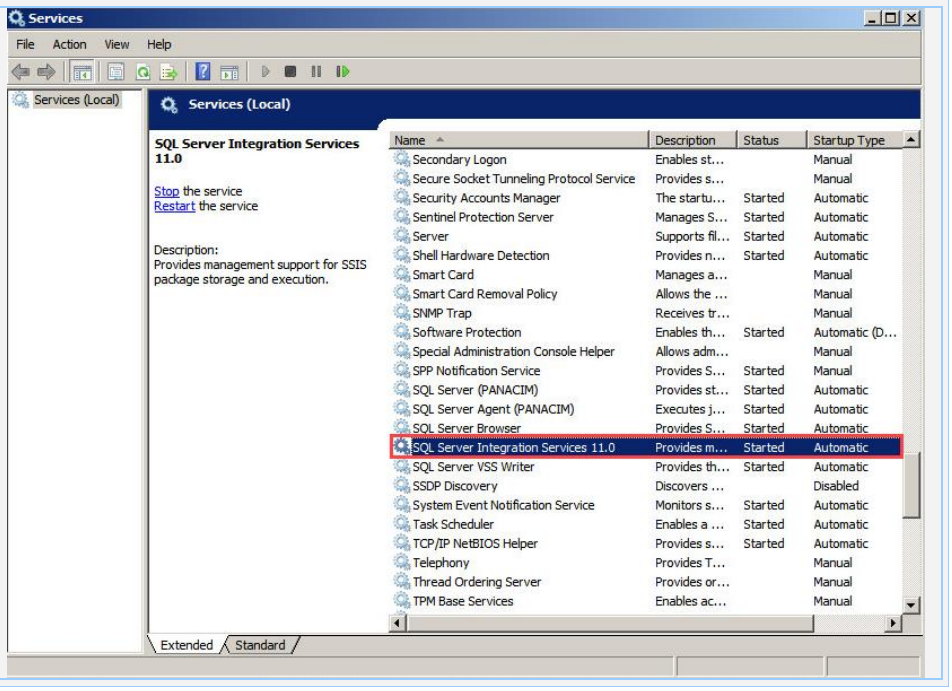
Integration of single PanaCIM EE server with MMS can be categorized into the following broad level steps.

1. Install SQL Server Integration Service on Application Server
2. Configure the MMS Base Address
3. Enable Tagged Feeder for Feeder Locking
4. Configure Feeder Tag Reasons
5. Configure E-Link Settings
6. Enable Nozzle Maintenance Tagging in Option Settings Utility
7. Enable the License for Maintenance Module
8. Configure PanaCIM Service URL and Database Details in MMS
9. Import Data in MMS from PanaCIM

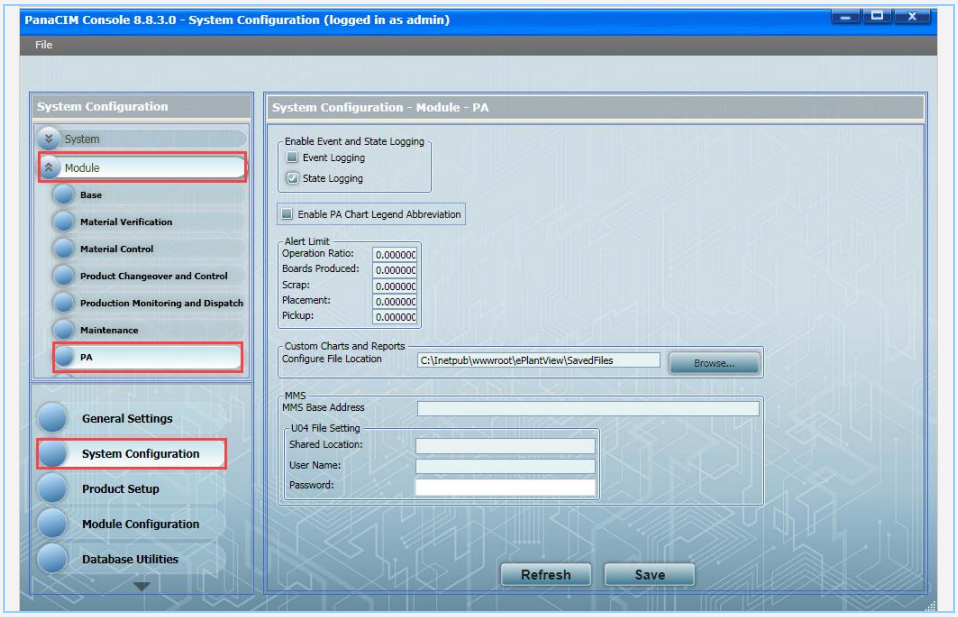
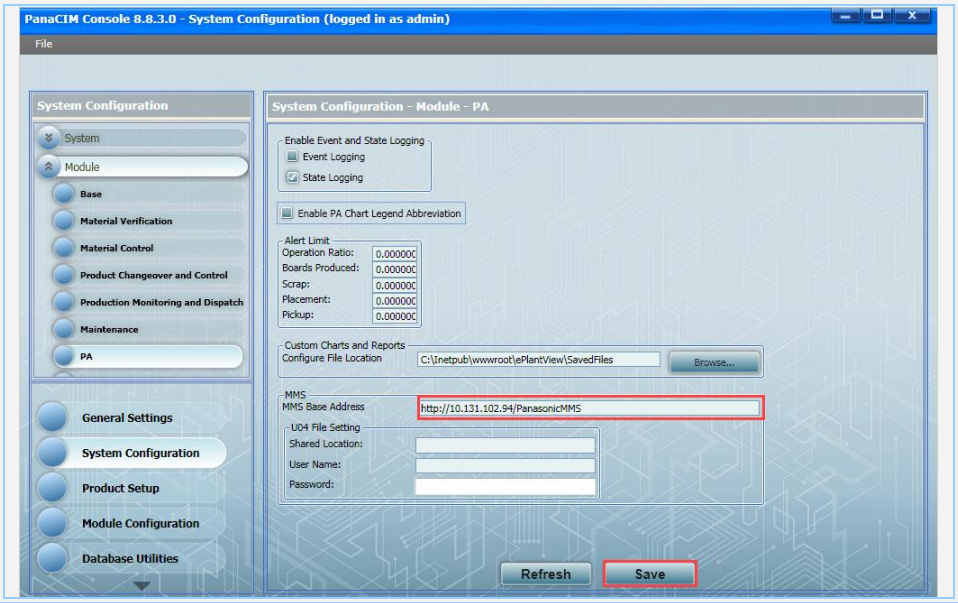
Step 1: Install SQL Server Integration Service on Application Server

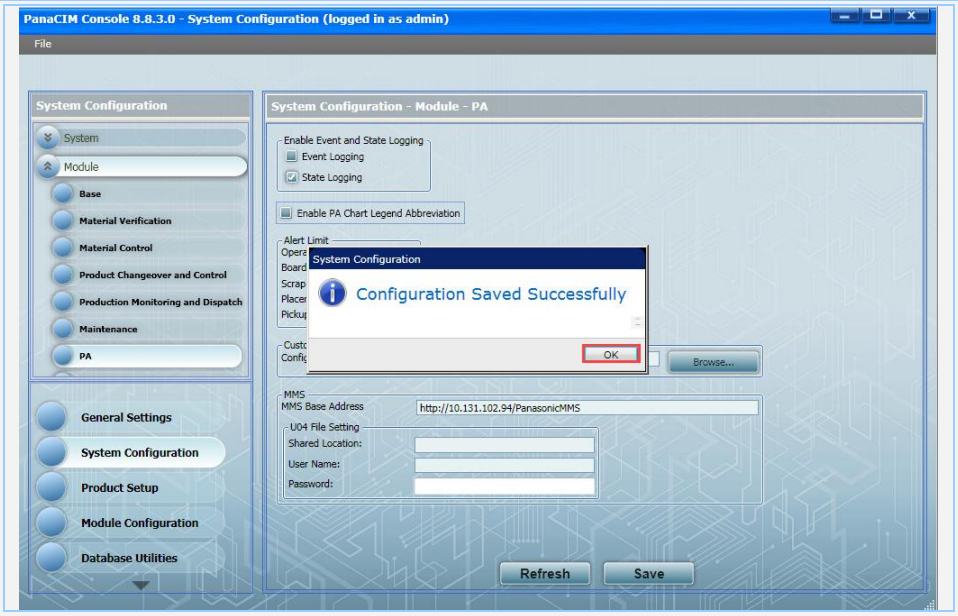
Step	Description	Screenshot
1	Mount the SQL installer CD on APP server.	
2	The server integration service file is available in the **UniversalInstaller\Utilities** folder of the PanaCIM installation directory.	

3	Open command prompt as administrator. Go to the location of the batch file and run the batch file as shown to the right.	
4	The installation of the integration service begins. Wait for a few minutes to complete the installation.	

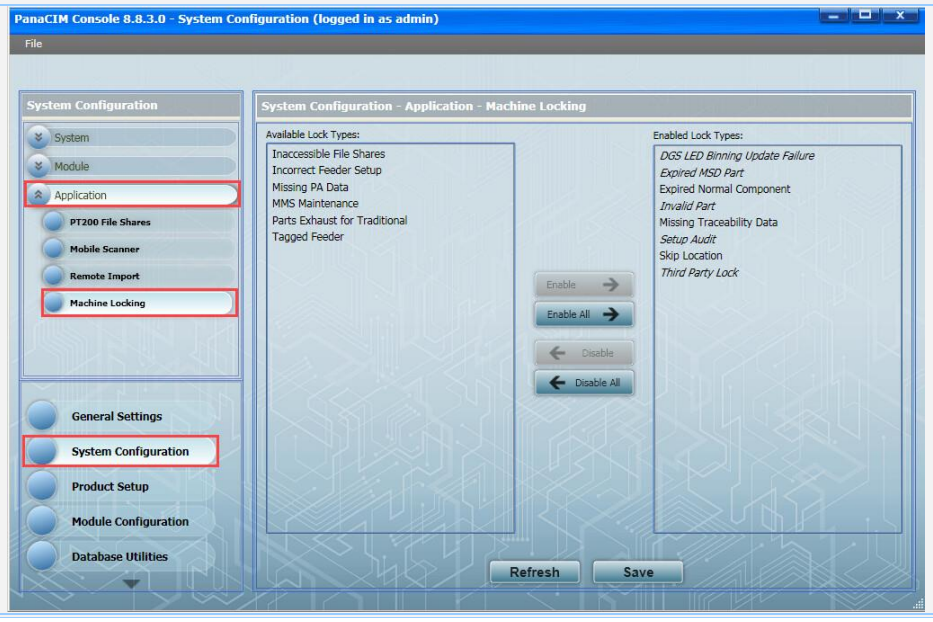
5	To verify that the SQL integration service is installed and running on the machine, open **Services**.	
6	The service is installed and running.	

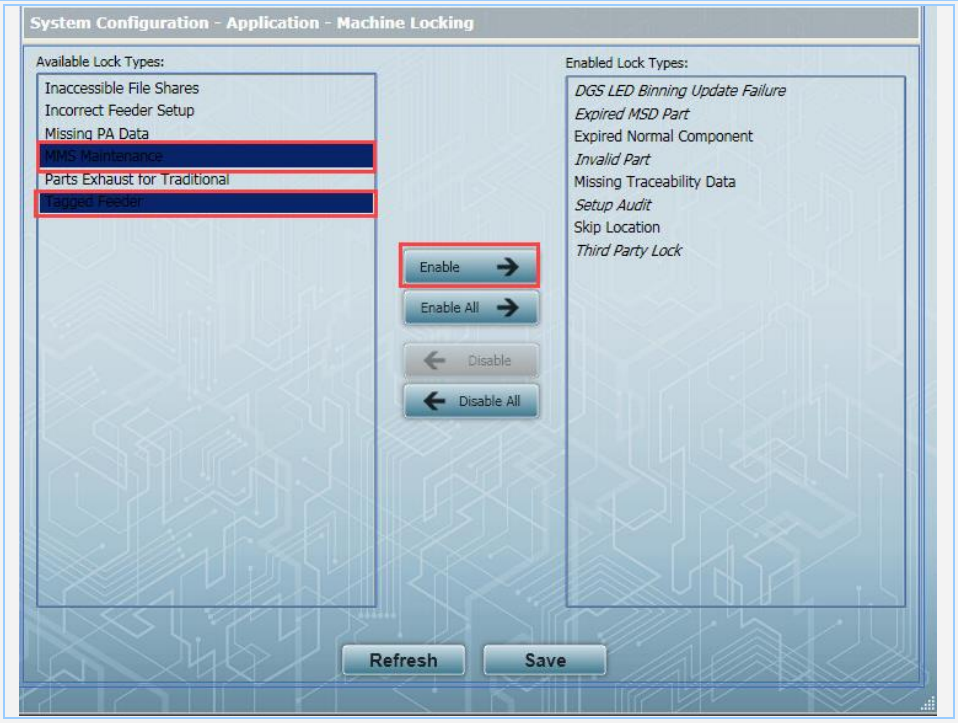
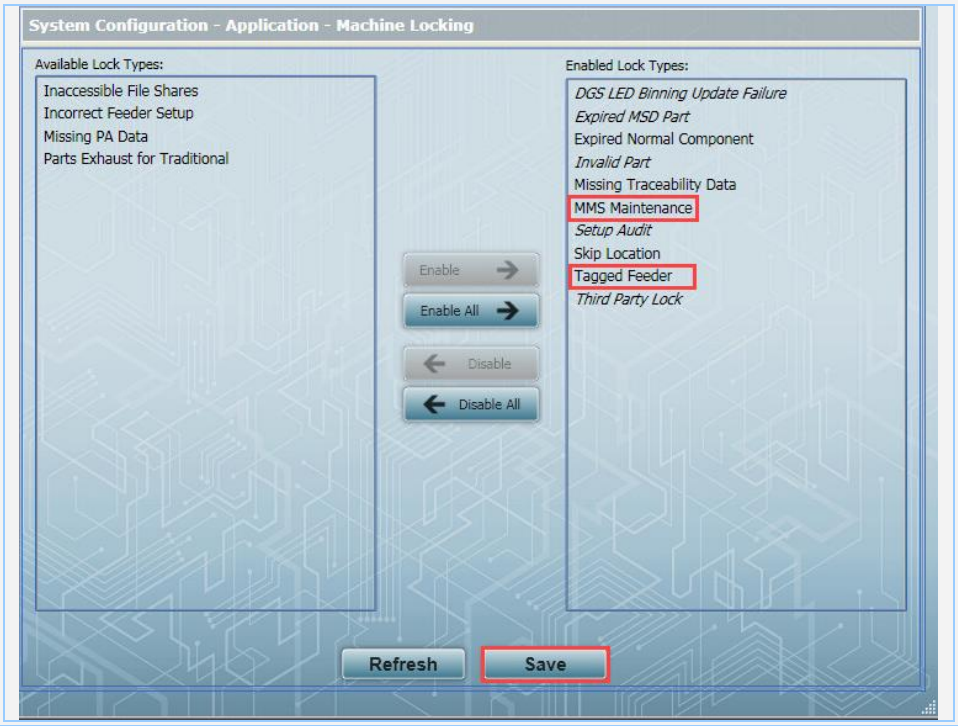
Step 2: Configure the MMS Base Address

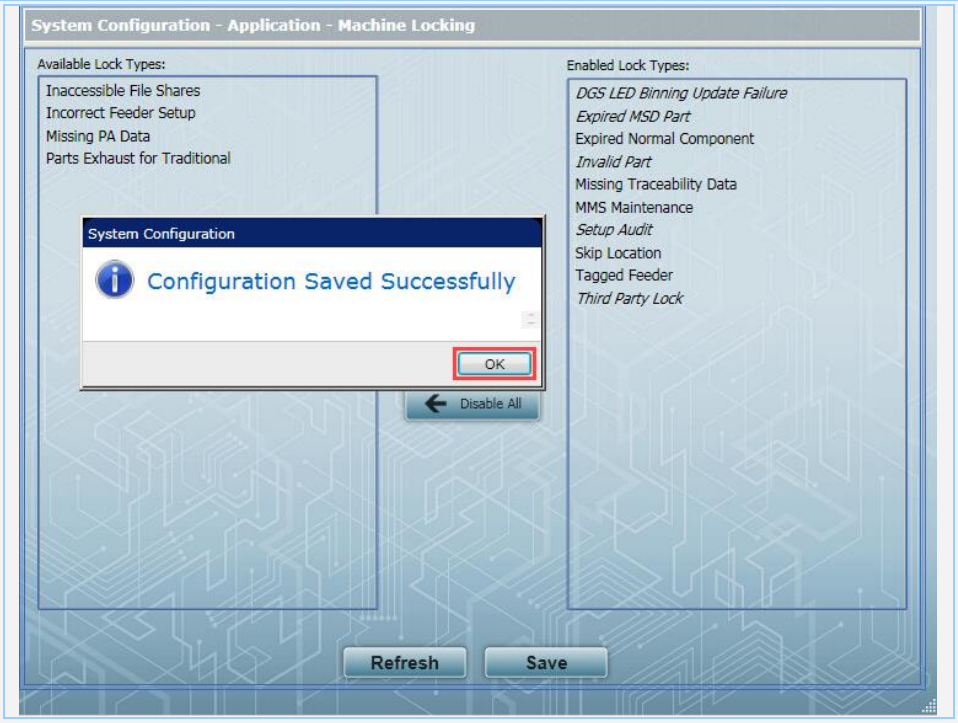
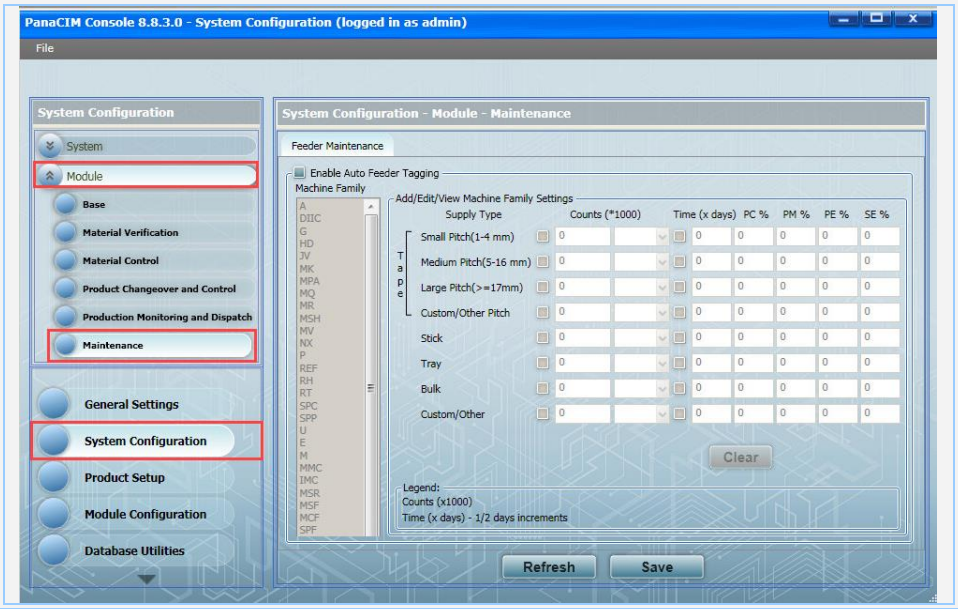
Step	Description	Screenshot
1	Open PanaCIM console and go to **System Configuration → Module → PA**.	
2	Provide MMS base address and click the **Save** button as shown to the right. The MMS base address is http://<ip_address_of_MMS machine>/PanasonicMMS	

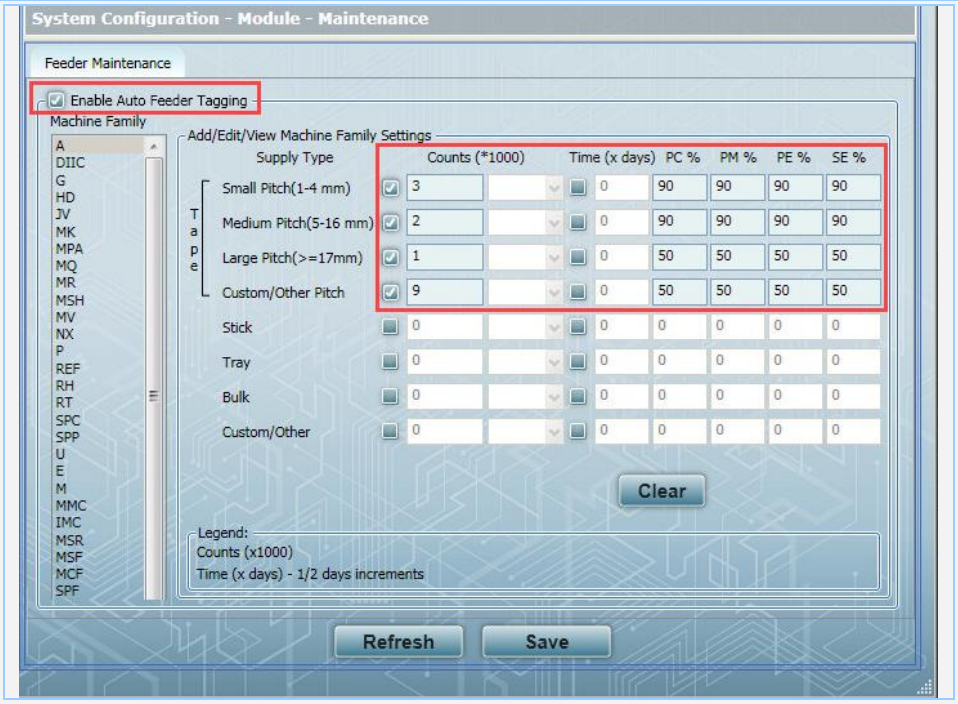
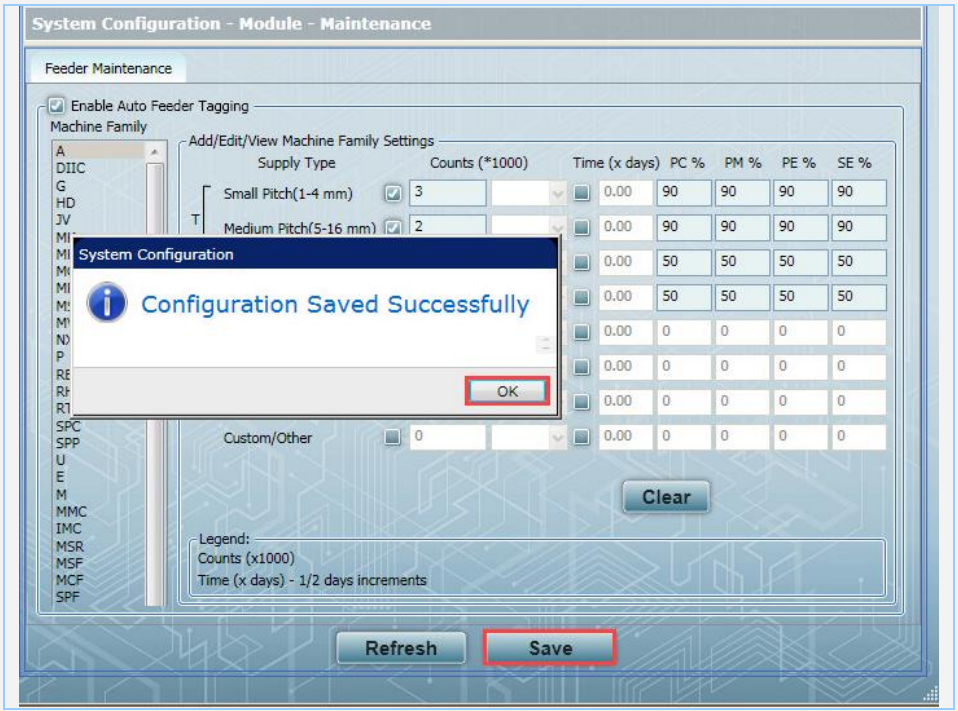
3	A confirmation message box appears. Click **OK**.	

Step 3: Enable Tagged Feeder for Feeder Locking

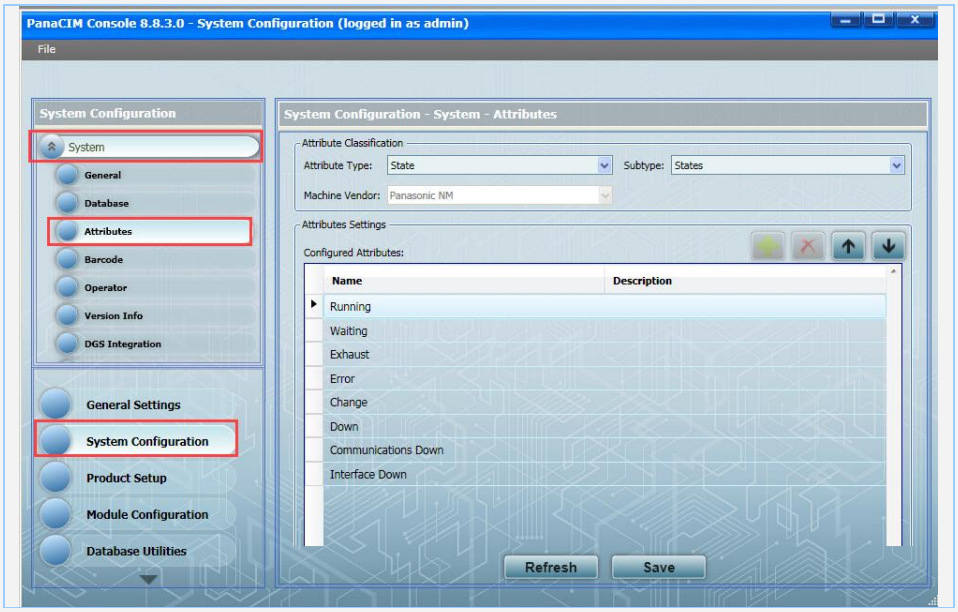
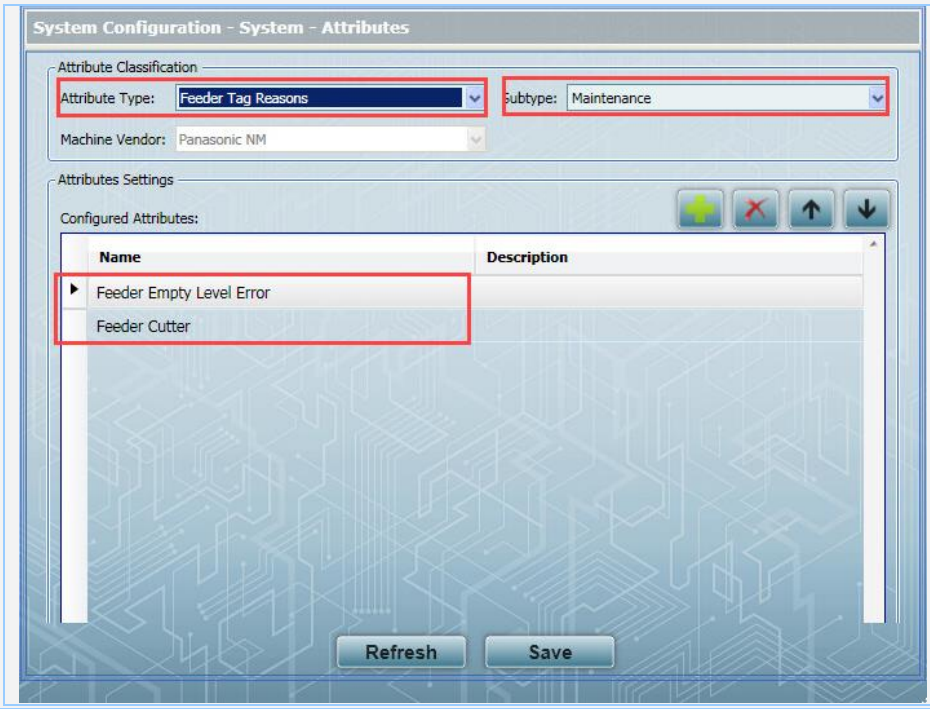
Step	Description	Screenshot
1	In PanaCIM console, go to **System Configuration → Application→ Machine Locking**.	

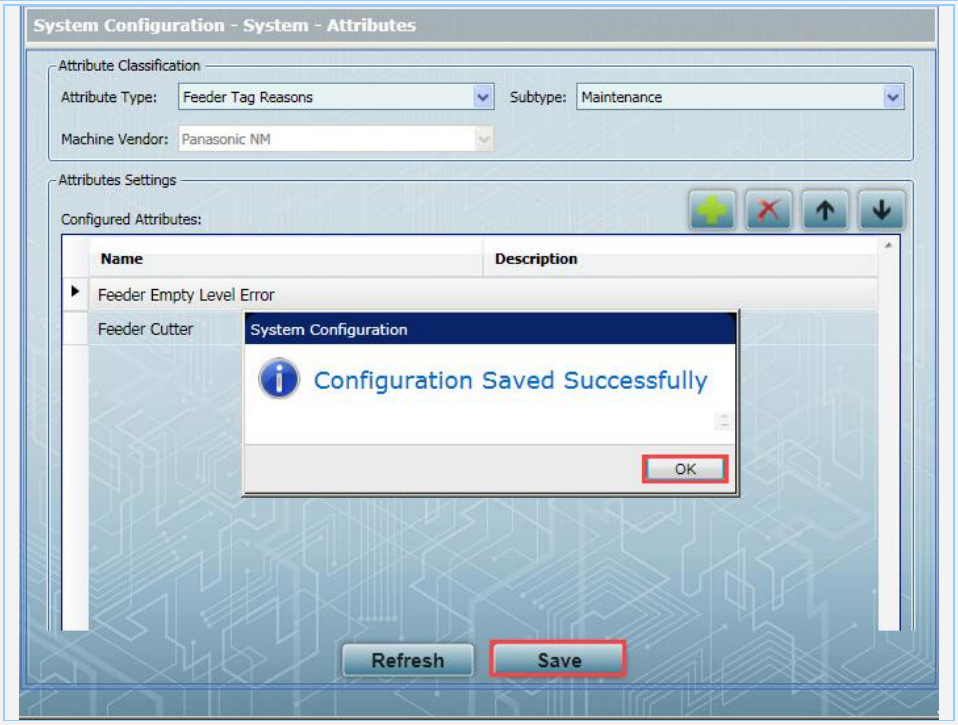
2	Select the **MMS Maintenance** and **Tagged Feeder** in the **Available Lock Types** list box and click the **Enable** button.	
3	The **MMS Maintenance** and **Tagged Feeder** lock types are moved into the **Enabled Lock Types** list box. Click the **Save** button.	

4	A confirmation message box appears. Click **OK**.	
5	In PanaCIM console, go to **System Configuration → Module → Maintenance**.	

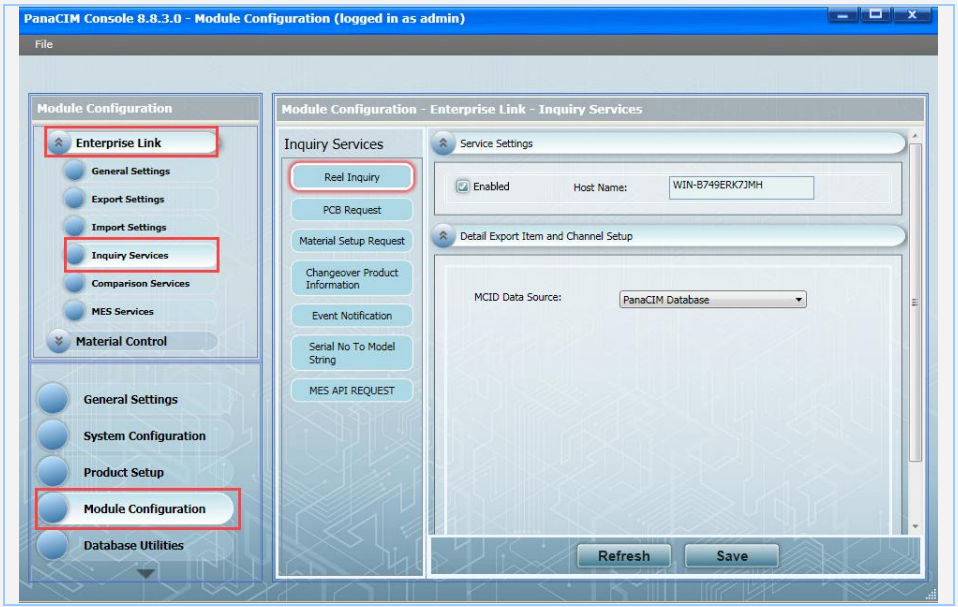
6	Configure feeder maintenance and enable auto feeder tagging for machine.	
7	Click the **Save** button to save the changes. A confirmation message box appears. Click **OK**.	

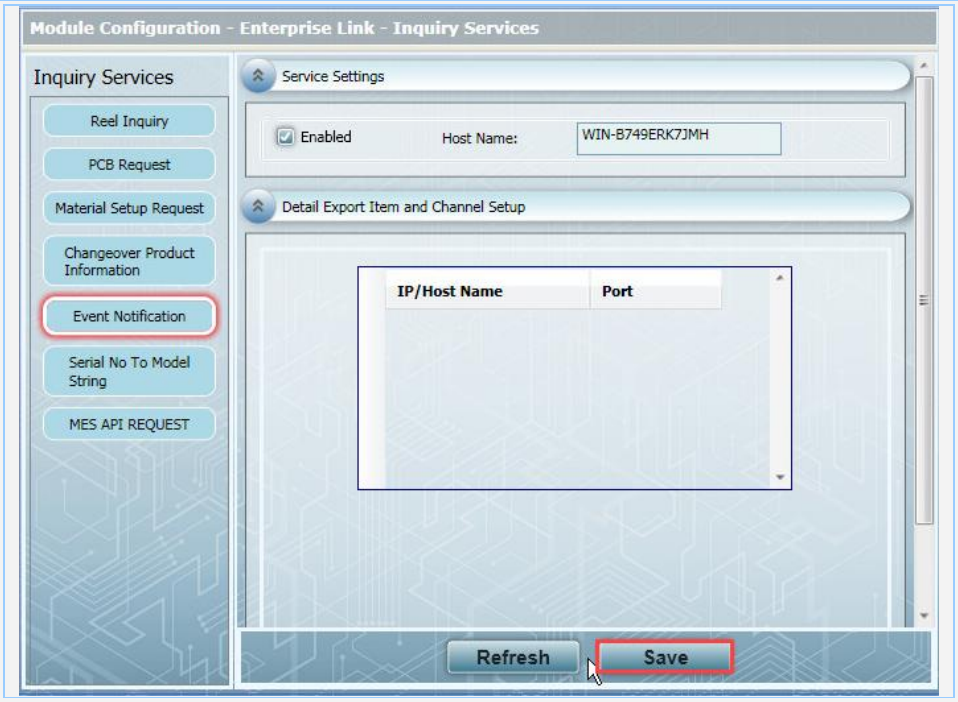
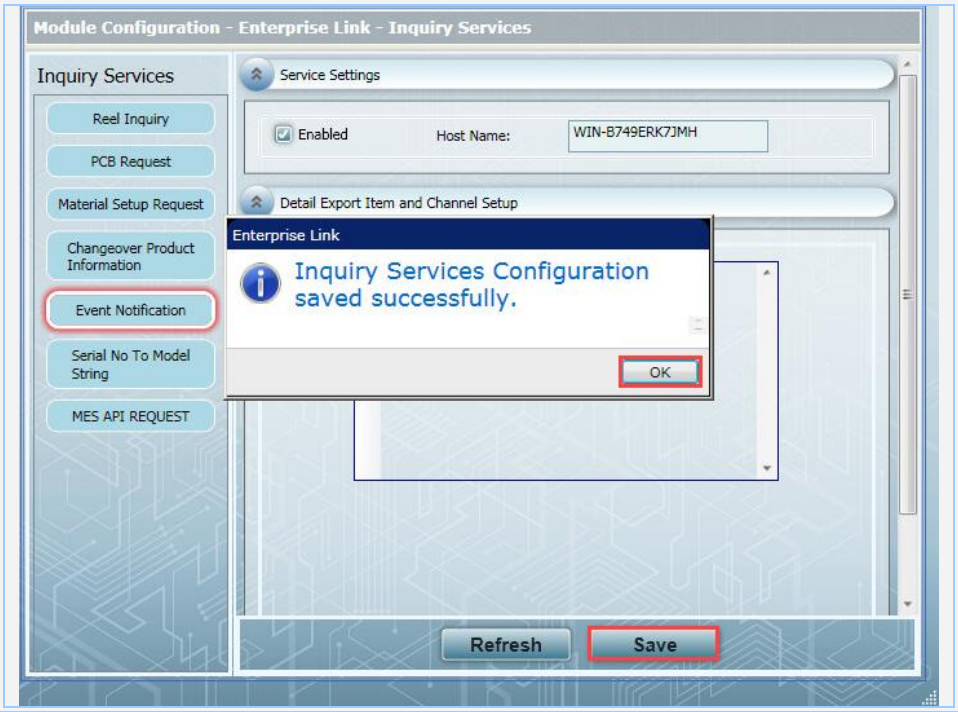
Step 4: Configure Feeder Tag Reasons

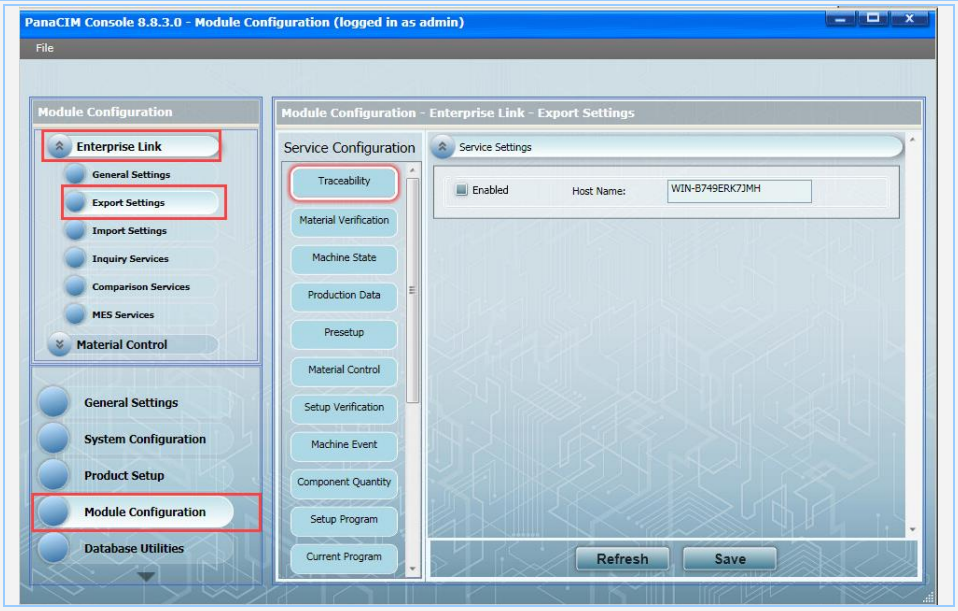
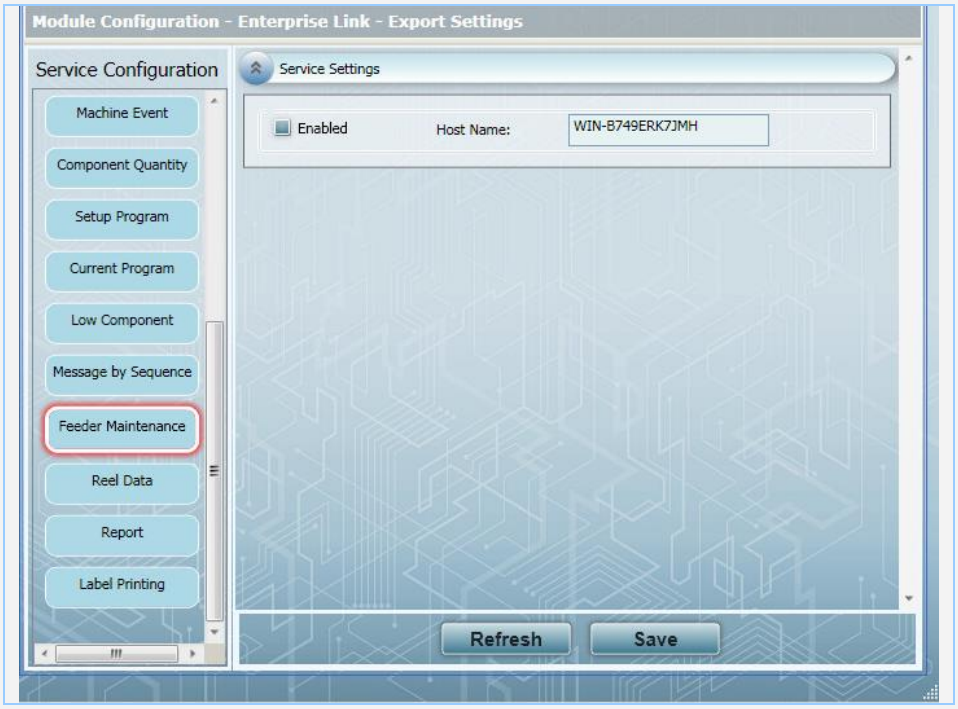
Step	Description	Screenshot
1	In PanaCIM console, go to **System Configuration → System → Attributes**.	
2	Select the **Attribute Type** as **Feeder Tag Reasons**, **Subtype** as **Maintenance** and configure the attribute settings as shown to the right.	

3	Click the **Save** button. A confirmation message box appears. Click **OK**.	

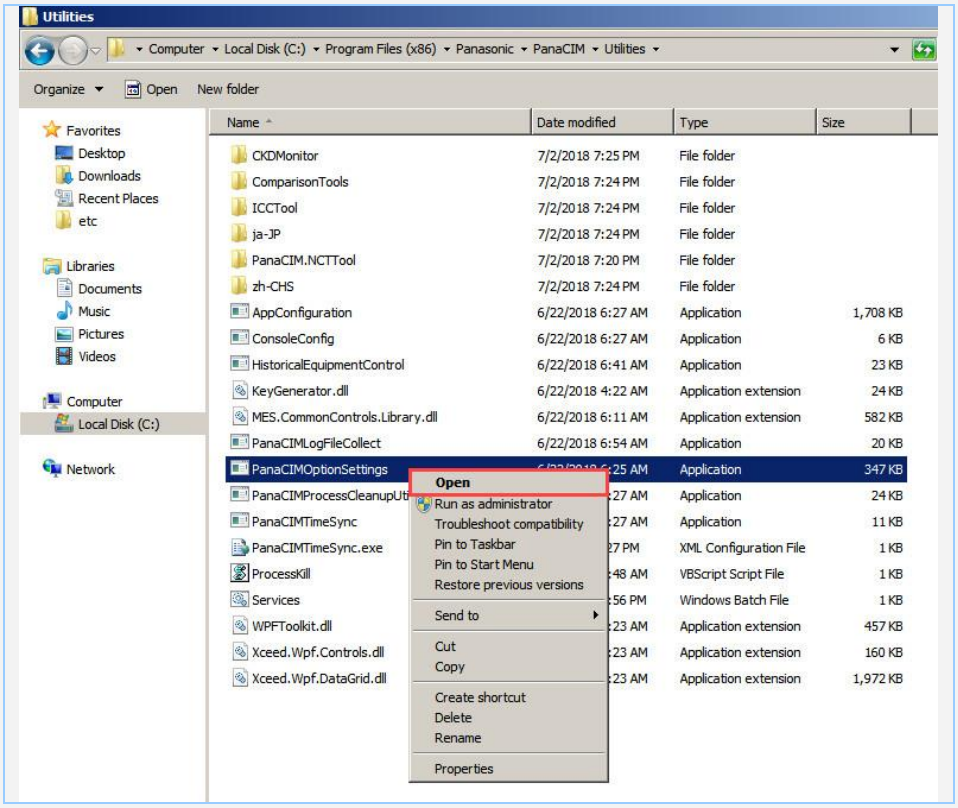
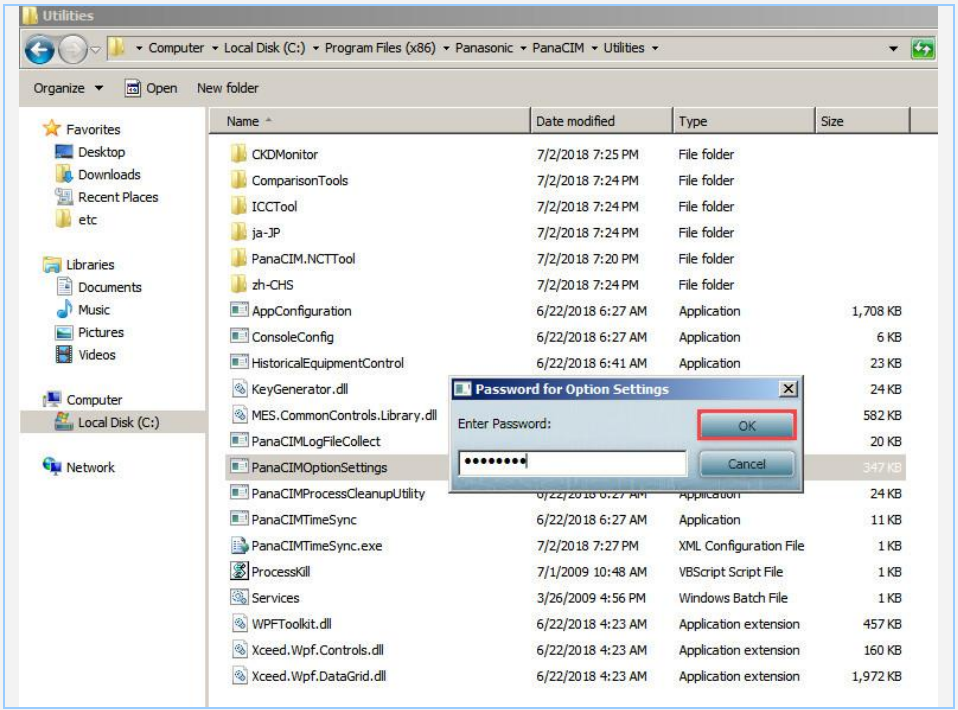
Step 5: Configure E-Link Settings

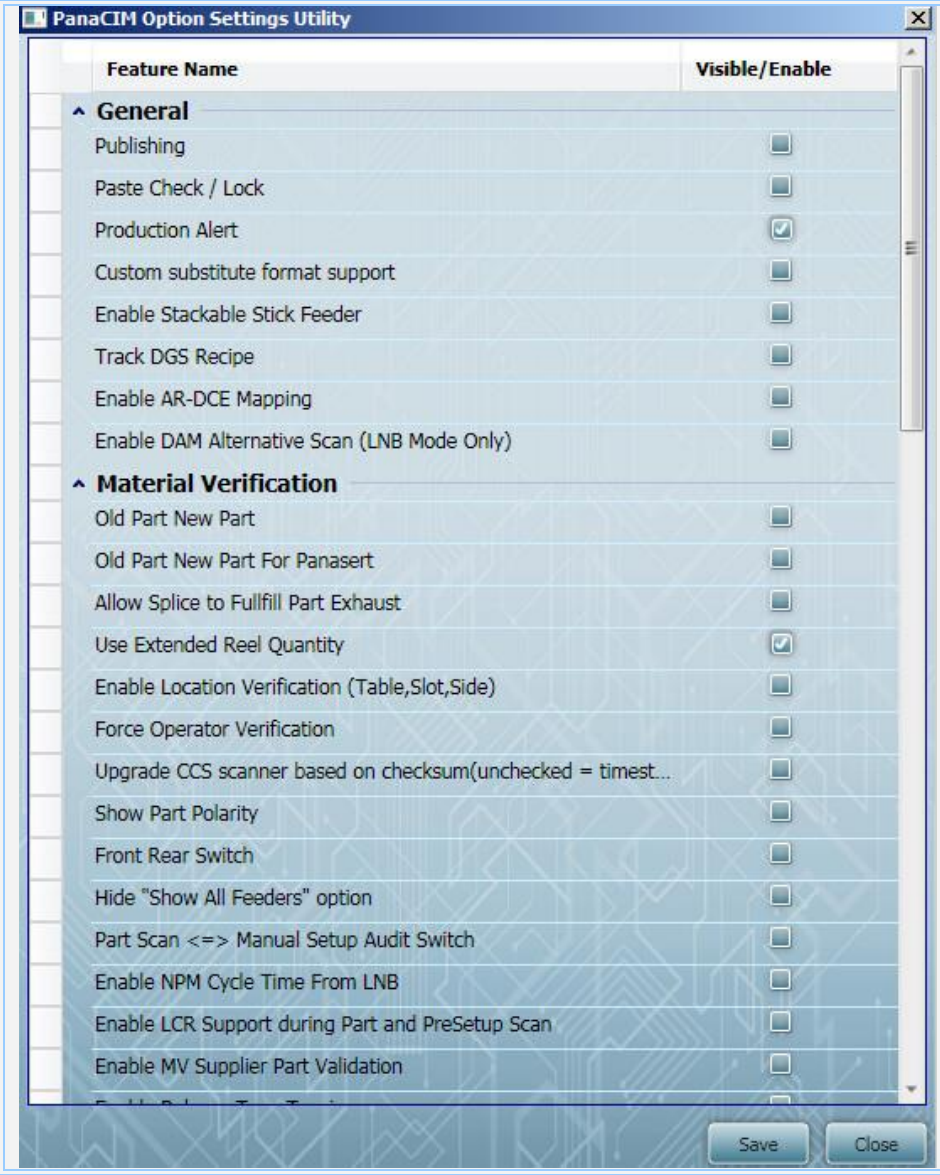
Step	Description	Screenshot
1	In PanaCIM console, go to **Module Configuration → Enterprise Link → Inquiry Services**.	

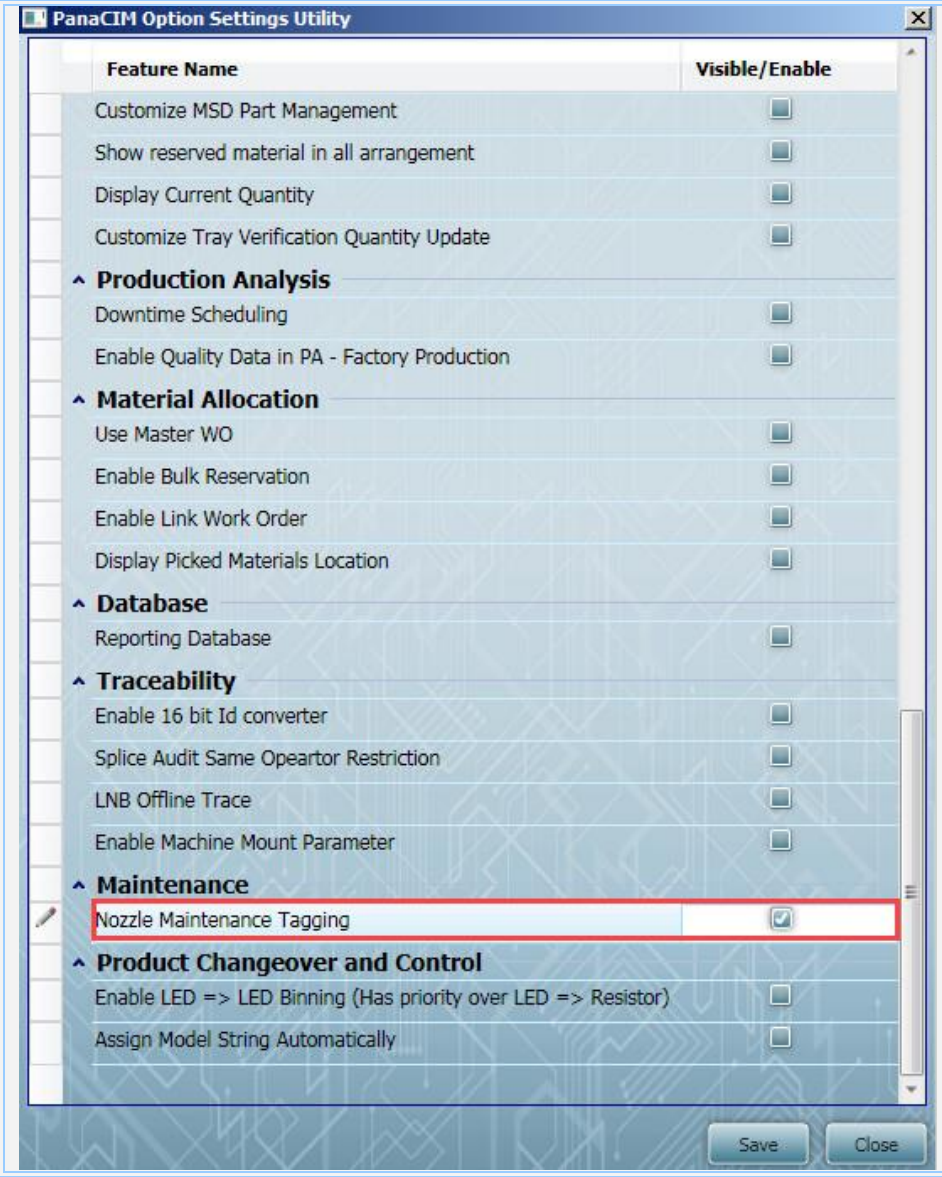
2	Enable the **Event Notification** option. Click the **Save** button.	
3	Upon clicking the **Save** button, a confirmation message box appears. Click **OK**.	

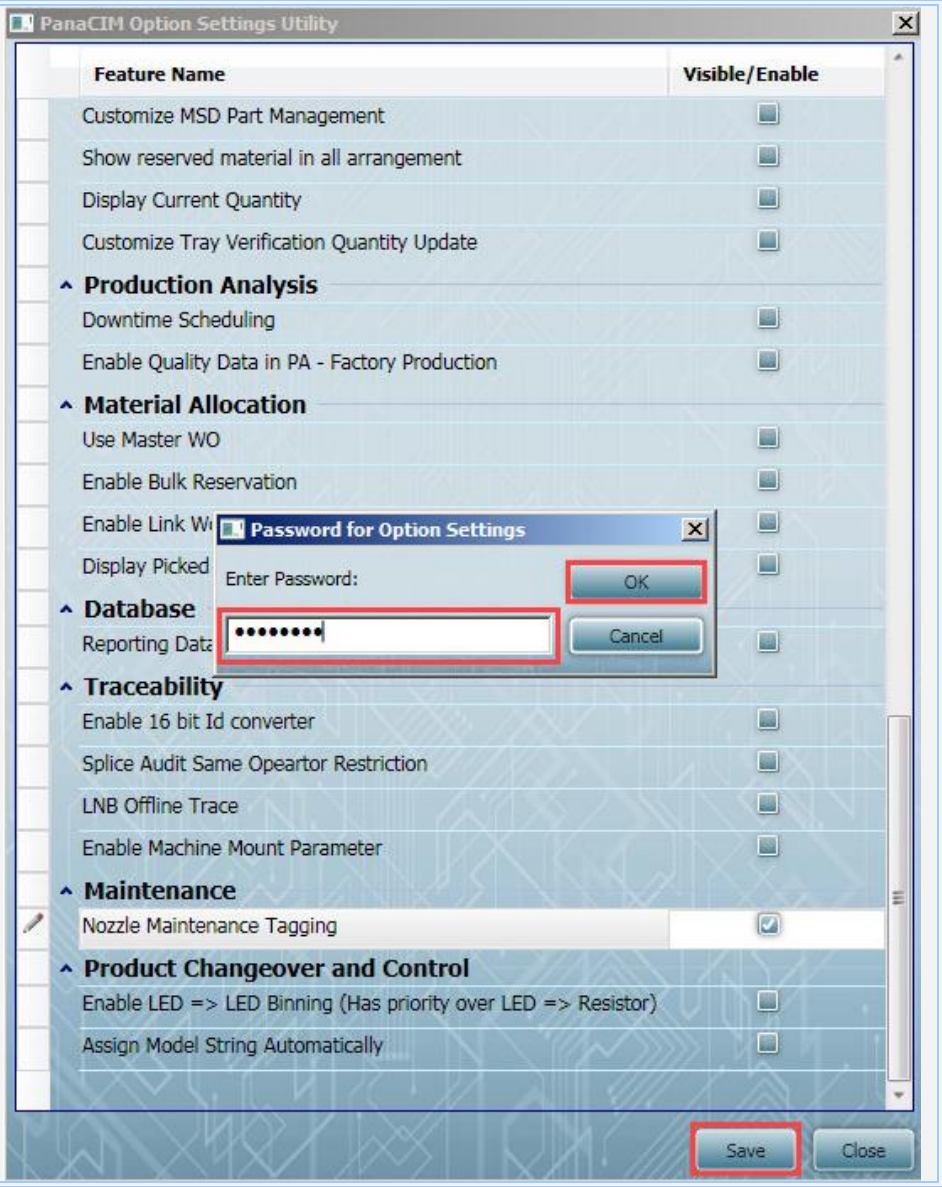
4	In PanaCIM console, go to **Module Configuration → Enterprise Link → Export Settings**.	
5	Ensure that **Feeder Maintenance** is disabled.	

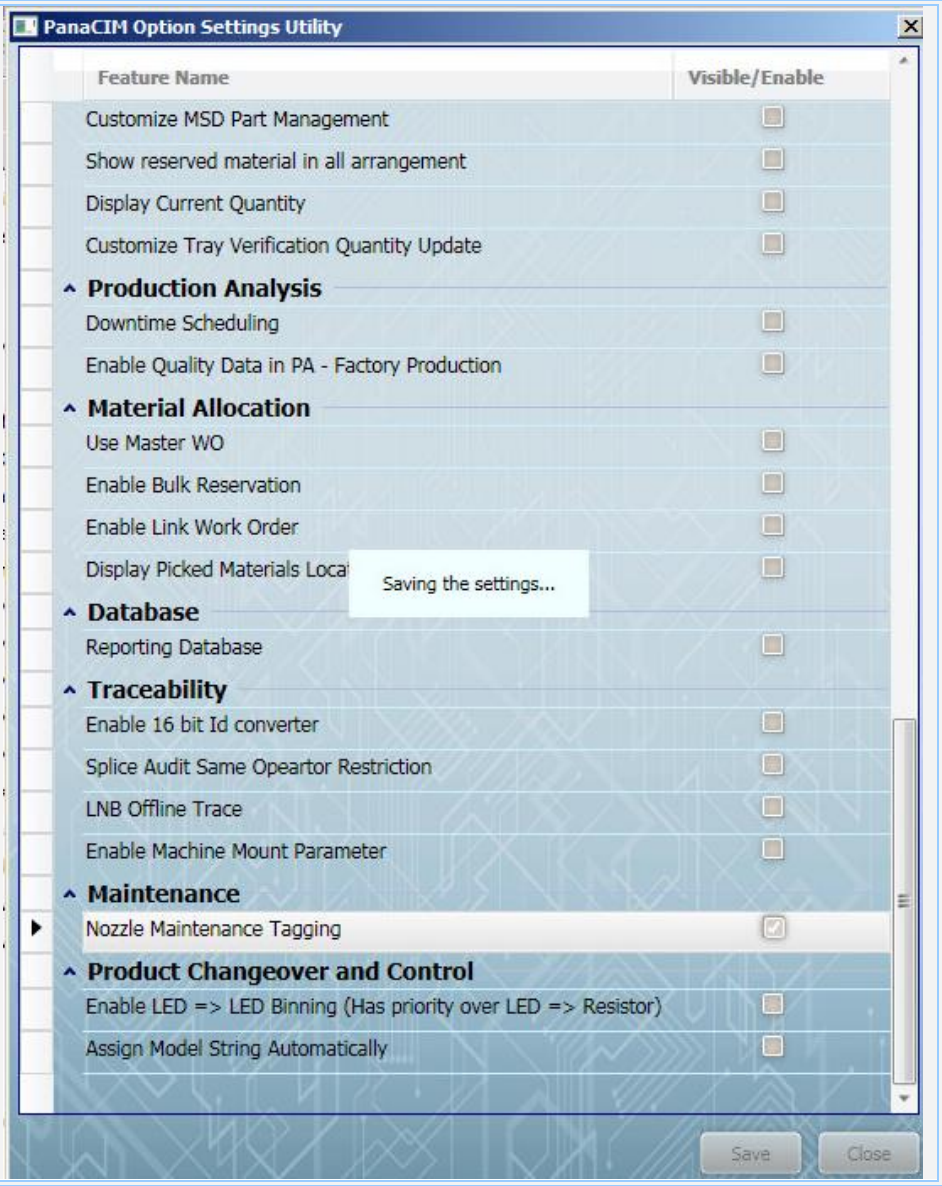
Step 6: Enable Nozzle Maintenance Tagging in Option Settings Utility

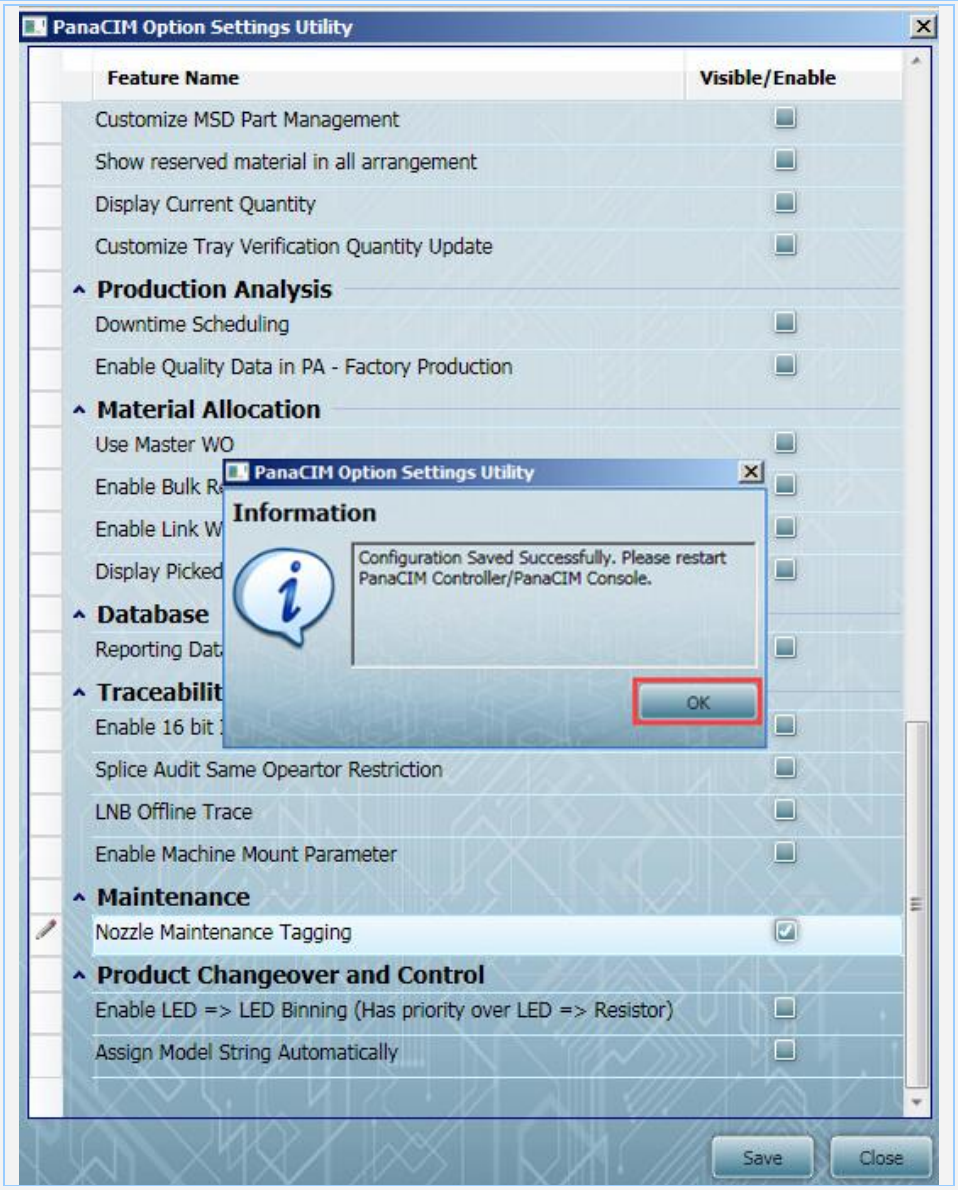
Step	Description	Screenshot
1	Right-click the **PanaCIM Option Settings Utility** and select the **Open** option from context menu.	
2	Enter password and click **OK**.	

3	The **Option Settings Utility** appears.	

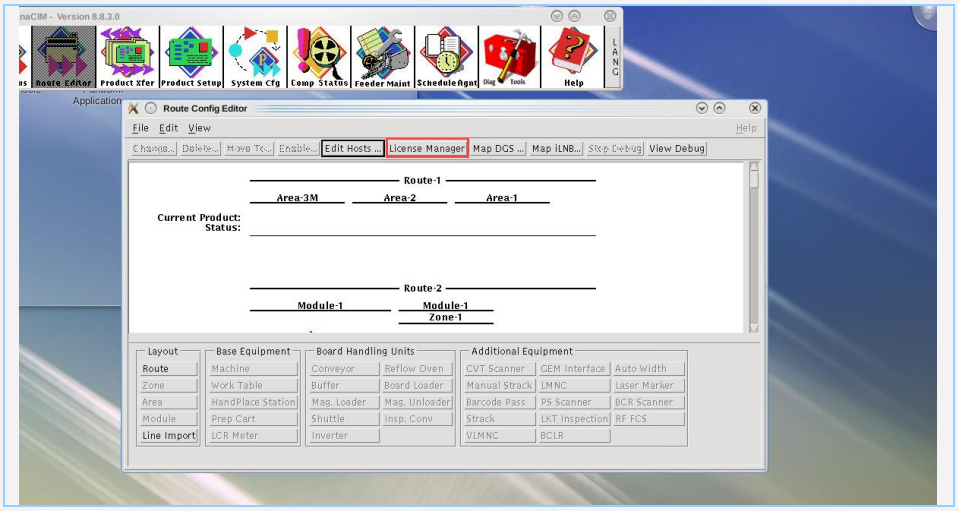
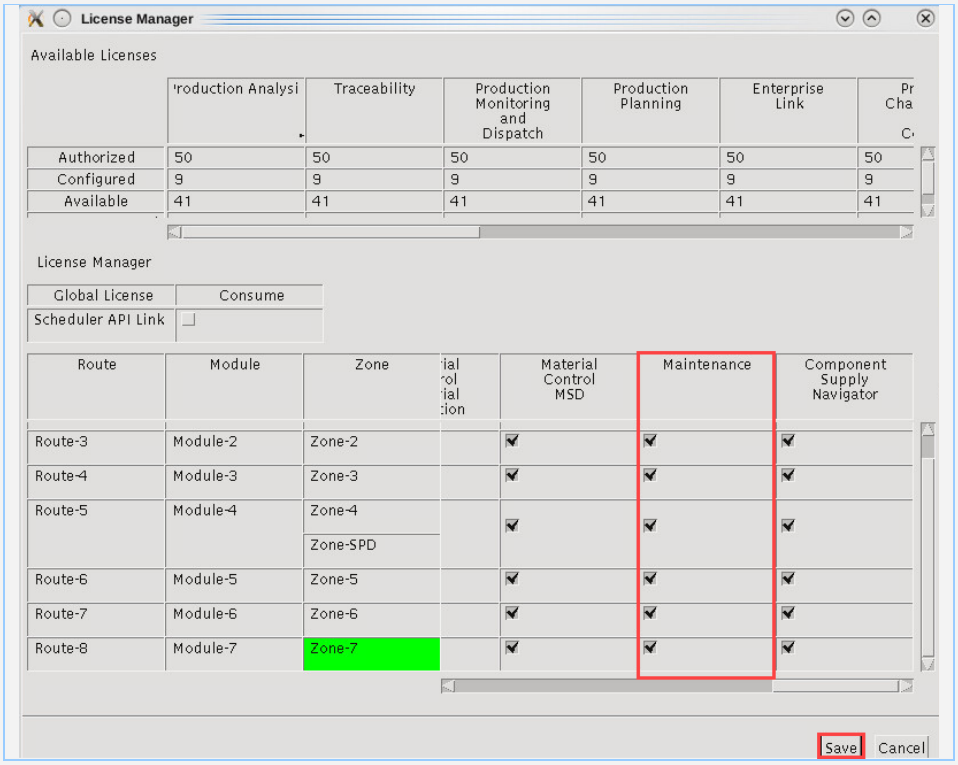
4	Check the **Nozzle Maintenance Tagging** in the **Maintenance** section.	

5	Click the **Save** button. The **Password for Option Settings** dialog box appears. Enter password and click **OK**.	

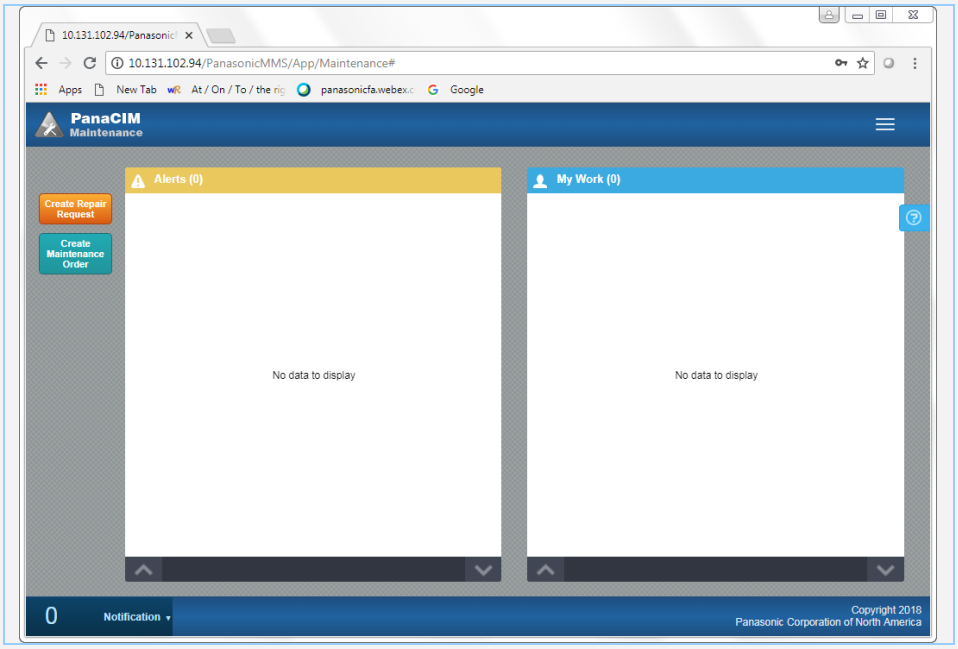
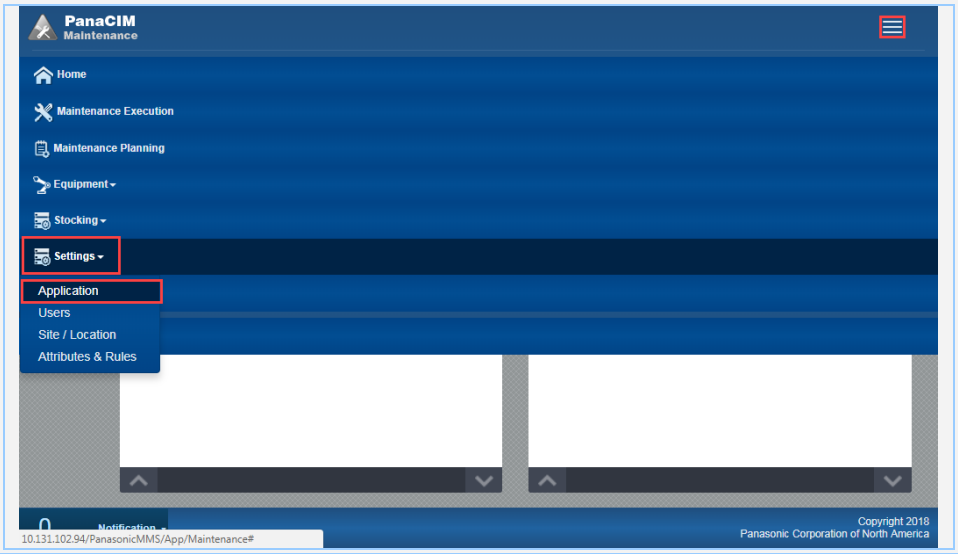
6	The settings are being saved. Please wait.	

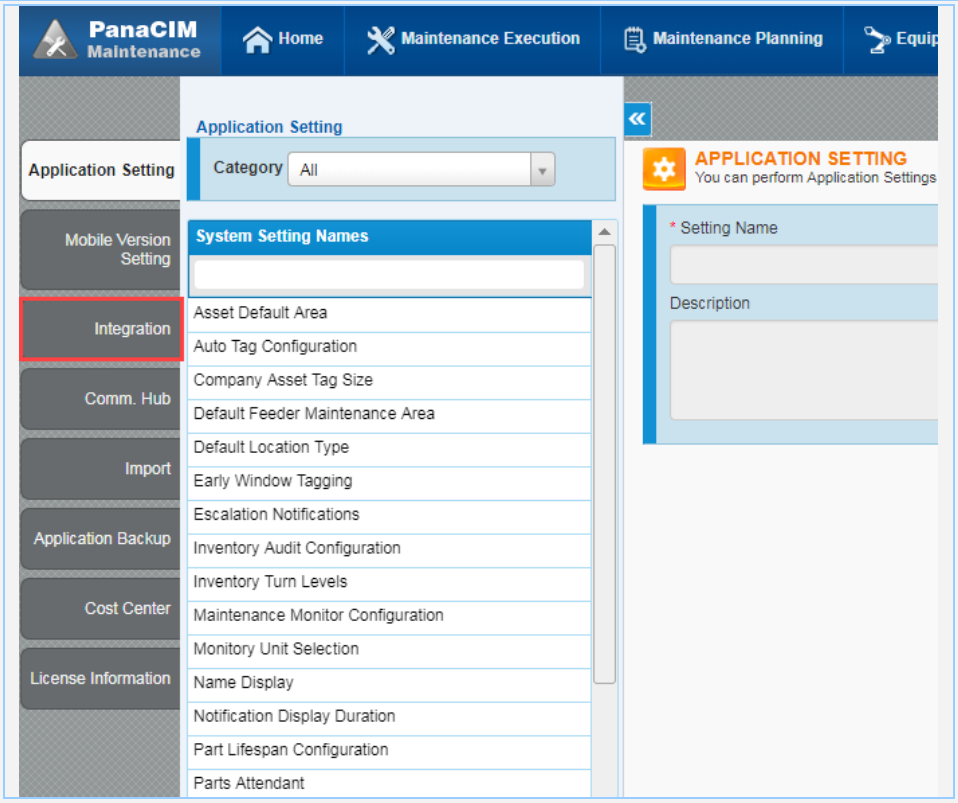
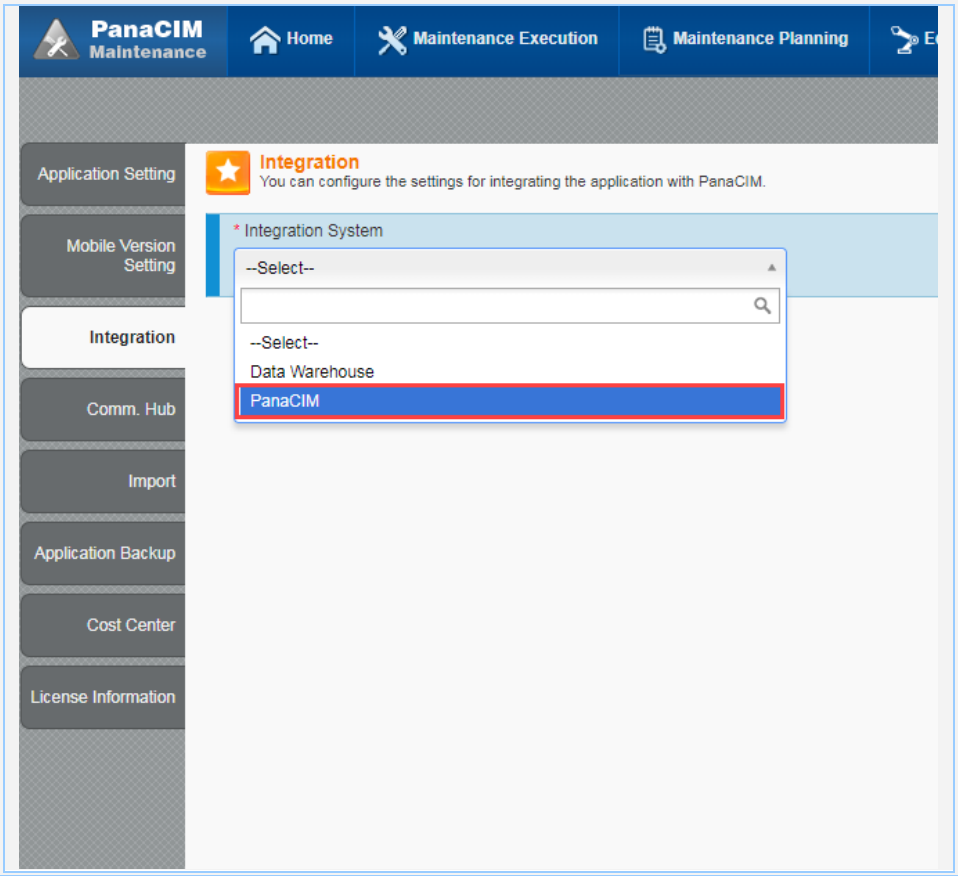
7	A confirmation message box appears. Click **OK and** restart PanaCIM Controller/PanaCIM Console.	

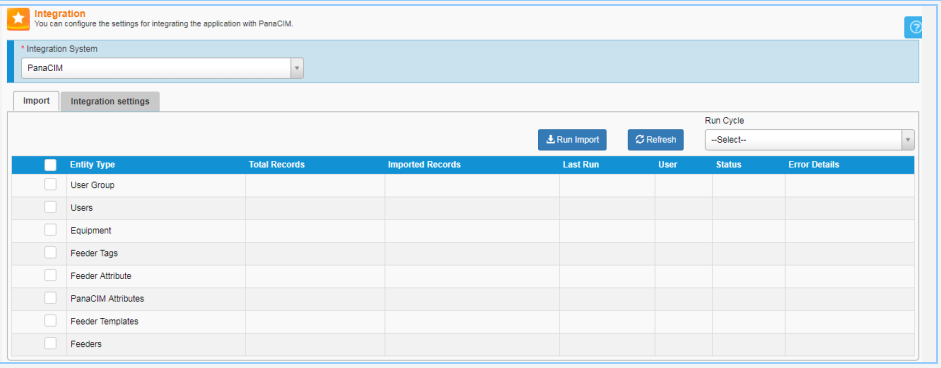
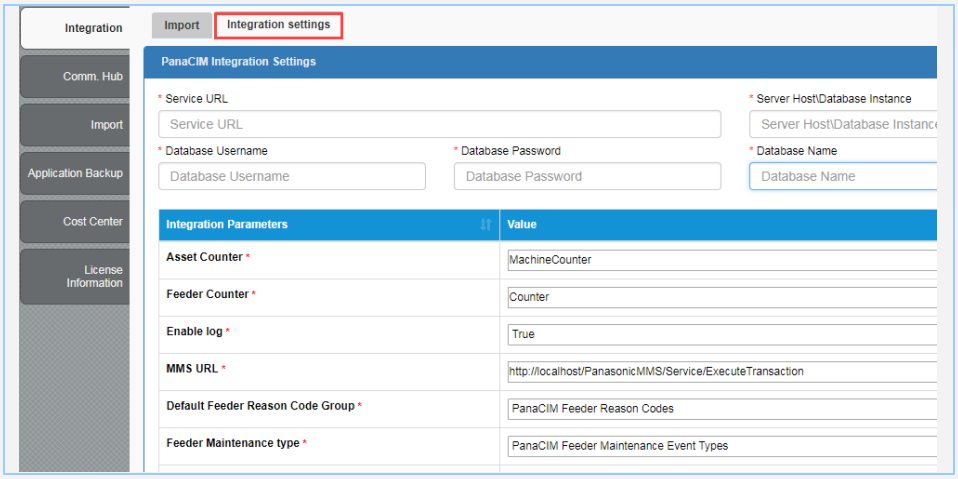
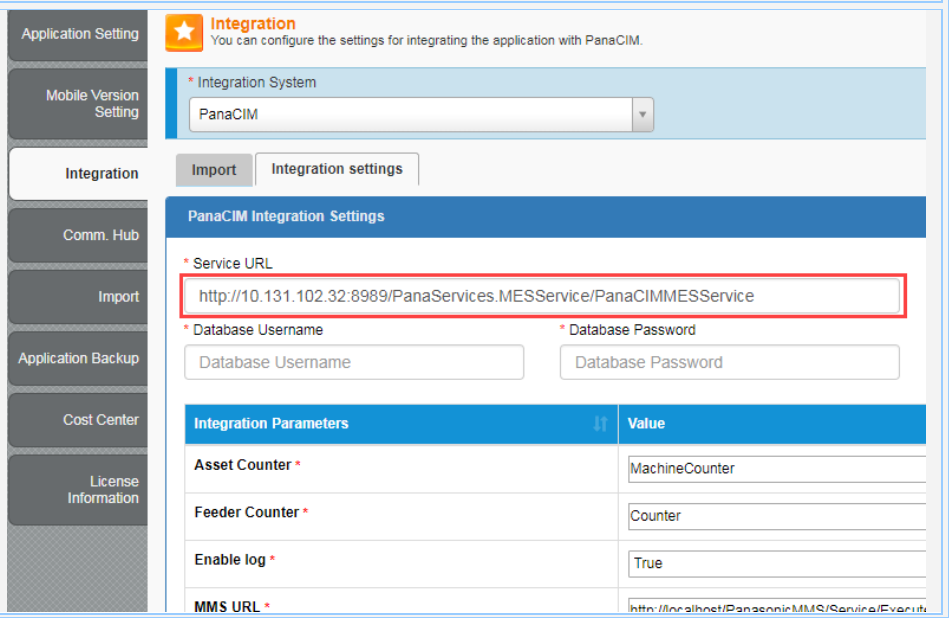
Step 7: Enable the License for Maintenance Module

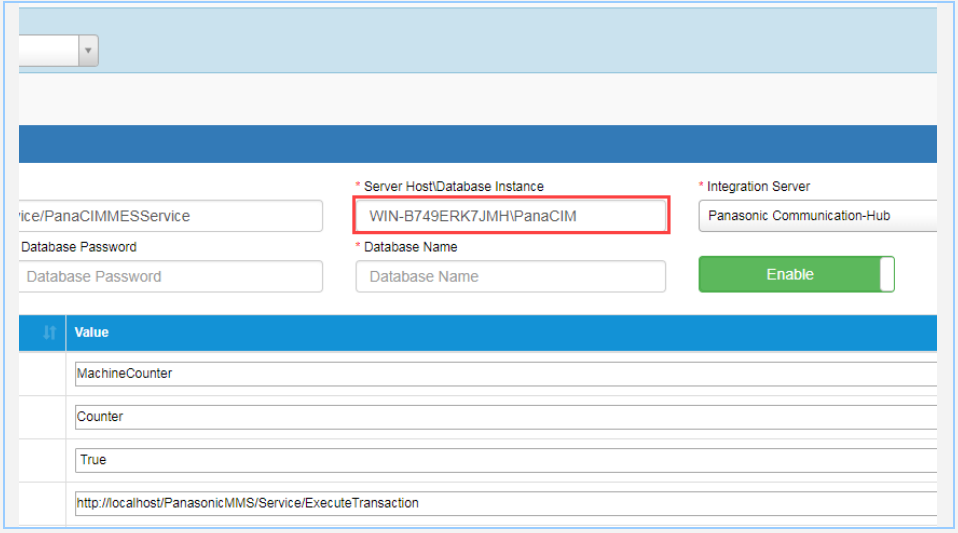
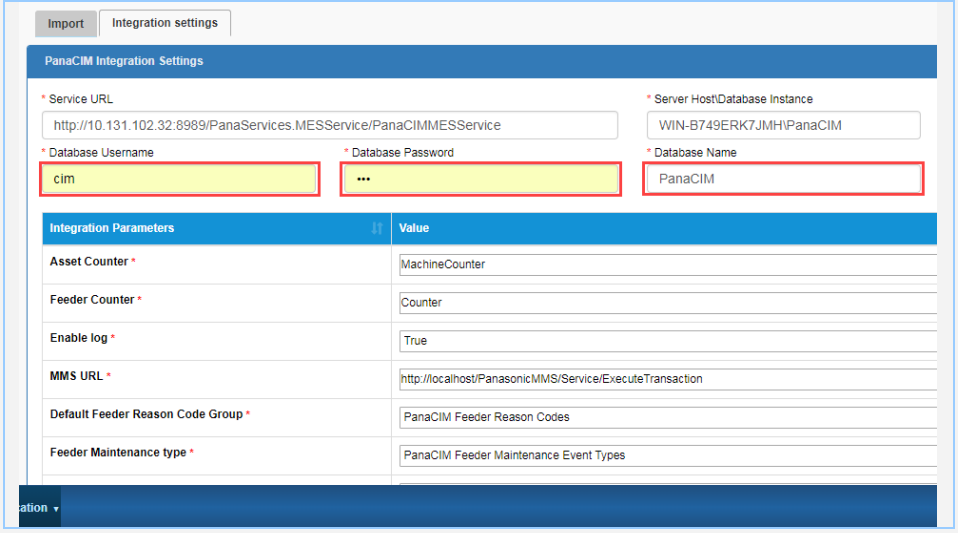
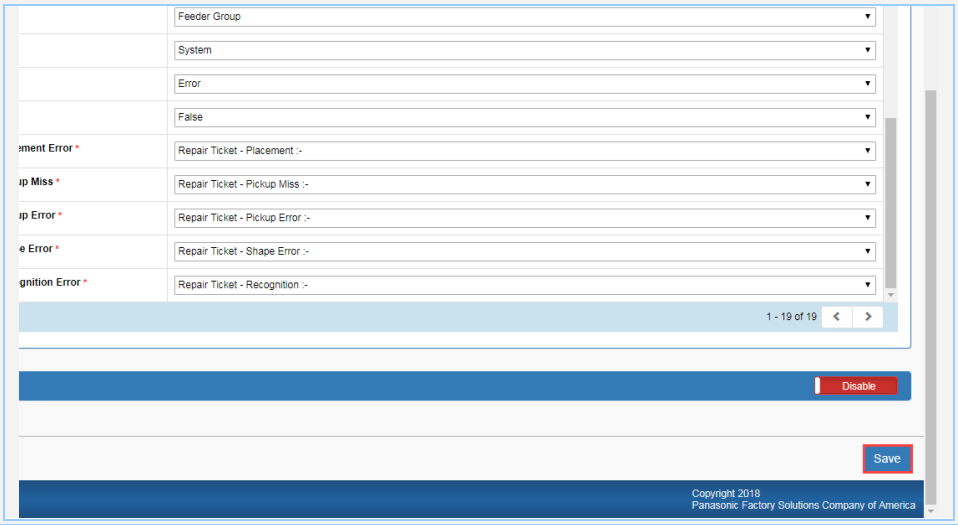
Step	Description	Screenshot
1	In CIMC, open **Route Config Editor** and click the **License Manager** tab.	
2	The **License Manager** tab appears. Provide licenses for **Maintenance** module. Click the **Save** button.	

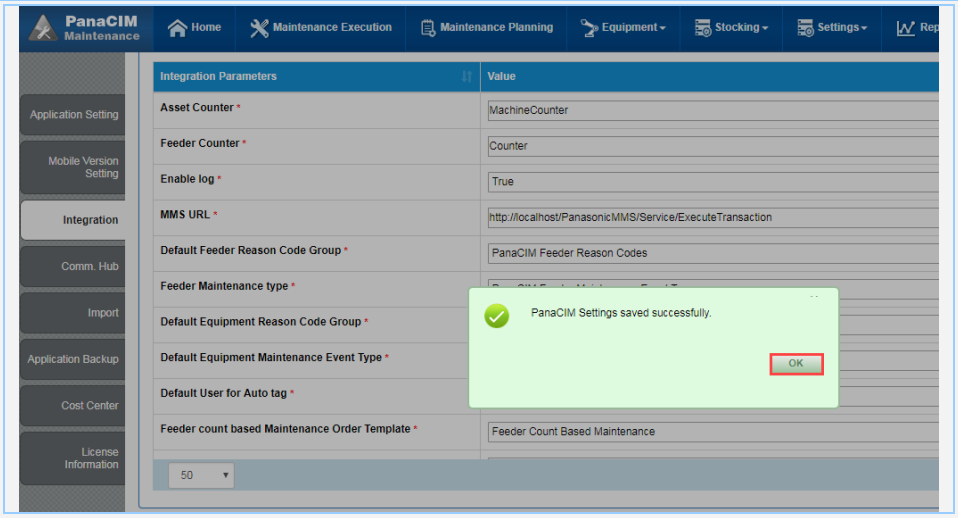
Step 8: Configure PanaCIM Service URL and Database Details in MMS

Step	Description	Screenshot
1	Login to the MMS Web application using the below URL: http://<ip_address_of_MMS machine>/PanasonicMMS	
2	Click the menu ( ) icon, then **Settings → Application**.	

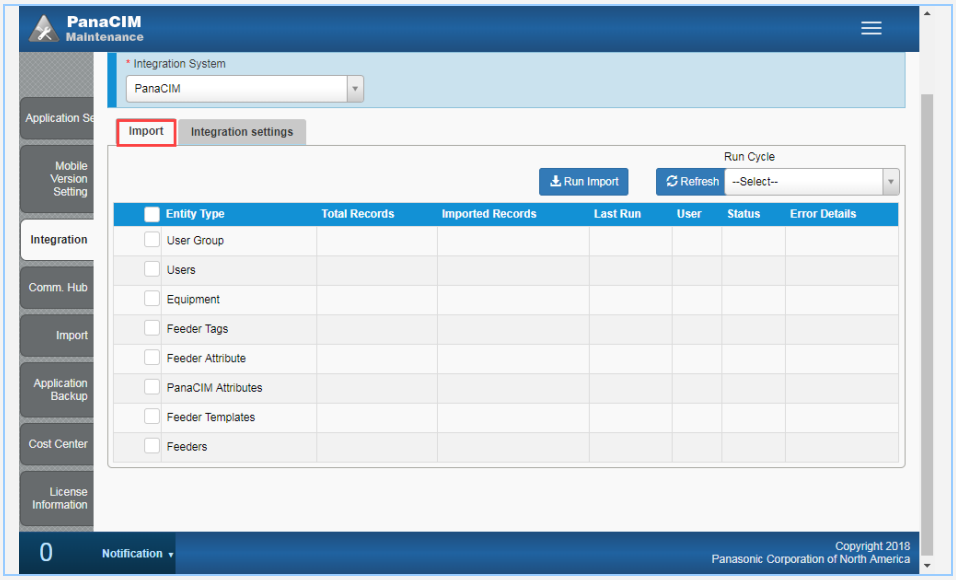
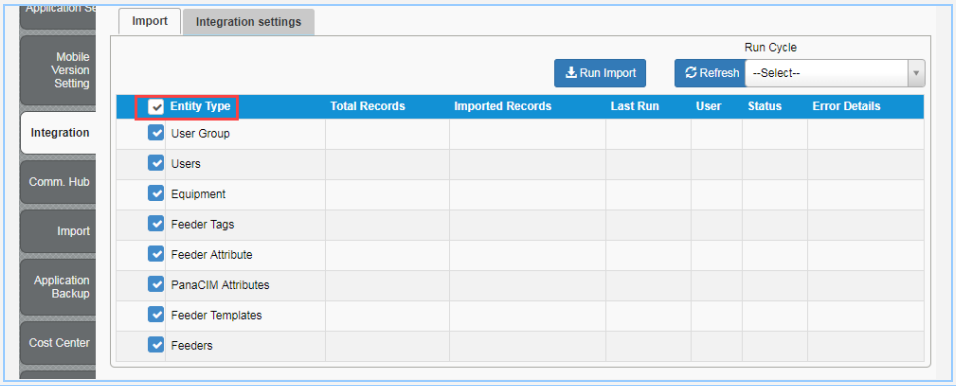
3	Click the **Integration** tab.	
4	Select the **PanaCIM** in the **Integration System** dropdown.	

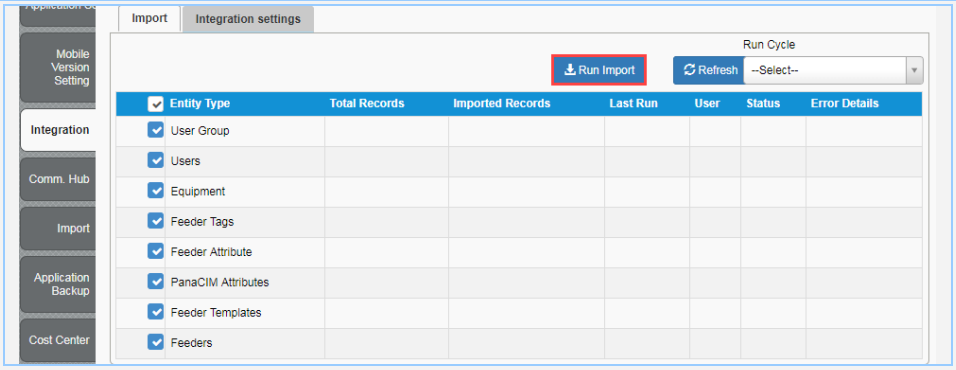
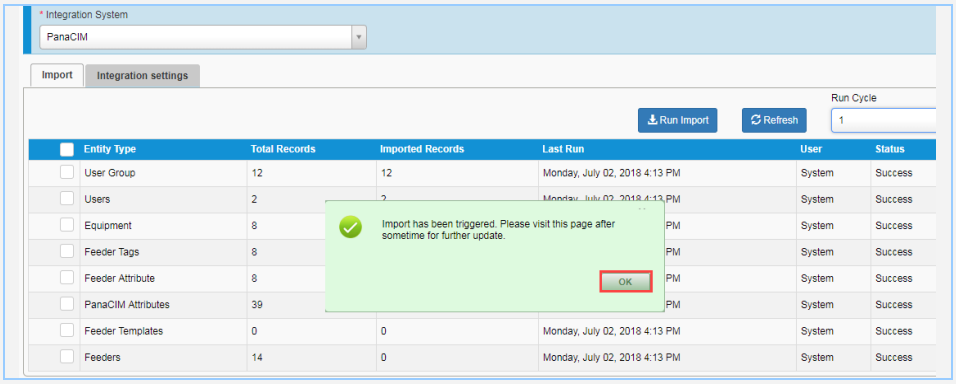
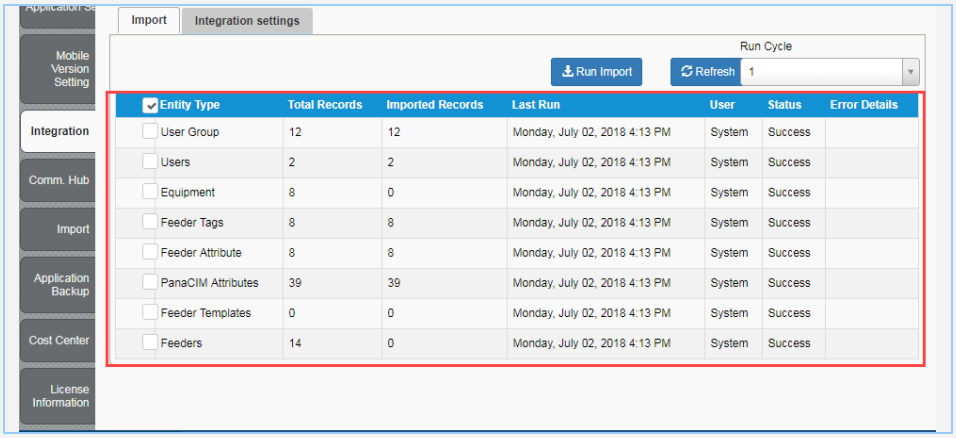
5	The integration screen appears.	
6	Click the **Integration** tab.	
7	Provide service URL of PanaCIM.	

8	Provide database instance detail.	
9	Provide database user name, database password, and database name.	
10	Click the **Save** button.	

11	A message box appears indicating that PanaCIM settings have been saved successfully. Click **OK**. **Note: The PanaCIM service URL is validated for successful connectivity. If MMS is not able to connect to the configured URL with provided credentials, then an error message pops-up.**	

Step 9: Import Data in MMS from PanaCIM

Step	Description	Screenshot
1	Click the **Import** tab.	
2	Select the required entity check boxes for import.	

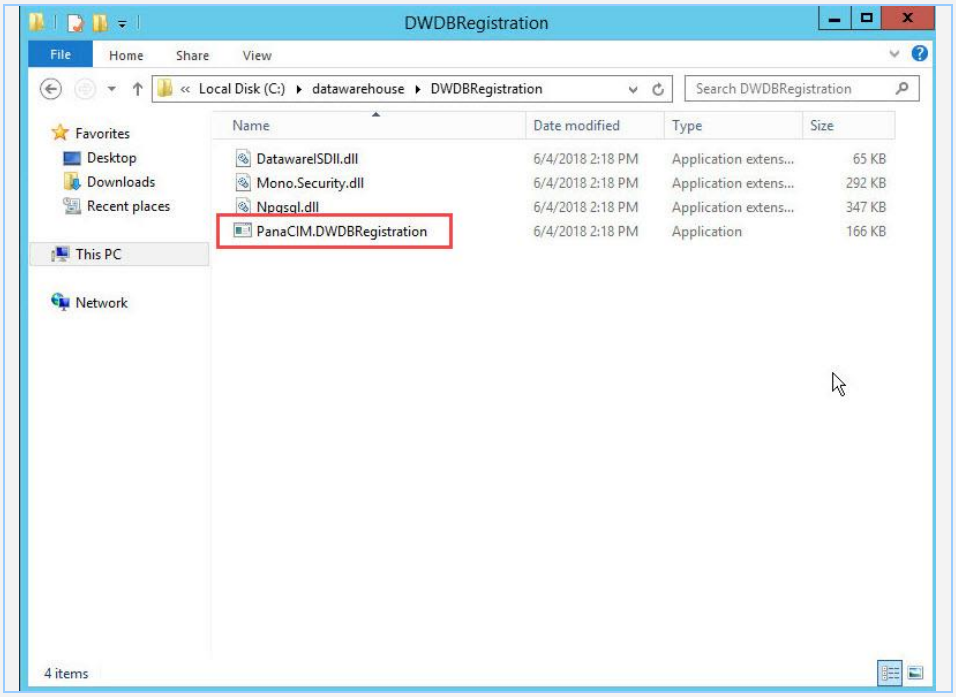
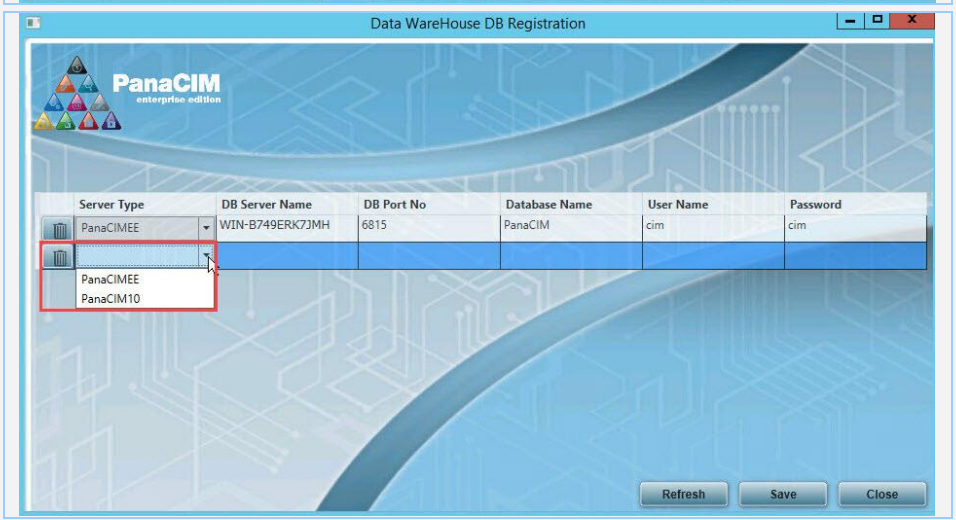
3	Click the **Run Import** button.	
4	A message box appears indicating that import is triggered. Click **OK**.	
5	The data is imported from PanaCIM to MMS as shown to the right.	

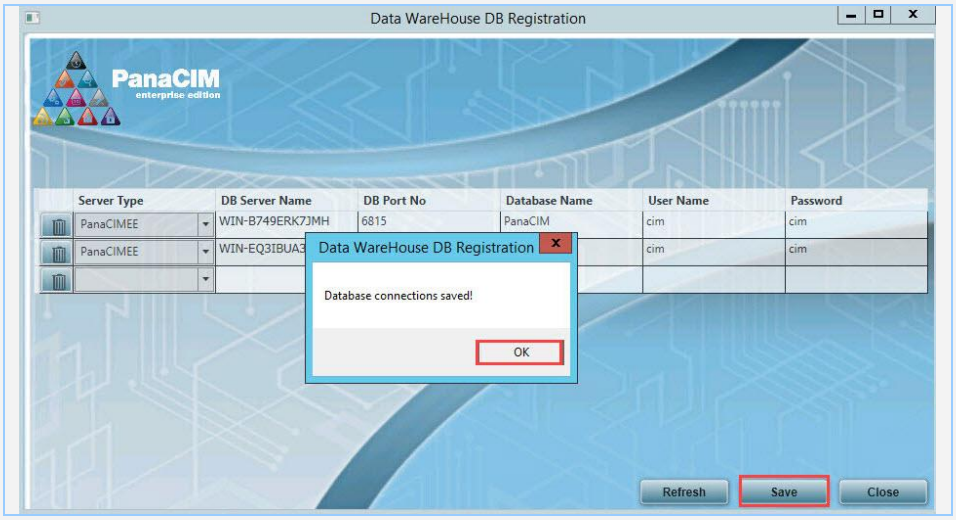
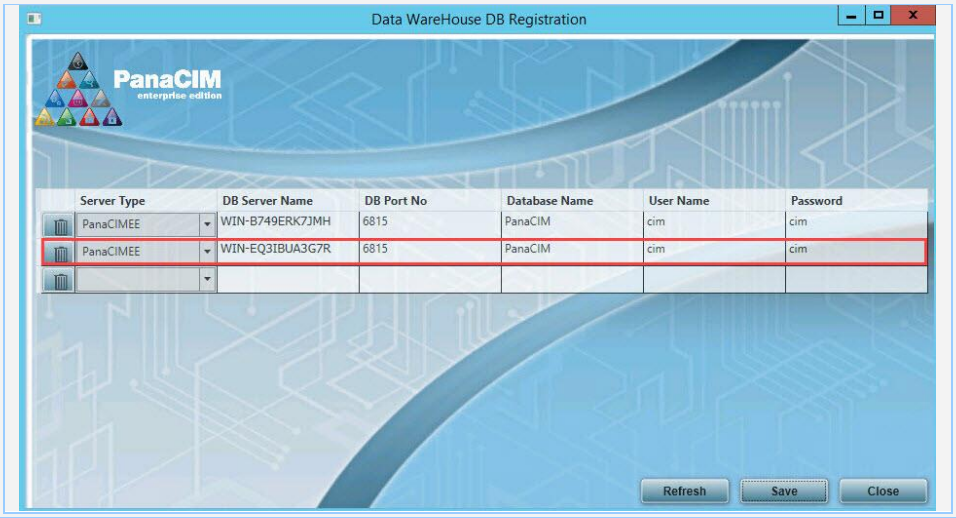
2.2 Multiple PanaCIM with MMS (Using Data Warehouse)

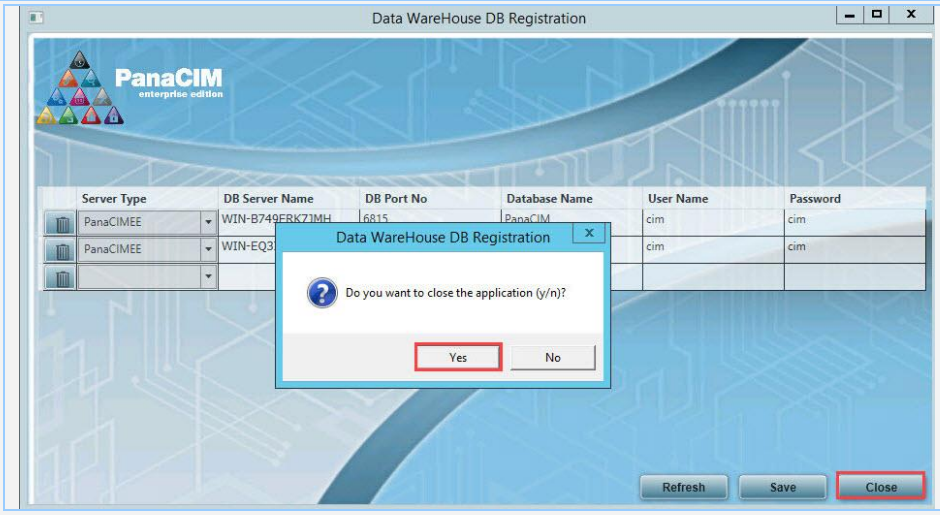
The integration of multiple PanaCIM EE servers with MMS can be categorized into following broad level steps.

1. Integrating Multiple PanaCIM EE Servers with Data Warehouse
2. Communication Hub Configuration
3. Configure Data Warehouse Service URL in MMS
4. Import Data from Data Warehouse to MMS

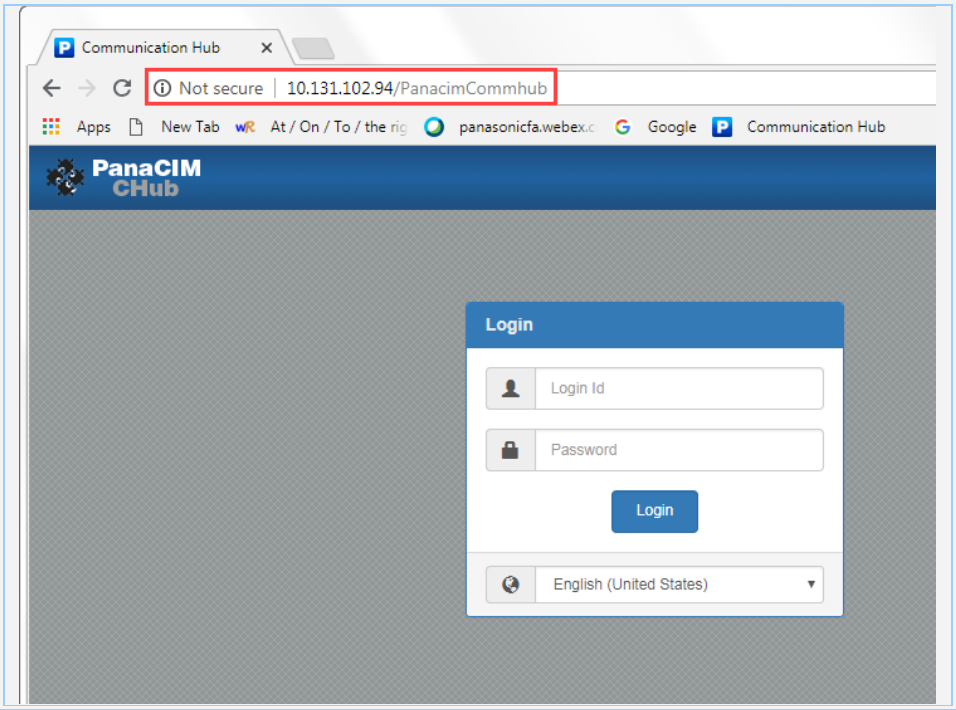
Step 1: Integrating Multiple PanaCIM EE Servers with Data Warehouse

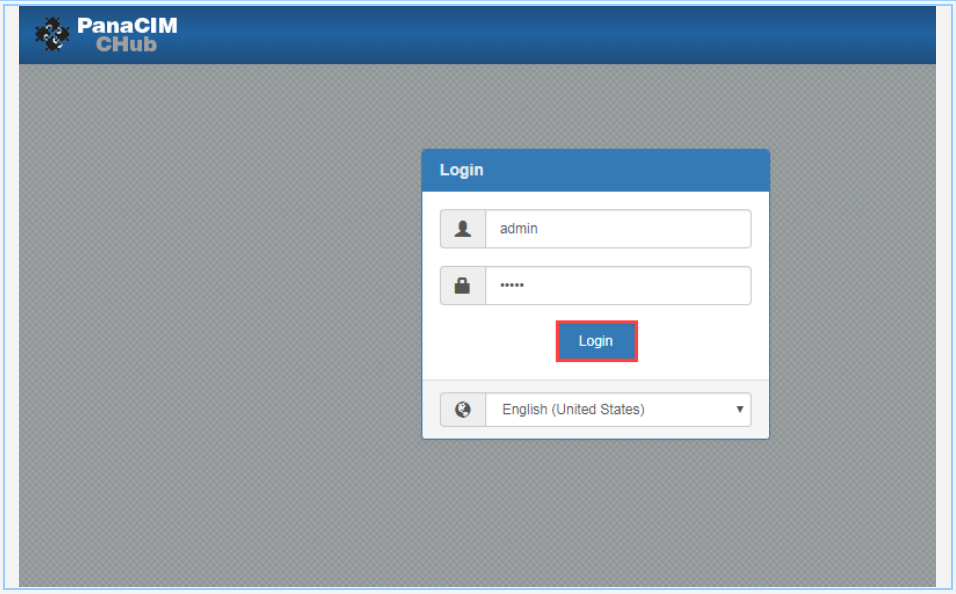
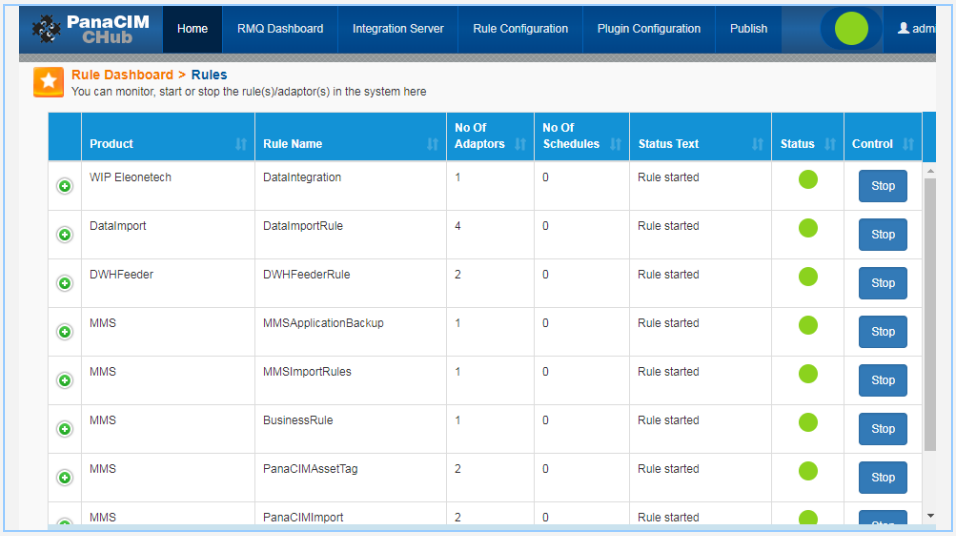
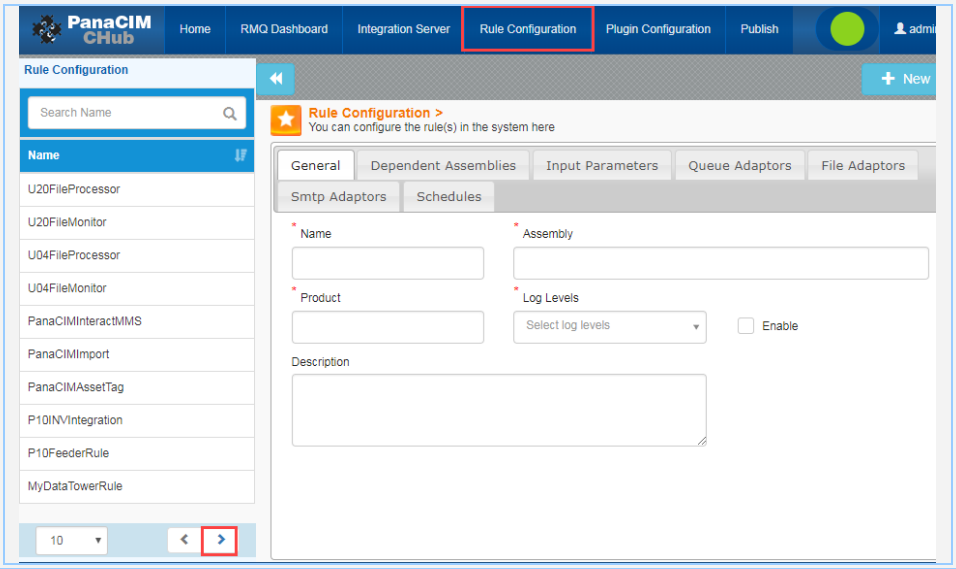
Step	Description	Screenshot
1	Run the **PanaCIMDWDBRegistration** service available in the **C:\datawarehouse\DWDBRegistration** directory.	
2	The **Data Warehouse DB Registration** screen appears. The application server details provided at the time of installation is already registered.	
3	On this screen multiple PanaCIM EE and P10 servers can be added.	

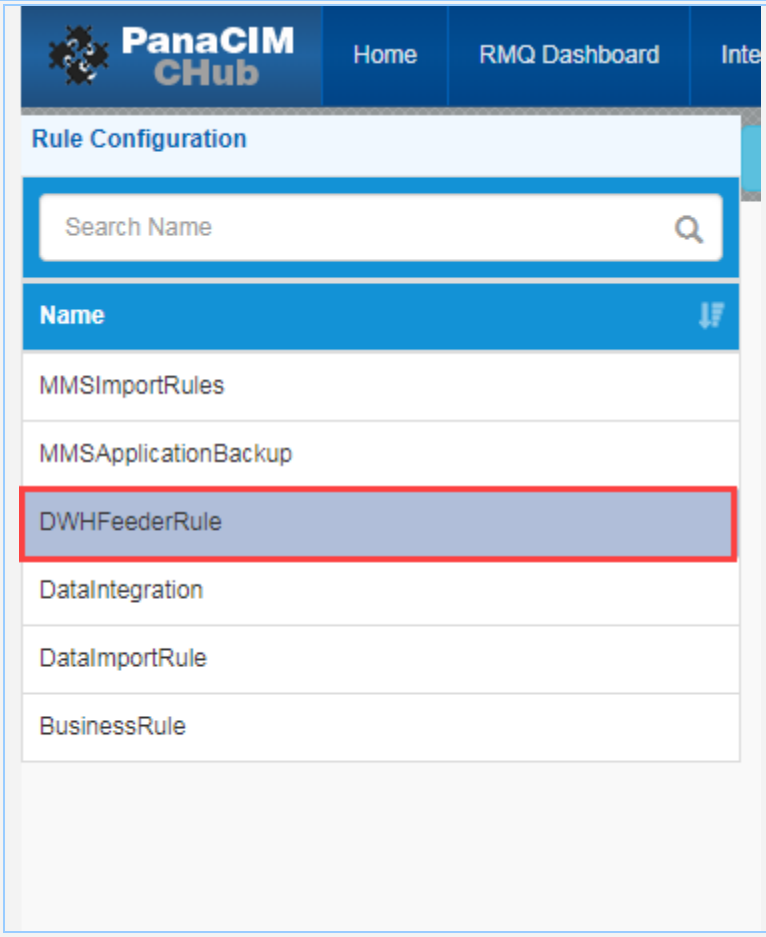
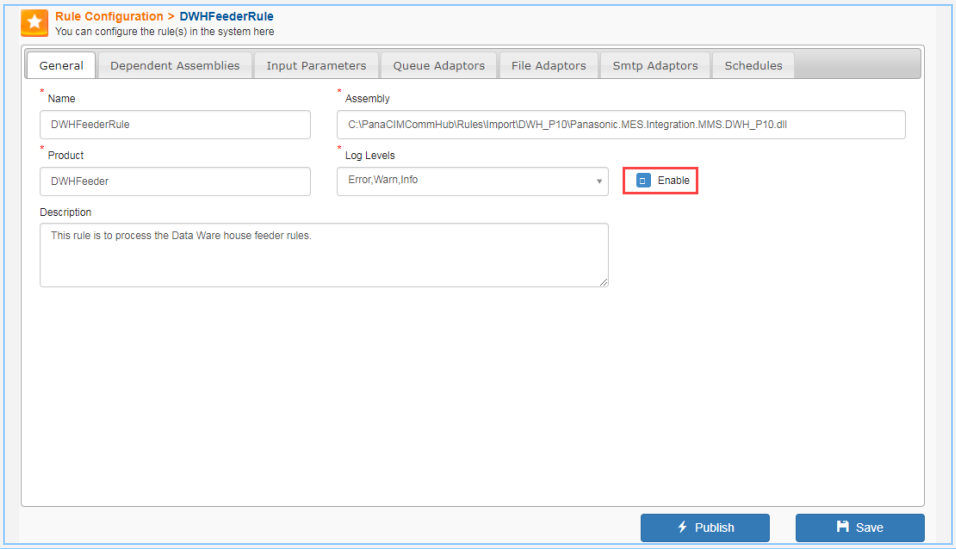
4	Add PanaCIM EE application server details.	
5	Click the **Save** button. A message box appears indicating that database connection saved. Click **OK**.	
6	The new PanaCIM application server is added as shown to the right.	

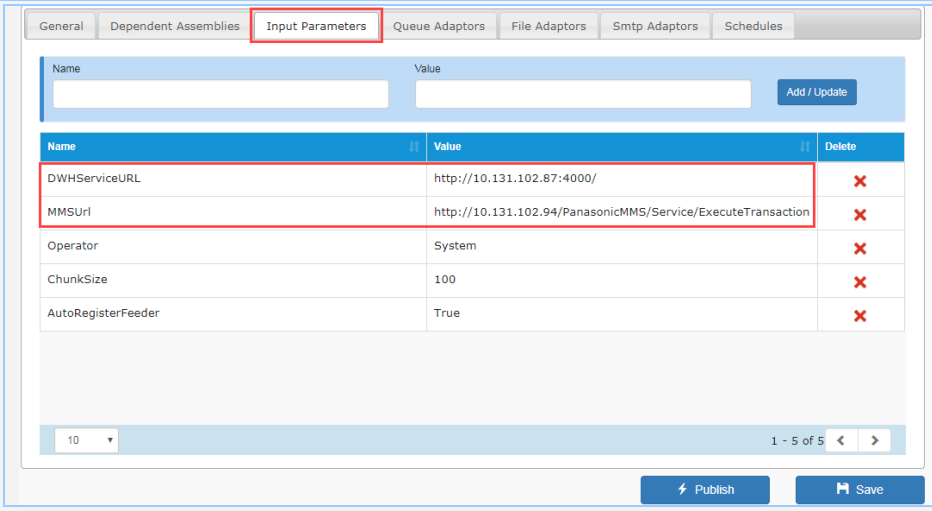
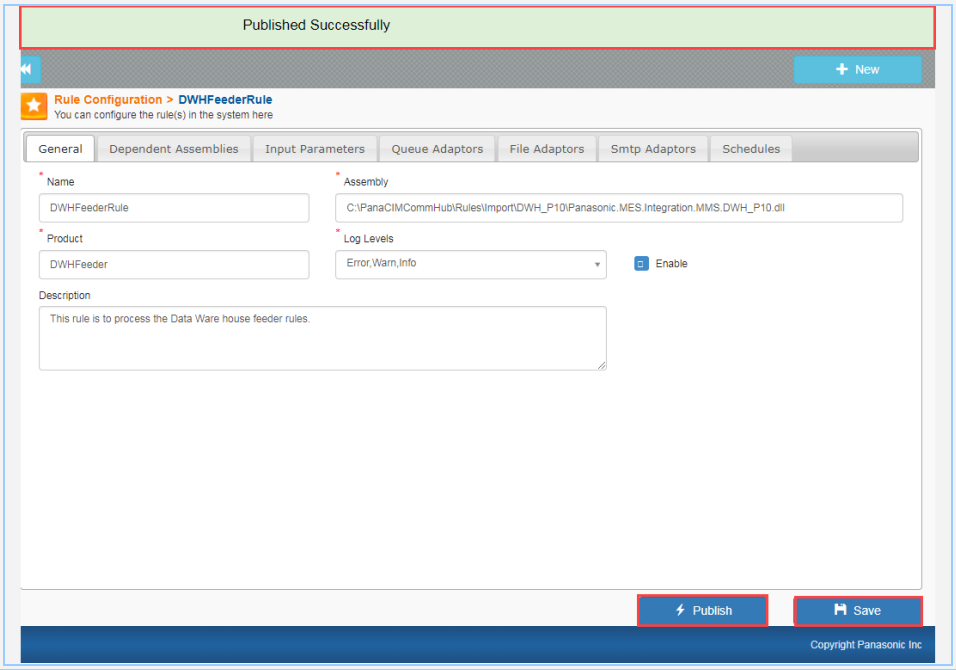
7	Click **Close** button to close the application. A confirmation message box appears. Click **Yes**. Similarly more PanaCIM EE servers can be integrated with Data Warehouse.	

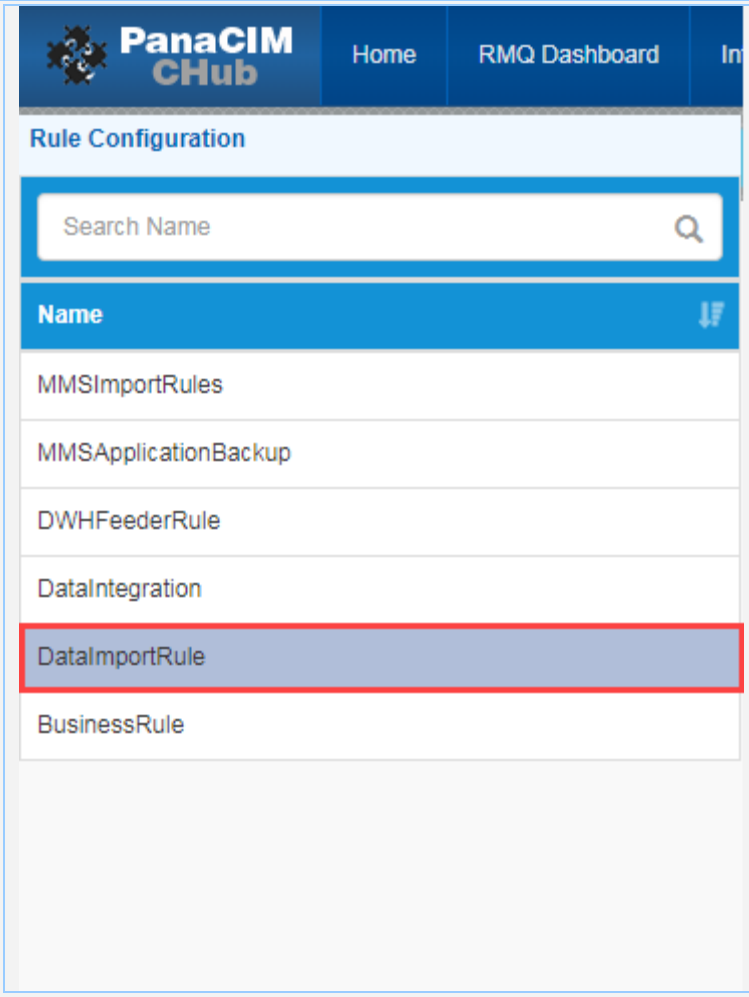
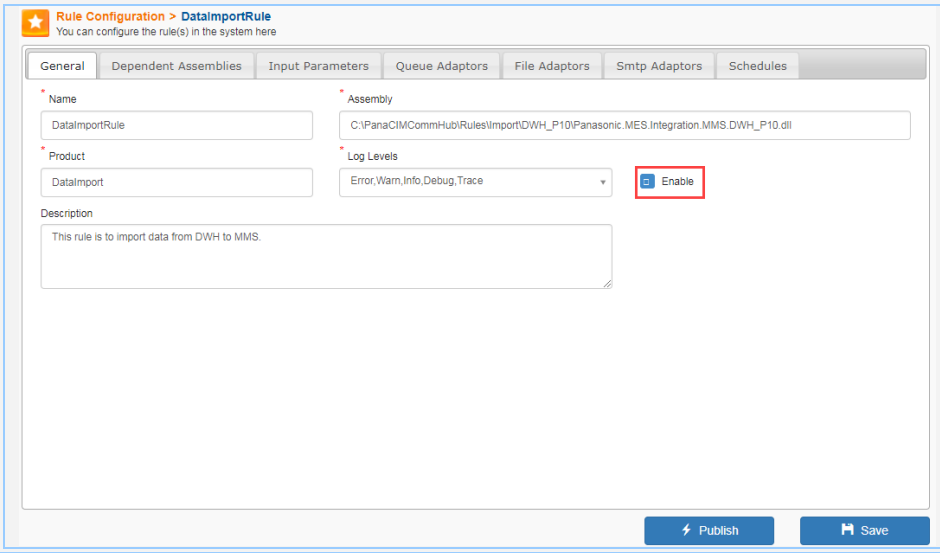
Step 2: Communication Hub Configuration

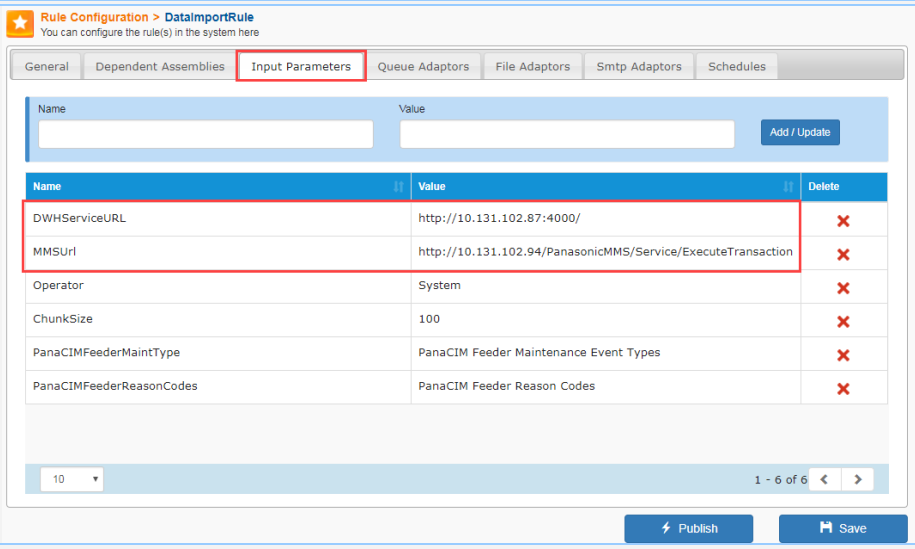
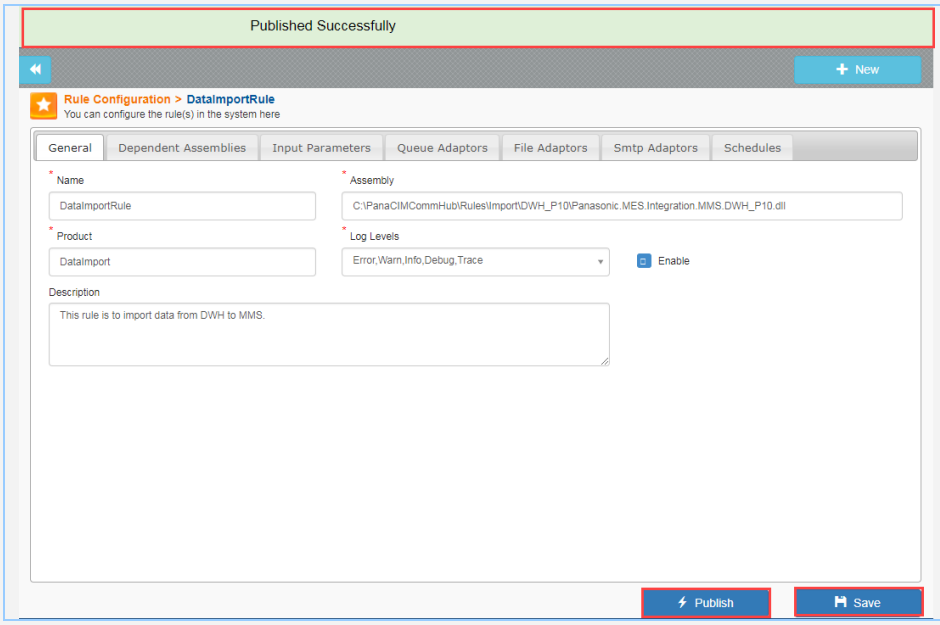
Step	Description	Screenshot
1	Open the Communication Hub application in browser using the below URL: <http://<IP Address of Comm hub Machine> /PanaCIMCommHub>	

2	Provide login Id and password and click the **Login** button.	
3	The home page of the application appears. Click the **Rule Configuration** tab.	
4	The **Rule Configuration** screen appears click the navigate icon. **Note: To integrate Data Warehouse with MMS, it is necessary to update the service ULRs of MMS and data warehouse applications for the following rules:** • **DWHFeederRule** • **DataImportRule**	

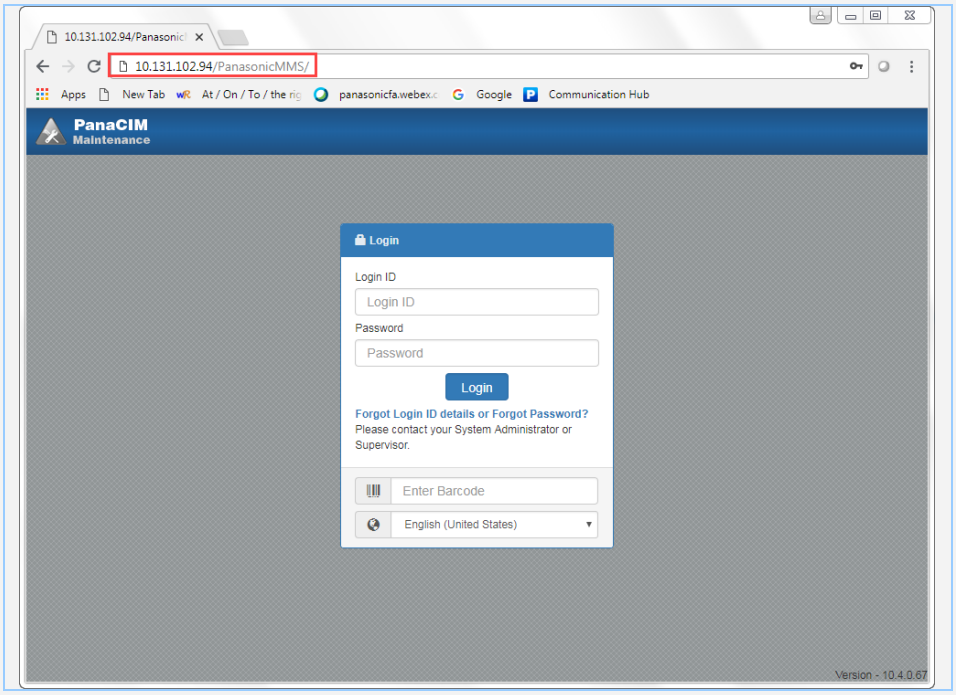
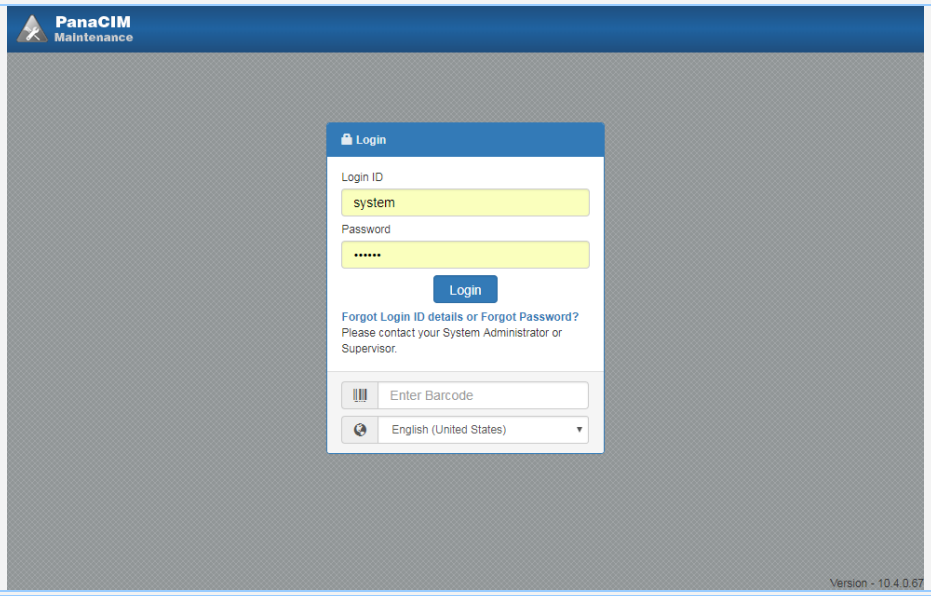
5	Click the **DWHFeederRule** tab in the **Rule Configuration** pane.	
6	The **DWHFeederRule** configuration screen appears. Ensure that the **Enable** check box is checked.	

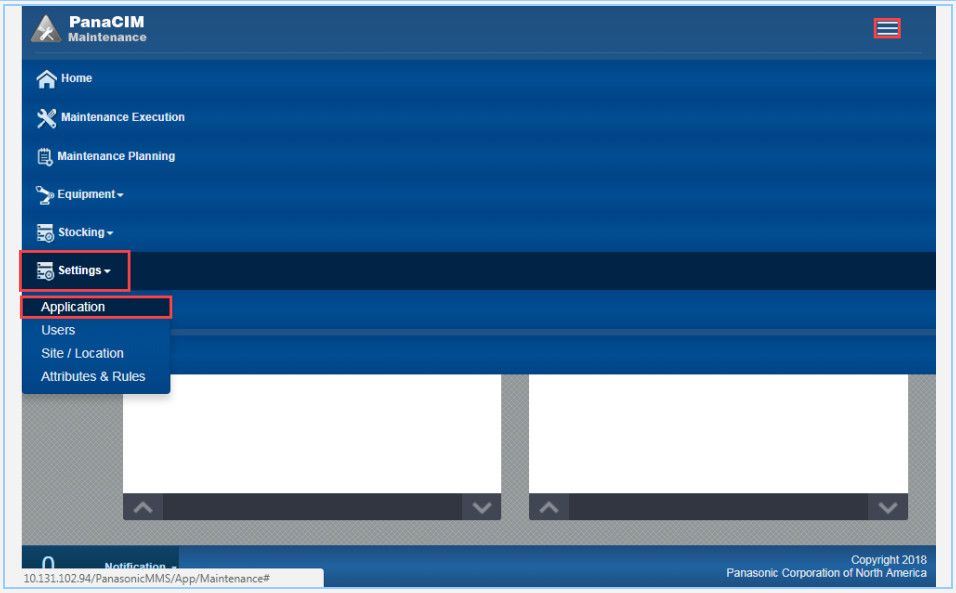
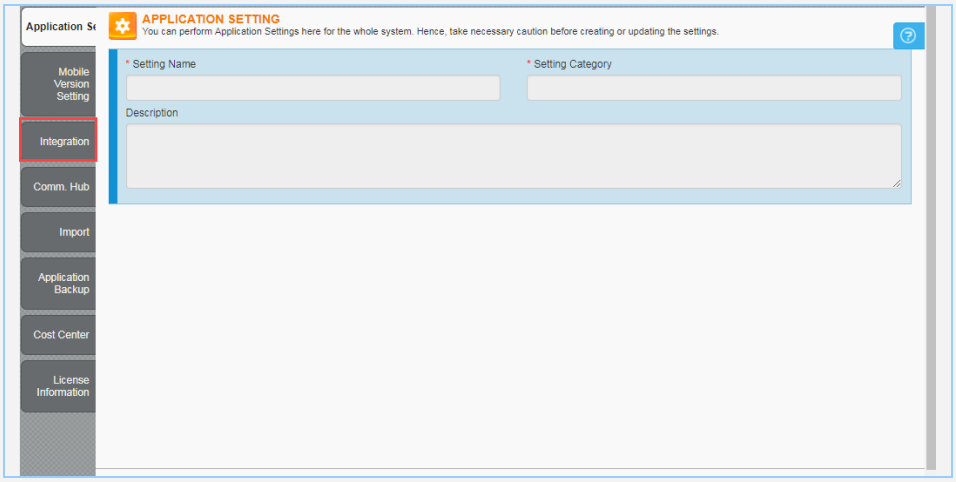
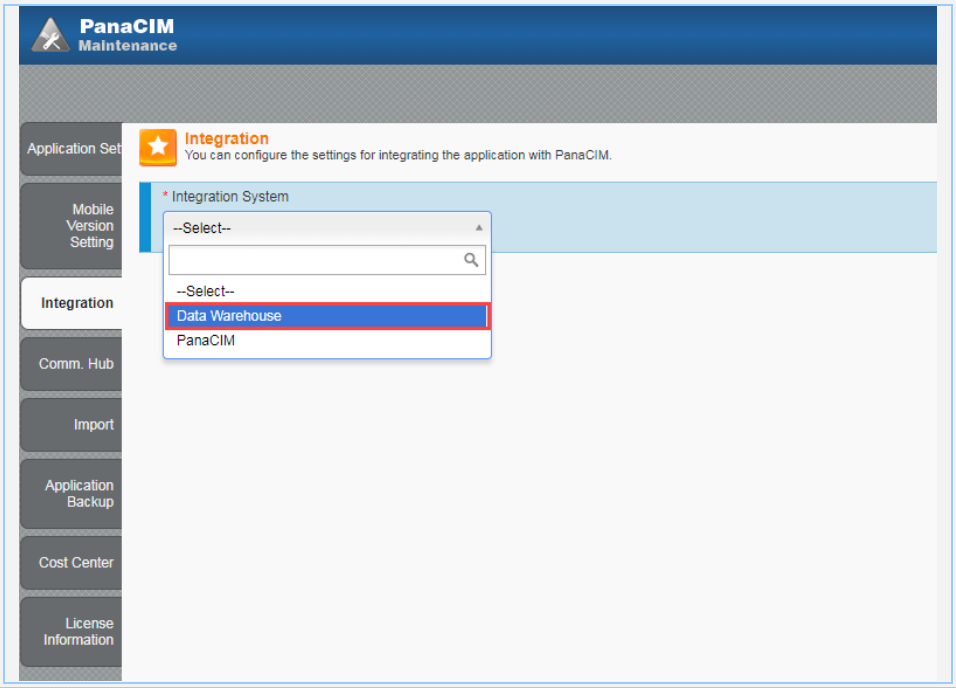
7	Click the **Input Parameters** tab. Update the **DWHServiceURL** and **MMSUrl** parameters with the data warehouse service URL and MMS service URL respectively.	
8	Click the **Save** button, then click the **Publish** button. Pop-up messages appear at the top of the screen indicating that the rule saved and published successfully.	

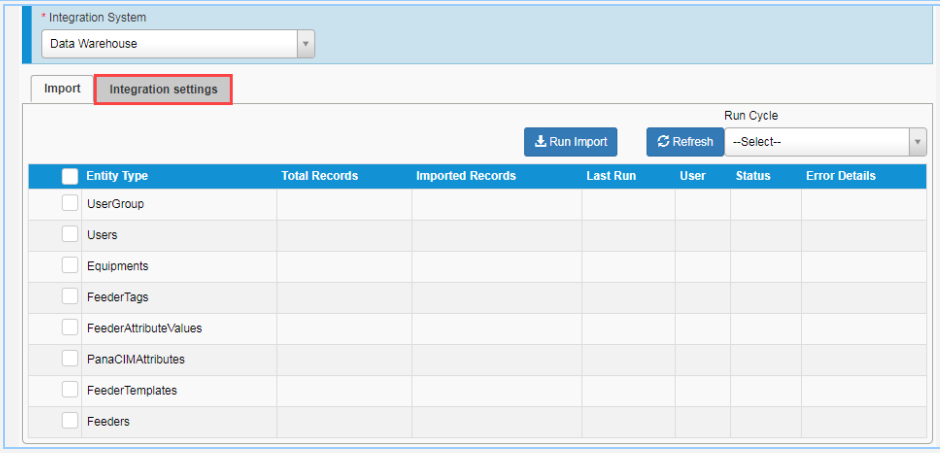
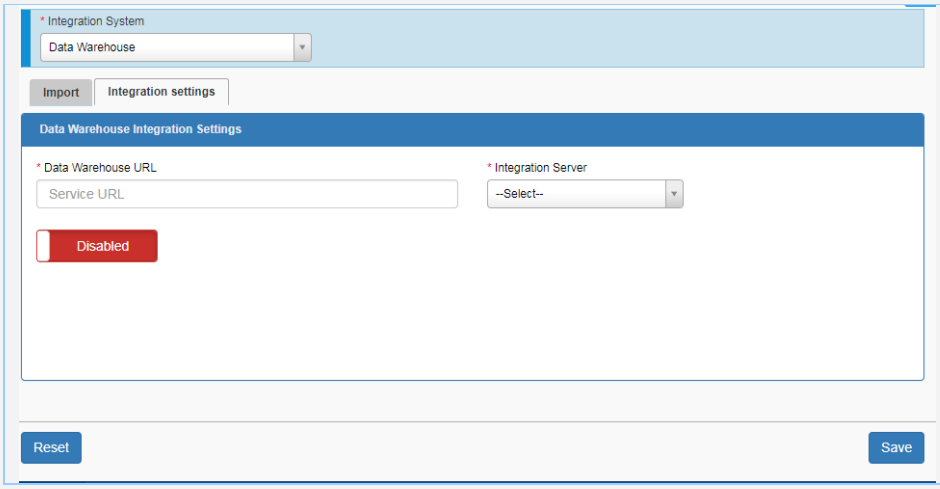
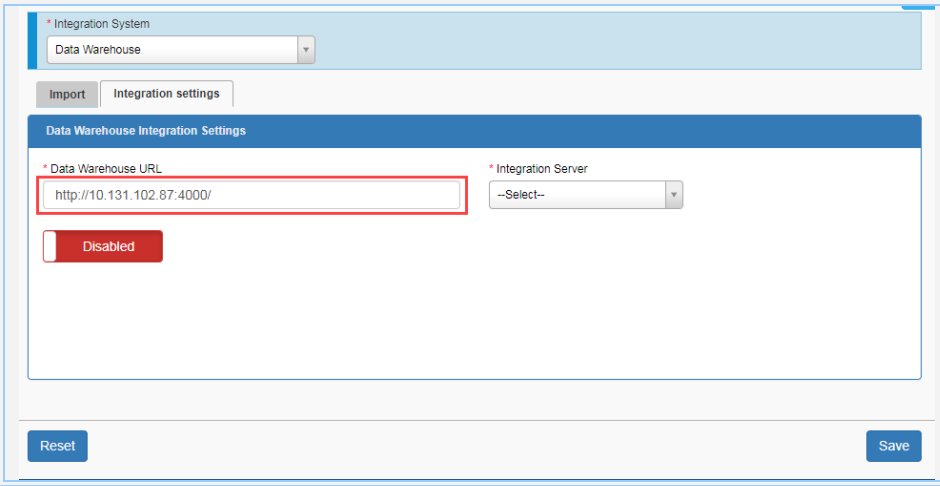
9	Click the **DataImportRule** tab in the **Rule Configuration** tab.	
10	The **DataImportRule** configuration screen appears. Ensure that the **Enable** check box is checked.	

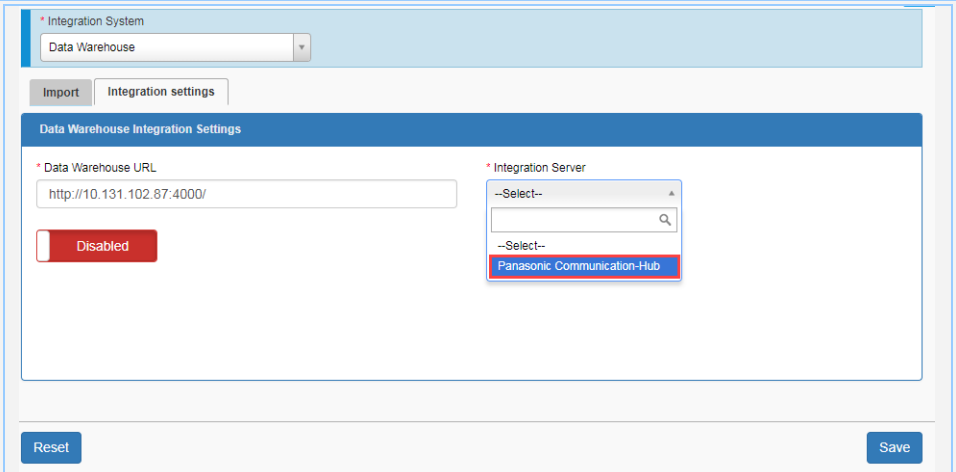
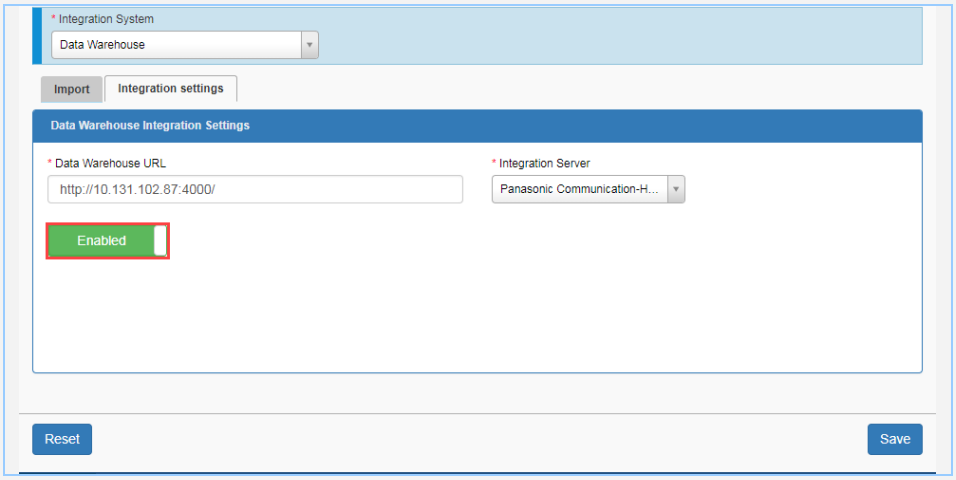
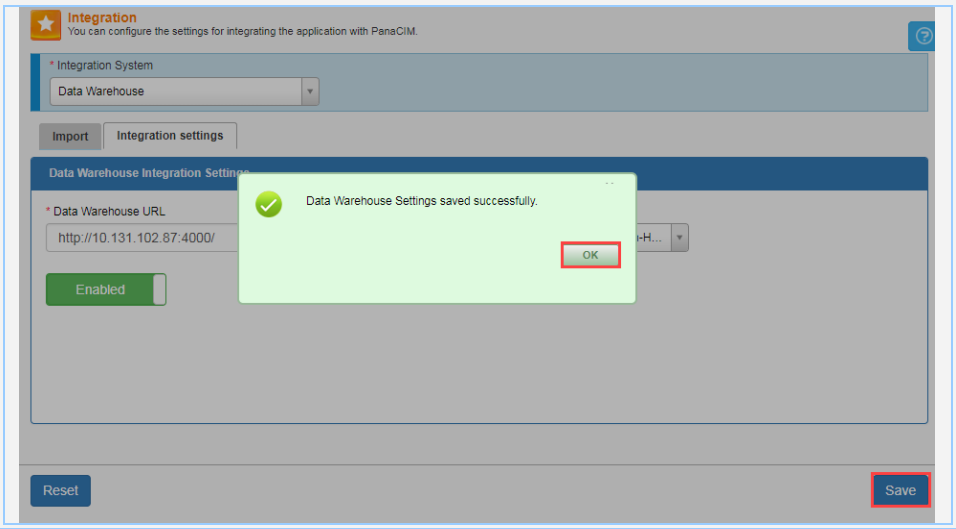
11	Click the **Input Parameters** tab. Update the **DWHServiceURL** and **MMSUrl** parameters with the data warehouse service URL and MMS service URL respectively.	
12	Click the **Save** button, then click the **Publish** button. Pop-up messages appear at the top of the screen indicating that the rule saved and published successfully.	

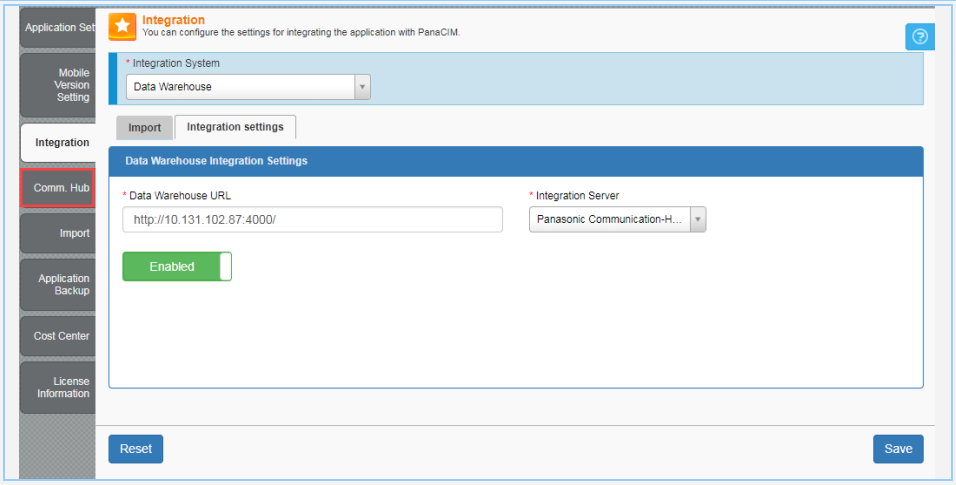
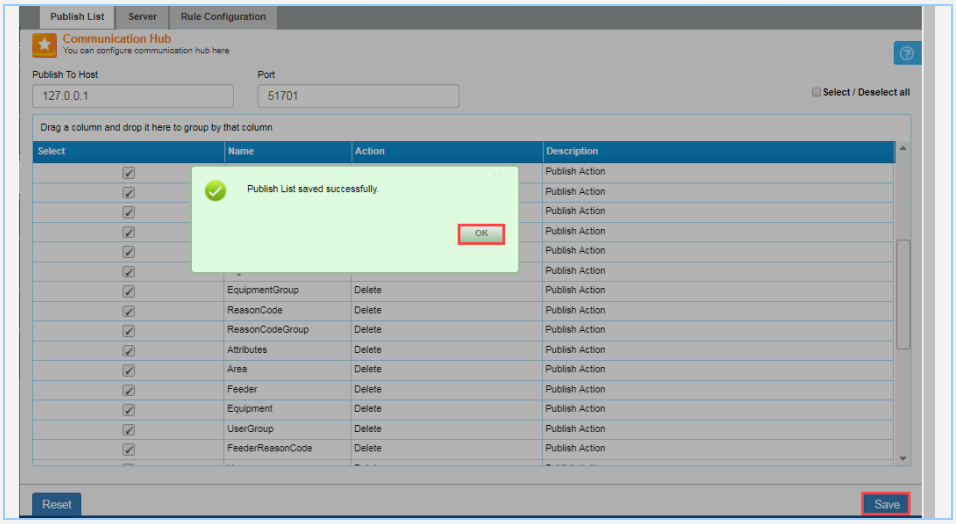
Step 3: Configure Data Warehouse Service URL in MMS

Step	Description	Screenshot
1	Open the MMS Web application using the below URL: http://<ip_address_of_MMS machine>/PanasonicMMS	
2	Provide login ID and password and click the **Login** button.	

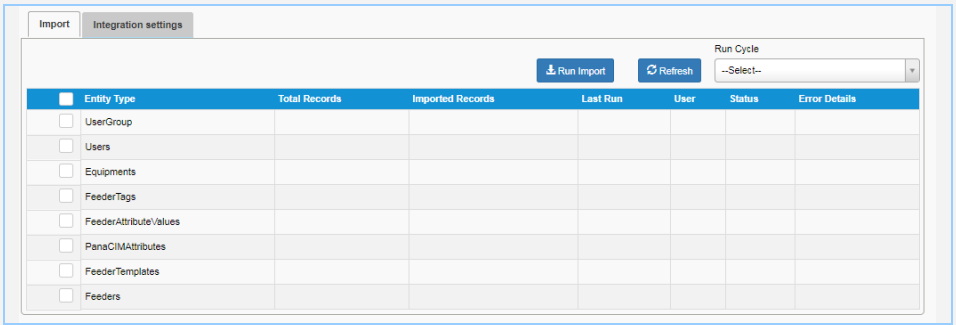
3	Click the menu ( ) icon then **Settings → Applications**.	
4	The **Application Settings** page appears. Click the **Integration** tab.	
5	The **Integration Page** appears. Select **Data Warehouse** from the **Integration System** dropdown.	

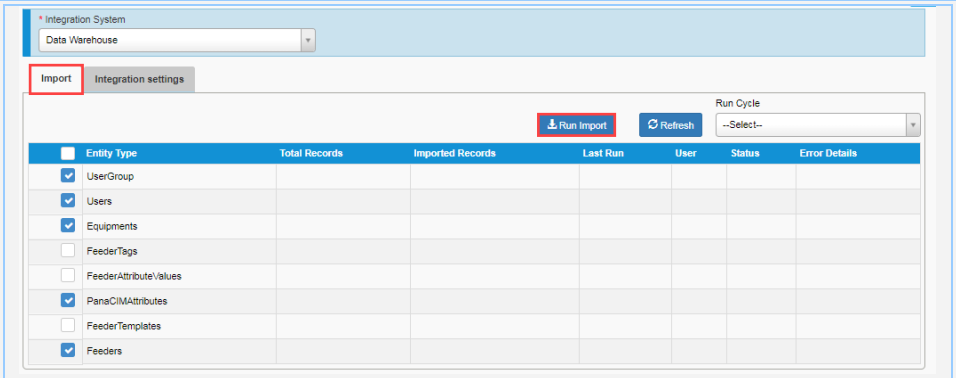
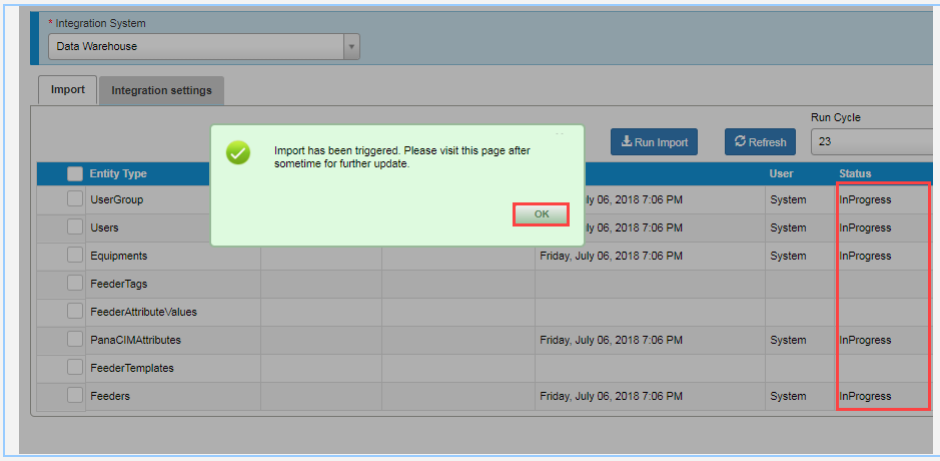
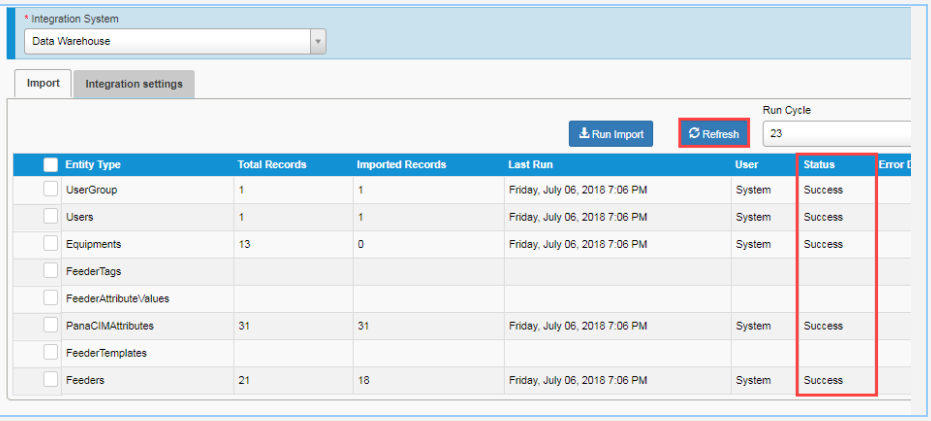
6	Click the **Integration Settings** tab.	
7	The **Integration Settings** screen appears.	
8	Provide data warehouse service URL.	

9	Select **Panasonic Communication-Hub** in the **Integration Server** dropdown.	
10	Click the **Disabled** toggle button to enable the integration server.	
11	Click the **Save** button to save configuration. A confirmation message box appears indicating that the data warehouse settings have been saved successfully. Click **OK**. **Note: The Data Warehouse URL is validated for successful connectivity. If MMS is not able to connect to the configured URL, then an error message pops-up.**	

12	Click the **Comm. Hub** tab.	
13	The Communication Hub settings page appears. Click the **Save** button. A confirmation message appears indicating that list of configuration rules published successfully. Click **OK**.	

Step 4: Import Data from Data Warehouse to MMS

Step	Description	Screenshot
1	Click **Import** tab. The import screen appears.	

2	Select the required entities and click the **Run Import** button. **Note: The following entities are for future enhancement, do not have any impact on data import:** • **Feeder Tags** • **Feeder Attribute** • **Values Feeder Templates**	
3	As soon as the **Run Import** button is clicked, a message box appears that import is triggered and visit the page after some time. Click **OK**. The status column shows the import status as **InProgress**.	
4	Click the **Refresh** button after few seconds, once the import is complete, the status column changes to **Success**.	

3 Setting UP Rabbit MQ Cluster

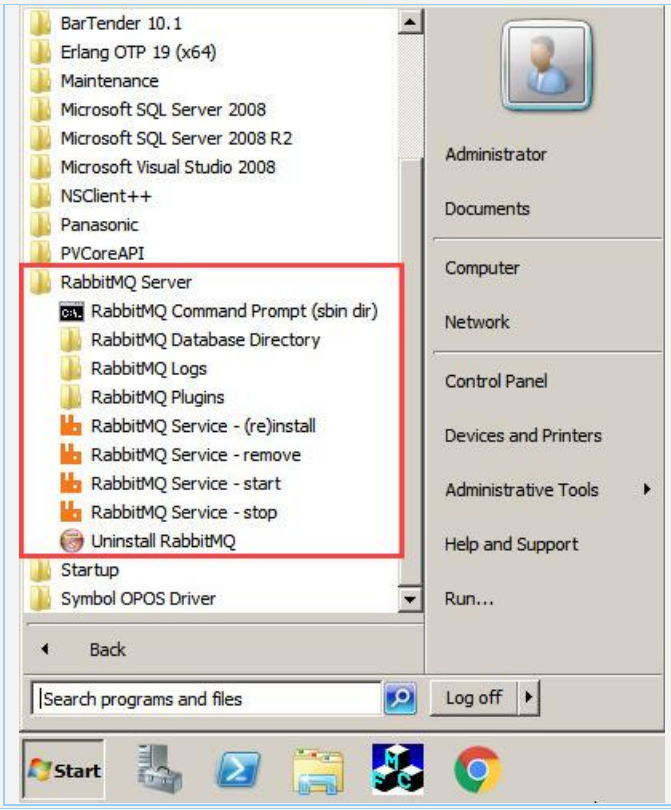
The Rabbit MQ Cluster needs to be setup for real time integration of multiple PanaCIM EE servers with MMS. The Communication Hub application along with RabbitMQ server must be installed on PanaCIM app servers and MMS. In such case, RabbitMQ instances running on PanaCIM app servers and MMS need to be clustered for integration.

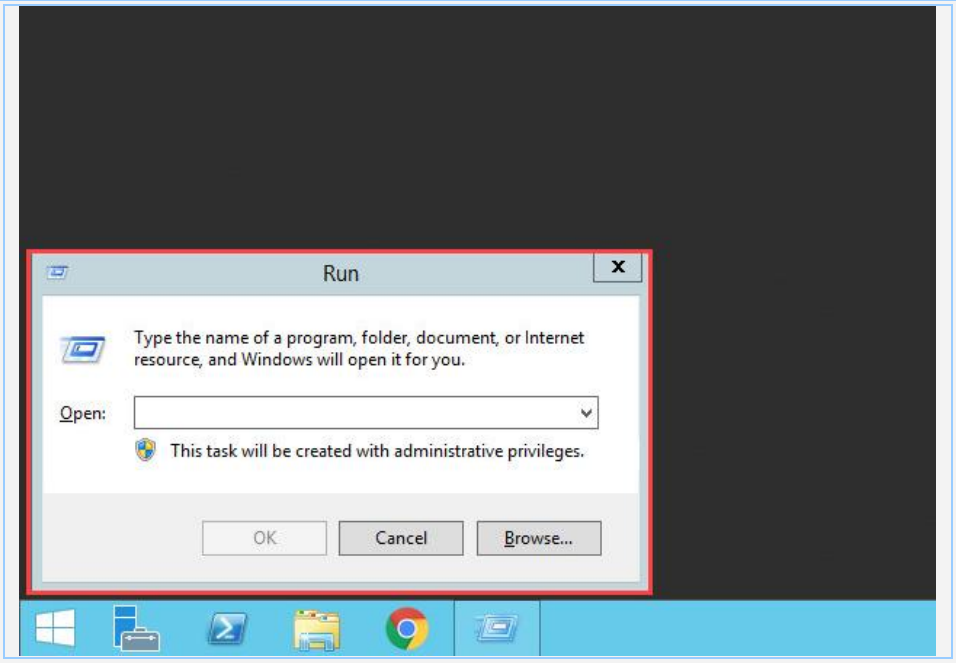
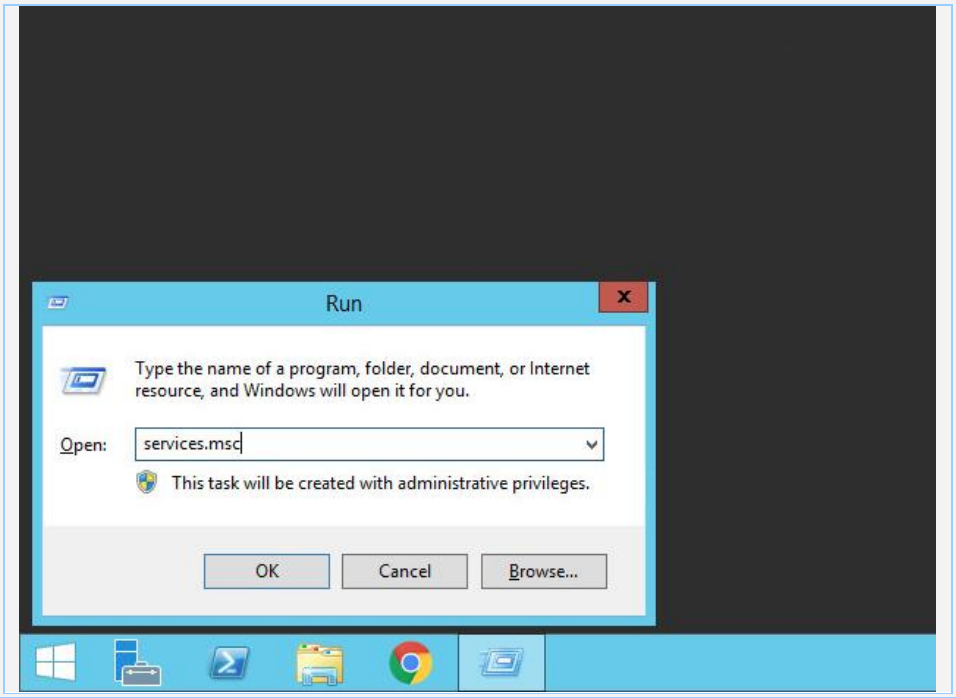
Consider that there are two PanaCIM EE servers and one MMS server where Communication Hub/RabbitMQ have been installed. The PanaCIM EE and MMS servers are need to be clustered for real time data integration. These servers are referred as nodes in a RabbitMQ cluster.

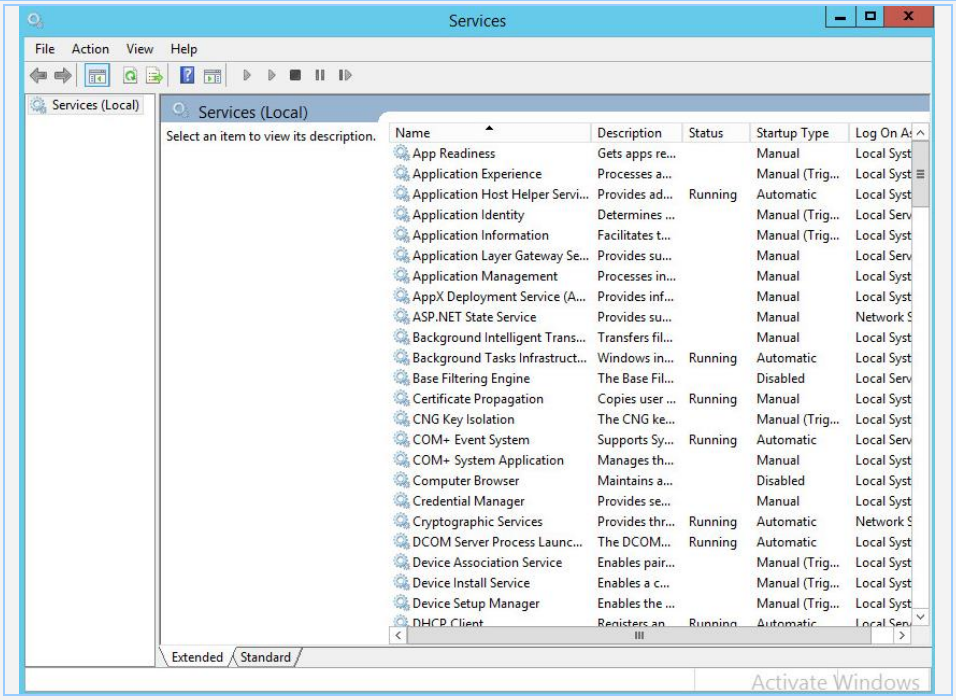
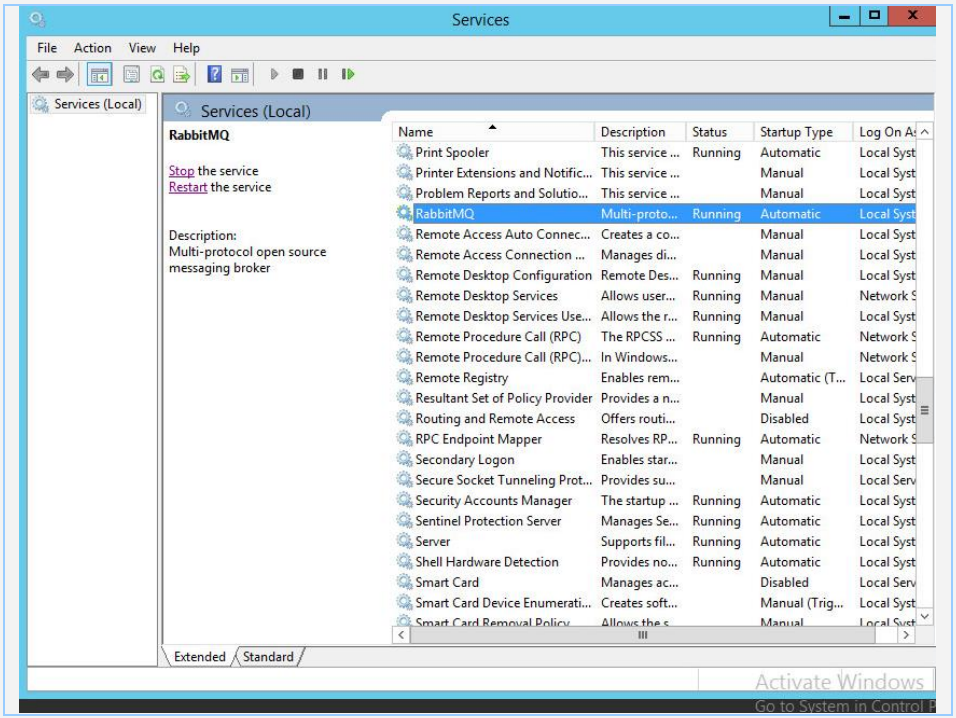
To cluster these three nodes, first the RabbitMQ service must be stopped for all three nodes, then the same cookie file must be copied in the **%WinDir%** and **%UserProfile%** directories across all nodes. After copying the cookie file, the RabbitMQ config file must be modified for all nodes. After modifying the config file, start the RabbitMQ service. Now cluster can be formed by joining nodes using the below commands in the RabbitMQ command prompt.

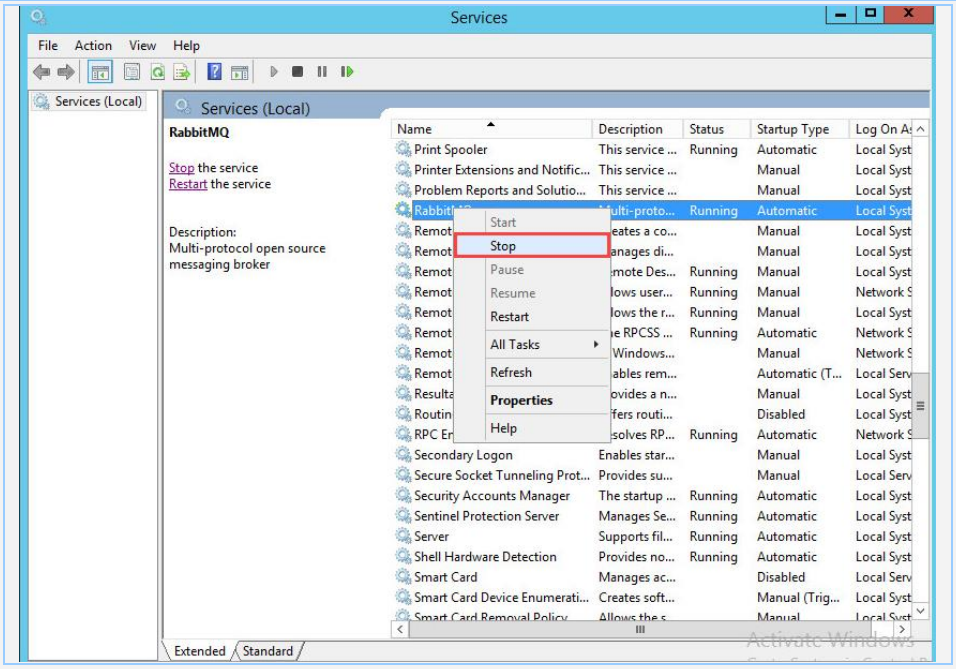
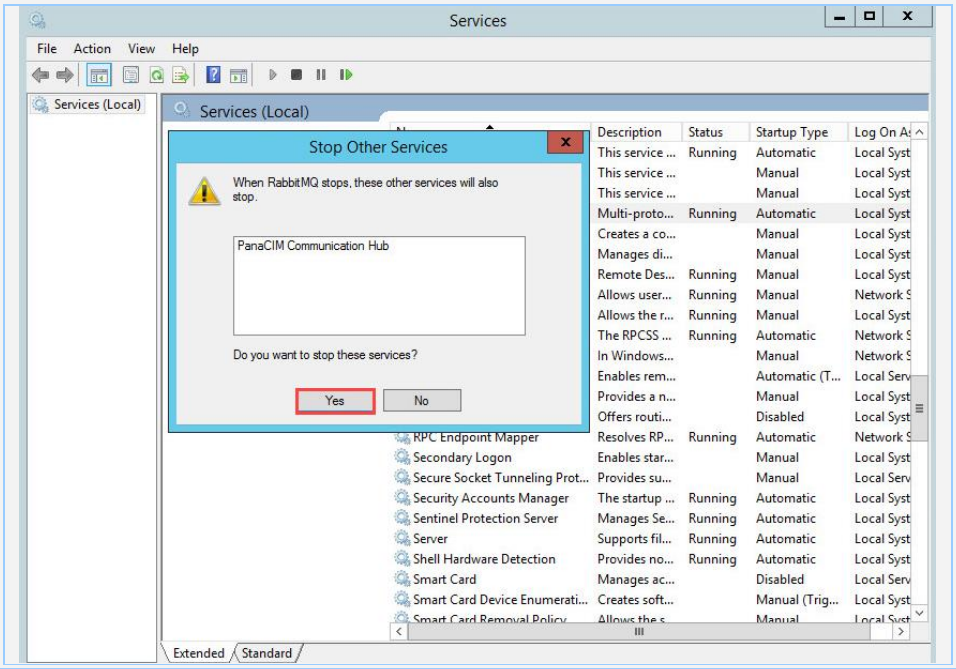
S.No.	Command	Description
1	*rabbitmqctl stop_app*	Stops the cluster node.
2	*rabbitmqctl start_app*	Starts the cluster node.
3	*rabbitmqctl join_cluster rabbit@<hostname>*	Join the cluster node to the node where the command is being executed.
4	*rabbitmqctl cluster_status*	Displays the status of cluster.

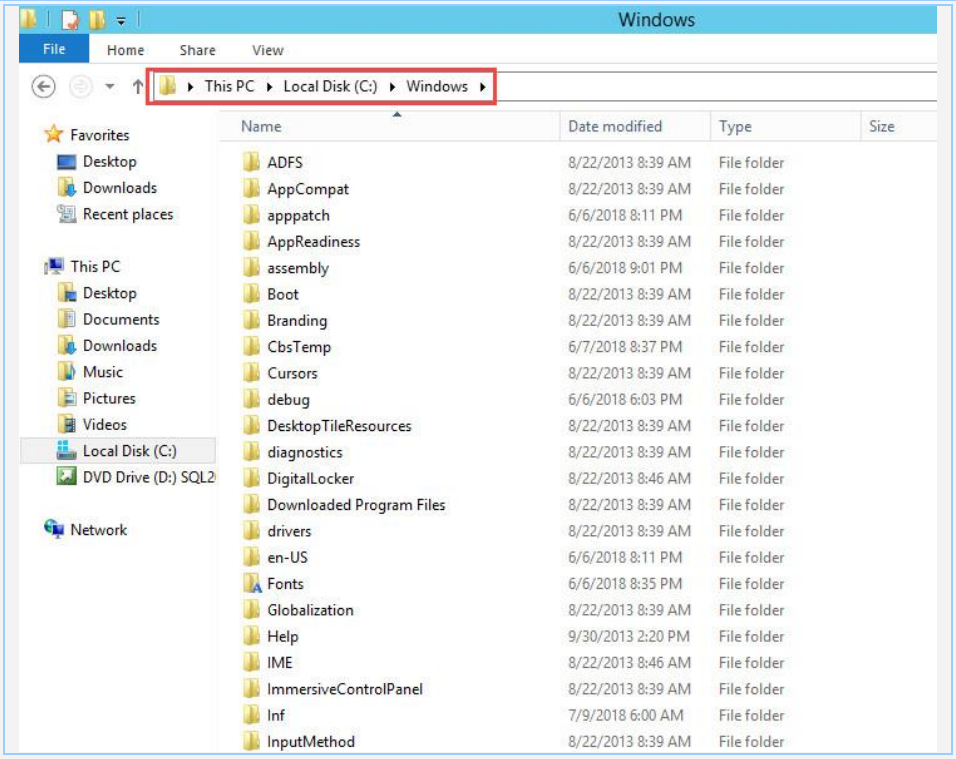
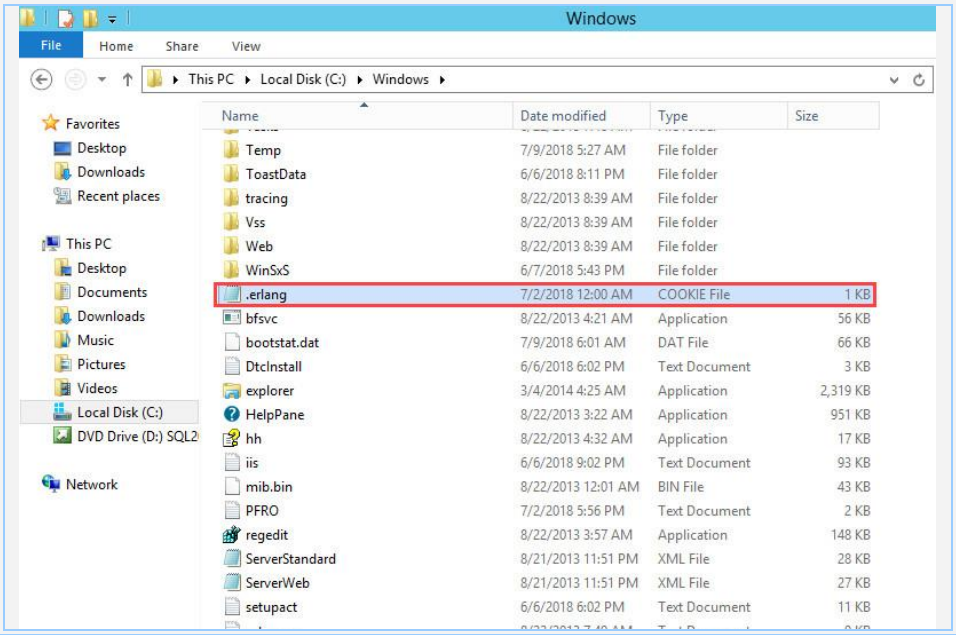
The following action table describes the step-by-step process of setting up rabbit MQ cluster.

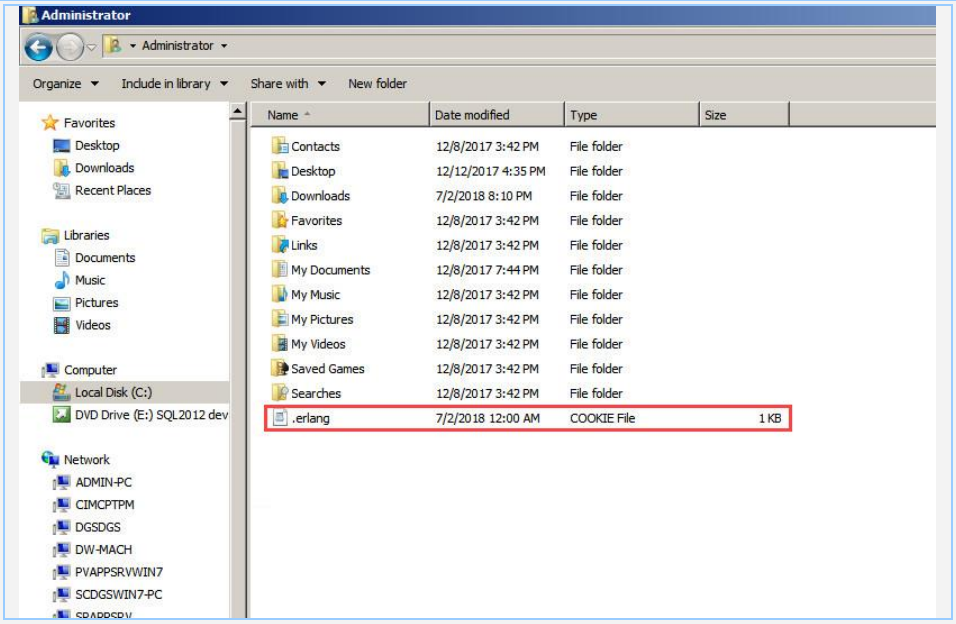
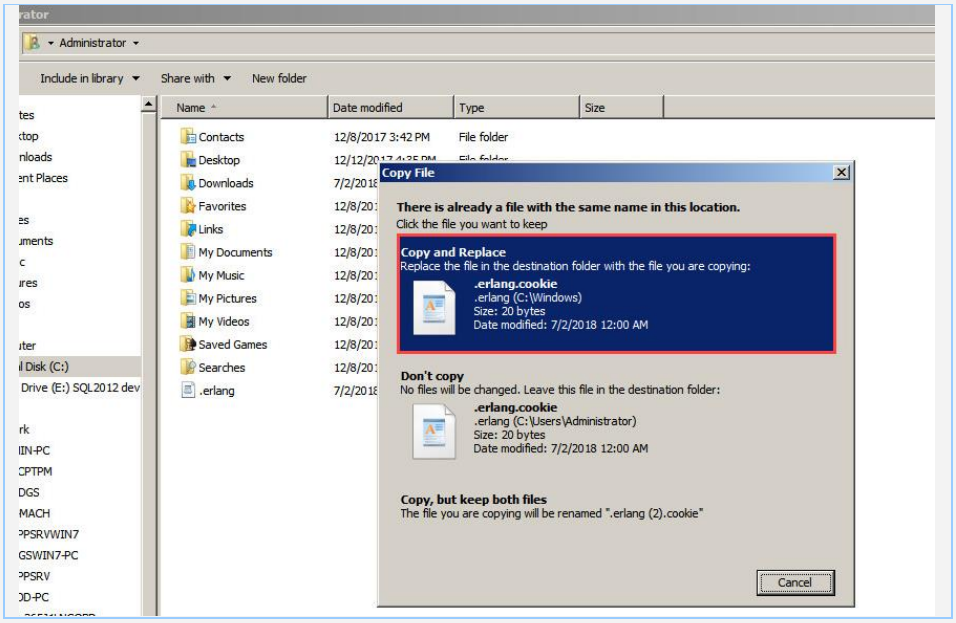
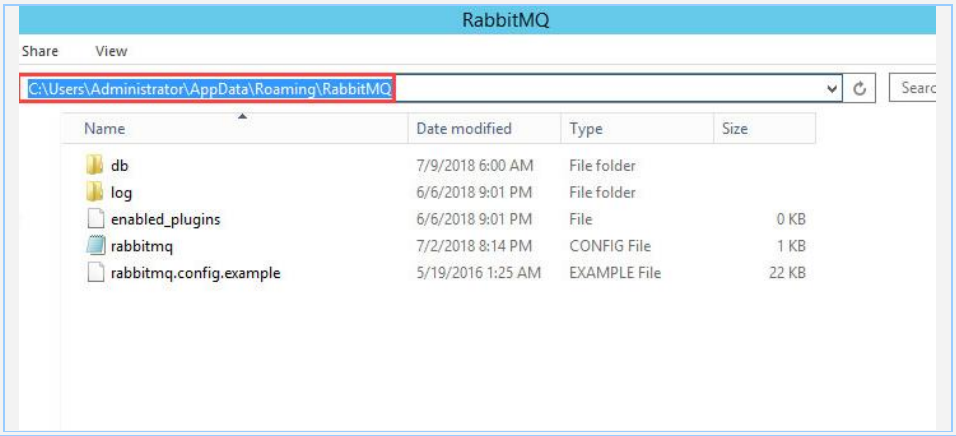
Step	Description	Screenshot
1	Install Communication Hub/RabbitMQ on PanaCIM EE servers and MMS server. If RabbitMQ installed properly, the **Start** menu displays the **RabbitMQ Server** folder as shown to the right.	

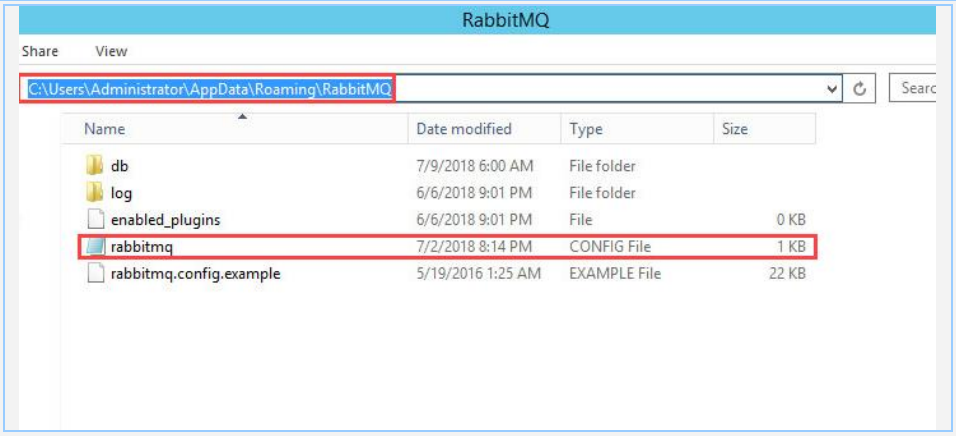
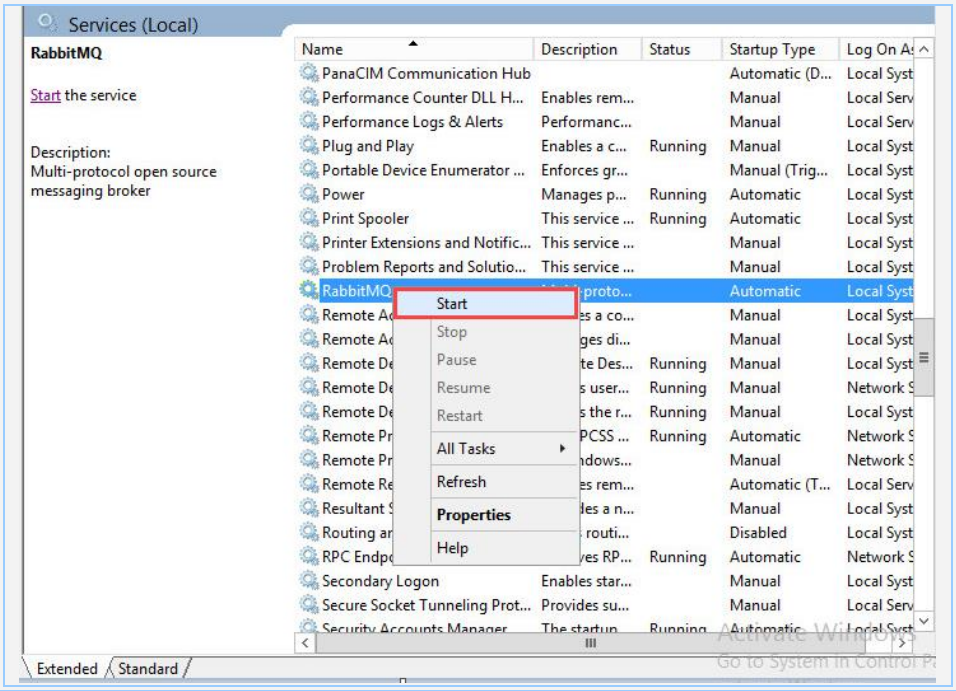
2	Press **Window + R** button to open **Run** dialog box.	
3	Type **services.msc** in the text area and press the **Enter** button.	

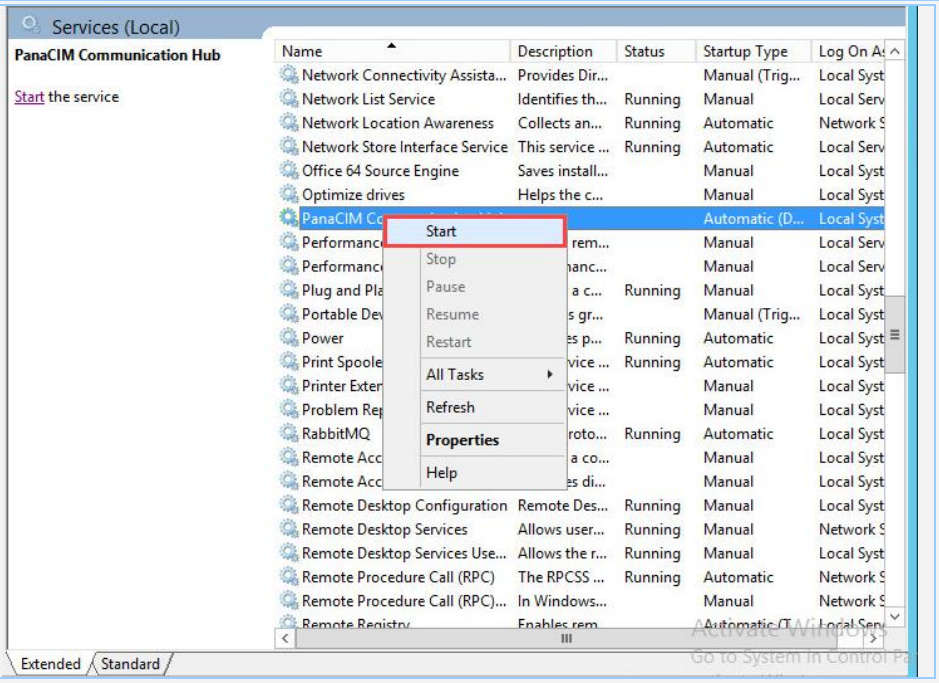
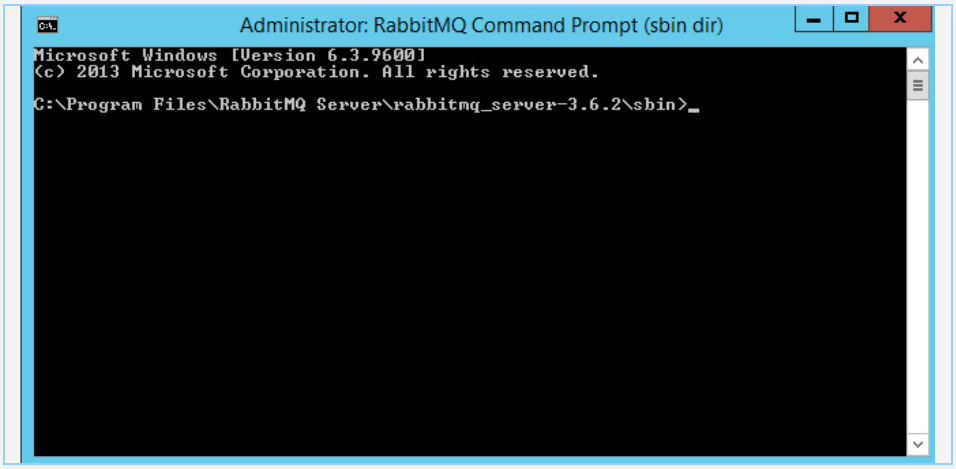
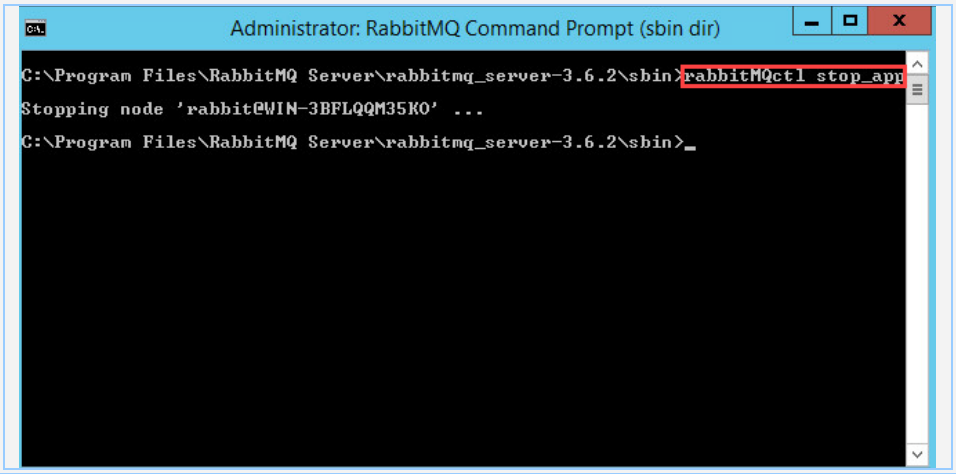
4	The **Windows Service Manager (Services)** appears as shown to right.	
5	Navigate the **RabbitMQ** service.	

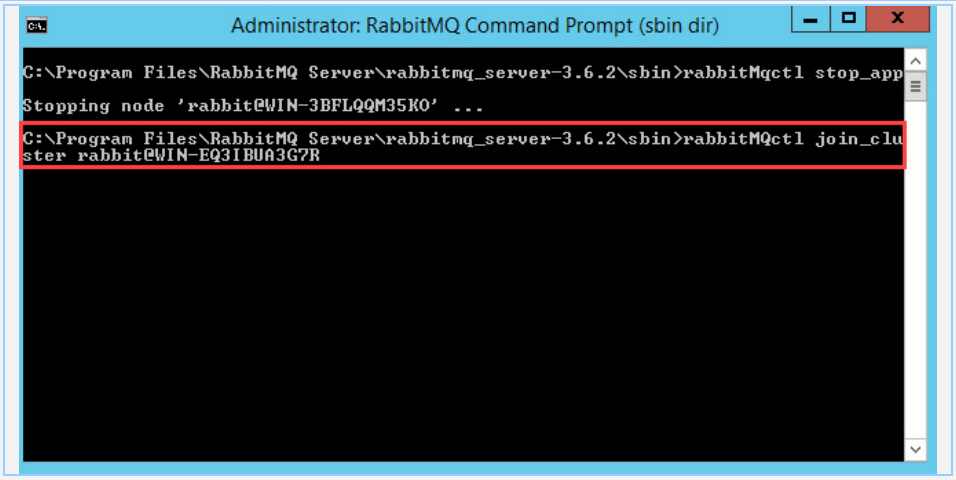
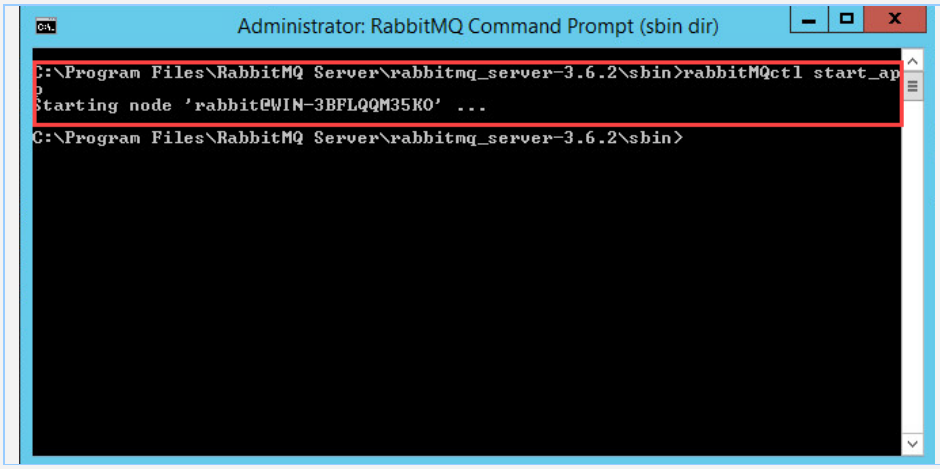
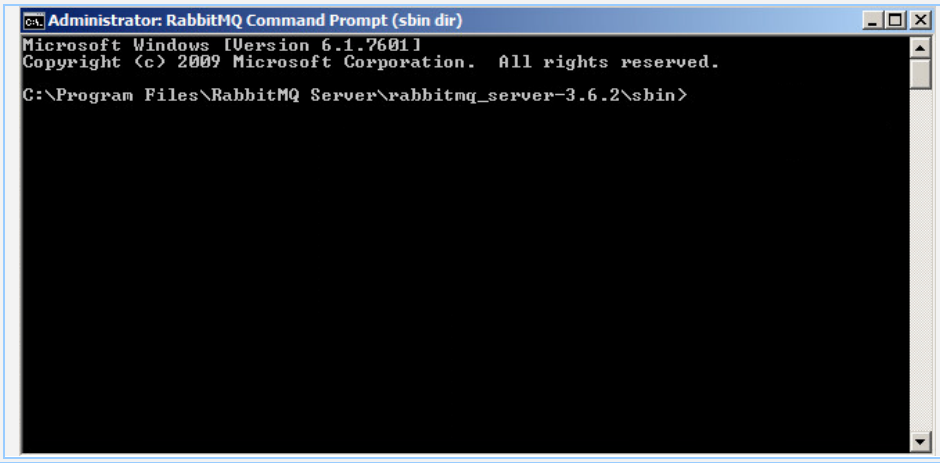
6	Right click the **RabbitMQ** service and select **Stop** option from context menu.	
7	A confirmation message box appears indicating that the Communication Hub service hub will be also stopped. Click the **Yes** button to stop the service. Similarly stop the RabbitMQ service for all the nodes that need to be clustered. (PanaCIM and MMS servers)	

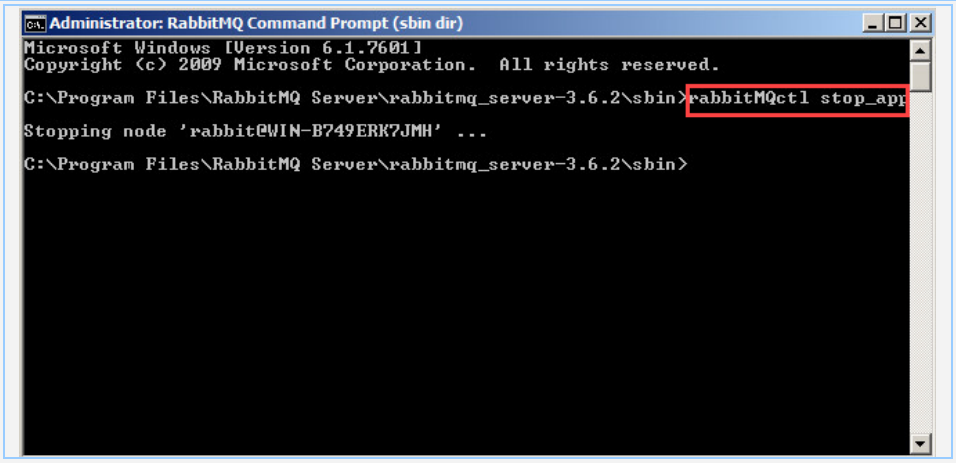
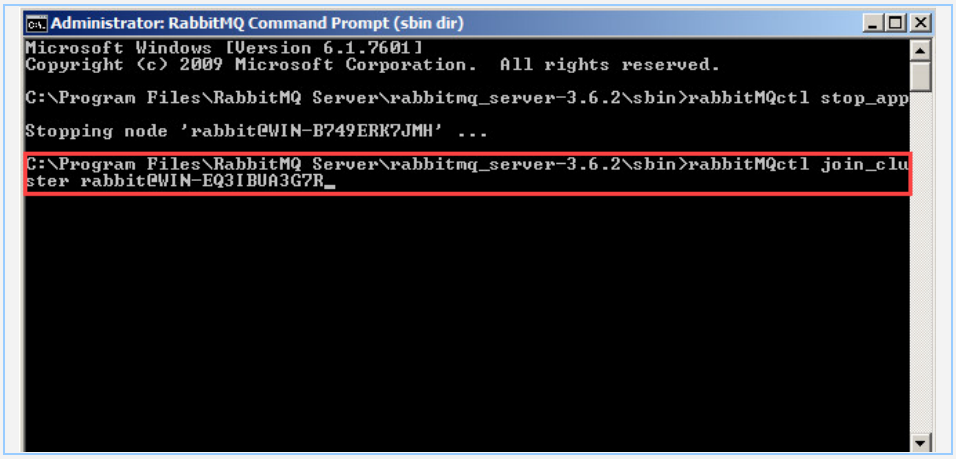
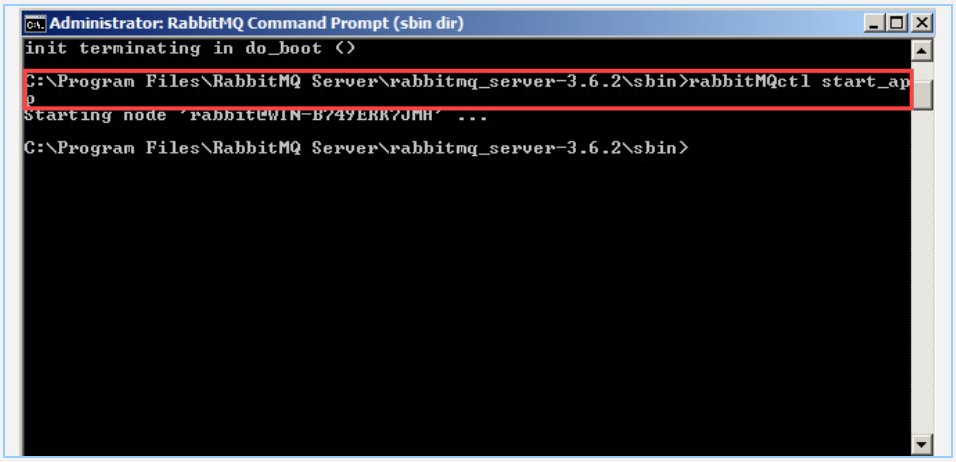
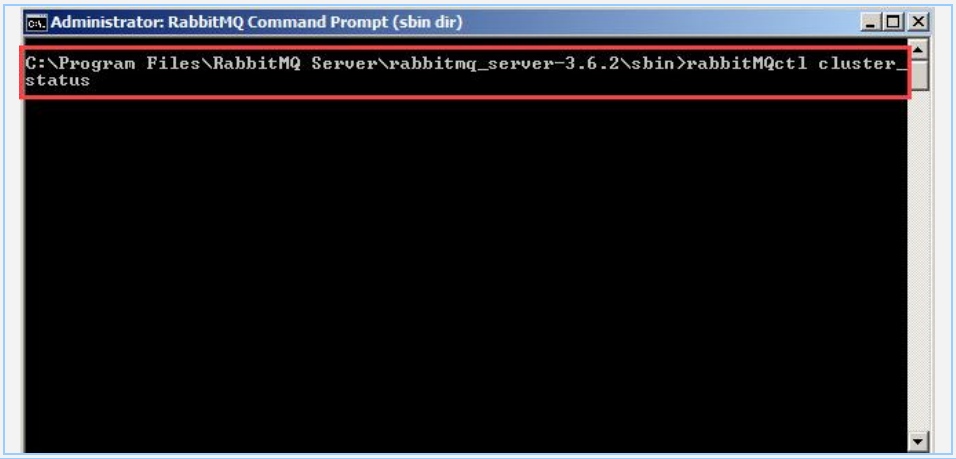
8	Open the **C:\Windows** directory on a node.	
9	Copy the **.erlang** cookie file from the **%windir%** (**C:\Windows)** directory.	

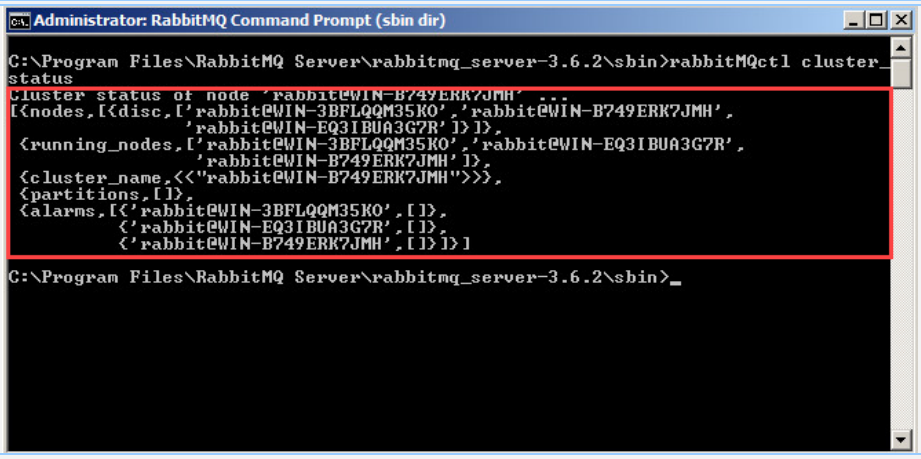
10	Open the **%userprofile%** (**C:\Users\<username>**) directory. The **.erlang** cookie file is available in this directory. Paste the file copied in the last step in this directory to replace the existing **.erlang** cookie file.	
11	Select the **Copy and Replace** option to replace the existing **.erlang** cookie file. Now the **%windir%** and **%userprofile%** both have the same cookie file. Copy the same cookie file in the **%windir%** and **%userprofile%** directories across all the nodes.	
12	Go to the **%UserProfile%\AppData\Roaming\RabbitMQ** directory on a node.	

13	Open the **rabbitmq** configuration file.	
14	Modify the file as shown to the right. In the modified configuration file shown here, three cluster nodes are added. These nodes are separated by commas. Similarly more nodes can be added by adding **rabbit@<hostname>** in the list separated by commas. Copy the same configuration file across the all the nodes at the same location.	
15	Start the **RabbitMQ** service one by one across all the nodes.	

16	Start the **Communication Hub** service one by one across all the nodes.	
17	Open RabbitMQ command prompt as administrator on a node.	
18	Type the following command and press the **Enter** key to stop the node. *rabbitMQctl stop_app* To cluster a node with another, the node must be stopped using above command.	

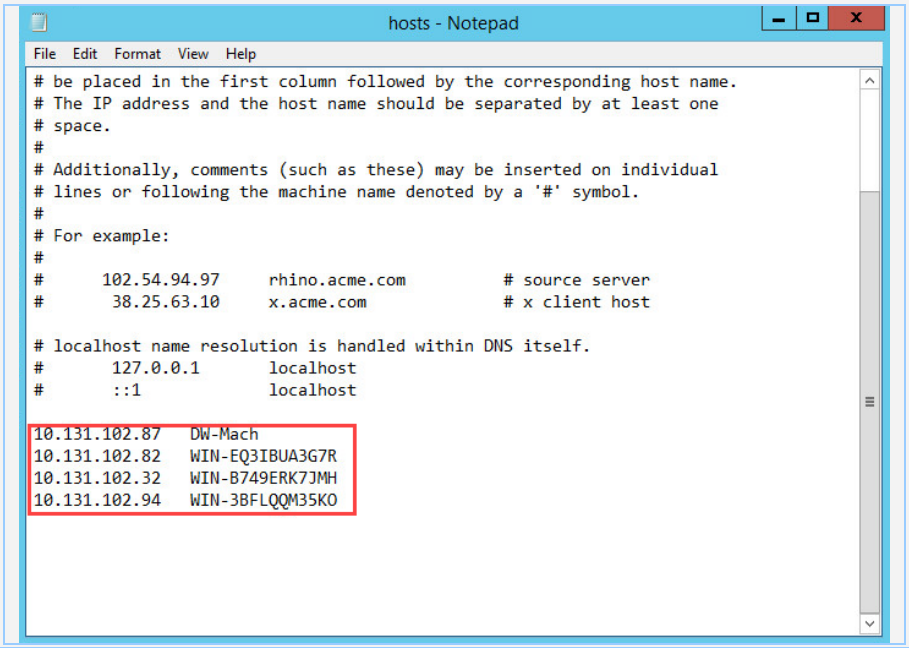
19	Type the following command and press the **Enter** key. *rabbitmqctl join_cluster rabbit@<hostname of node>* **Note: The above command will cluster two nodes. The third node can be joined with any of these two nodes.**	
20	Type the following command and press the **Enter** key to start the node. *rabbitMqctl start_app*	
21	Go to third machine and open the RabbitMQ command prompt as administrator.	

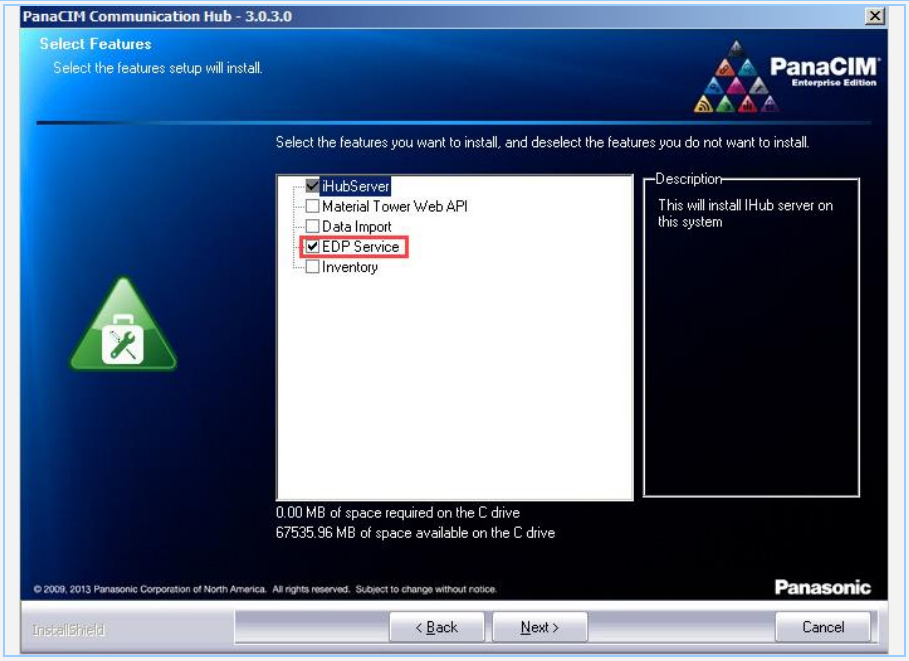
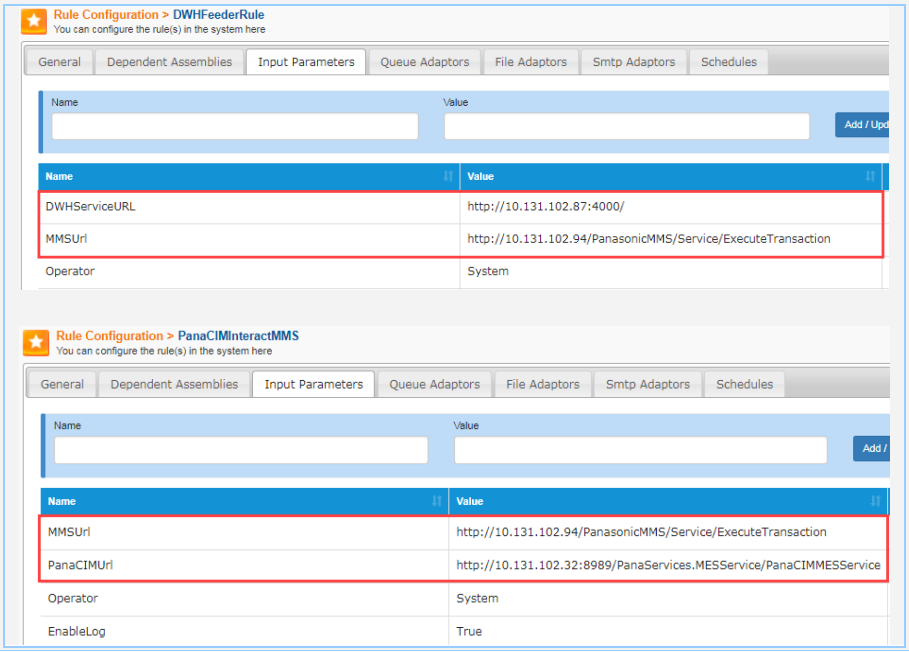
22	Type the following command and press the **Enter** key to stop the node. *rabbitMQctl stop_app*	
23	Type the following command and press the **Enter** key. *rabbitmqctl join_cluster rabbit@<hostname of node>* **Note: The above command will join the third node to the cluster of two nodes.**	
24	Type the following command and press the **Enter** key to start the node. *rabbitMQctl start_app*	
25	To see the status of cluster, run the following command on any of the clustered nodes. *rabbitMQctl cluster_status*	

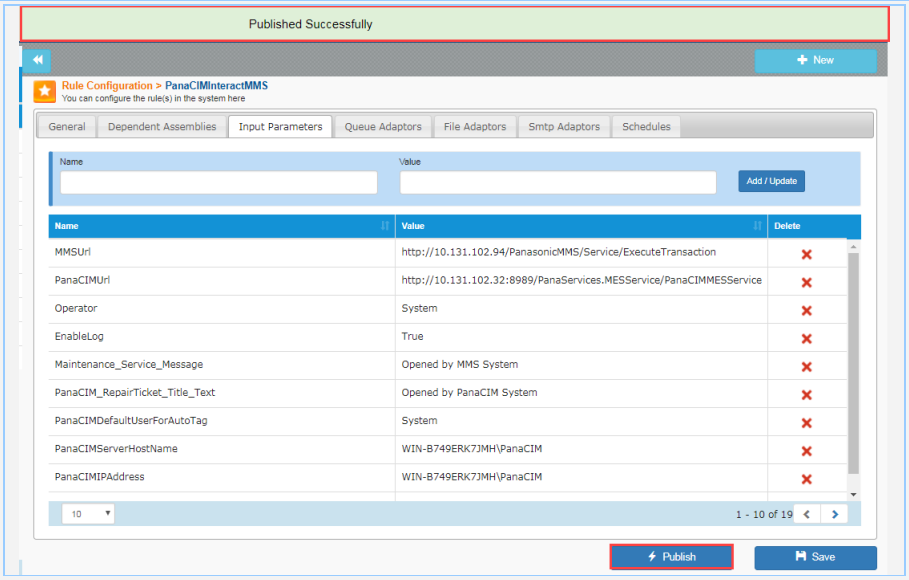
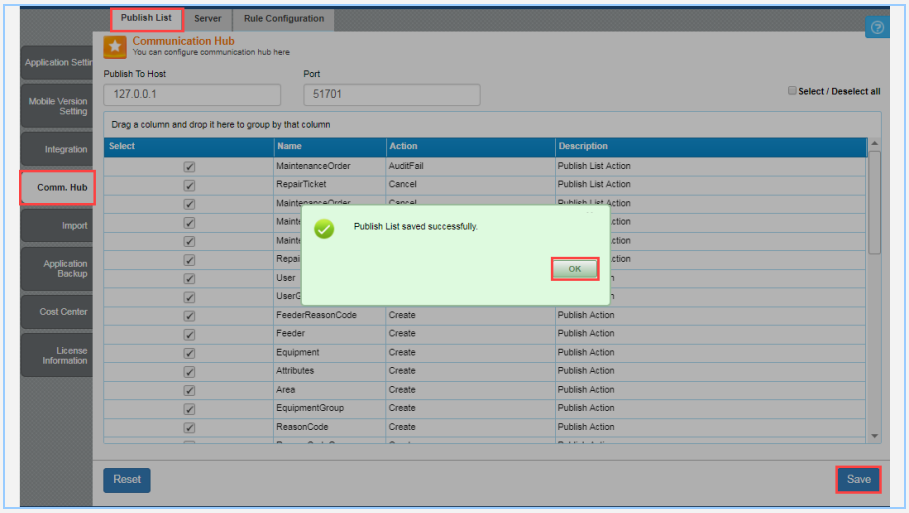
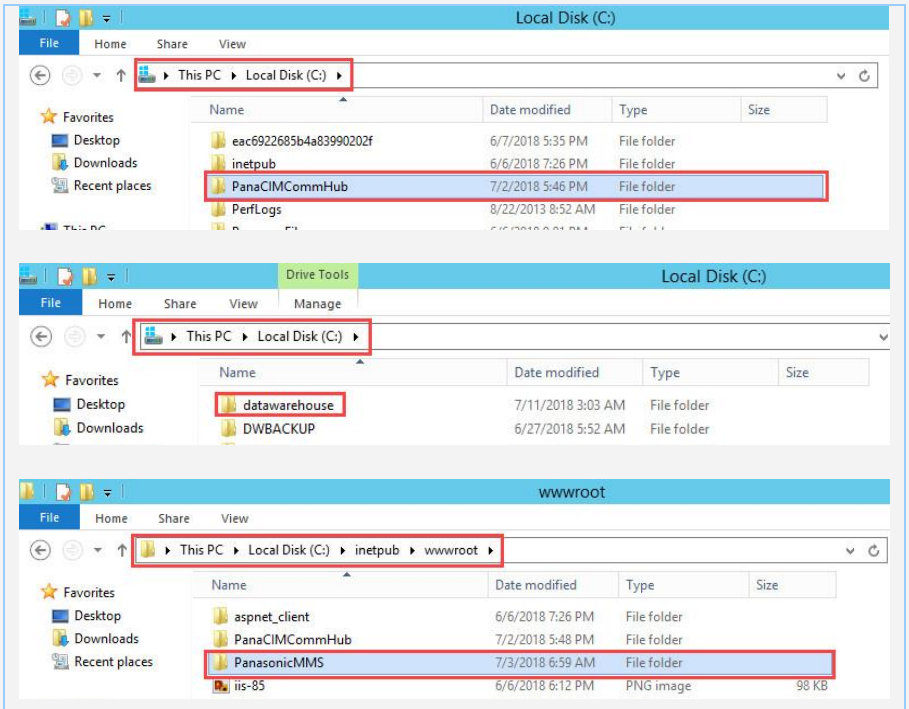
26	The status of the clustered nodes appear same on any of the clustered node as shown to the right.	

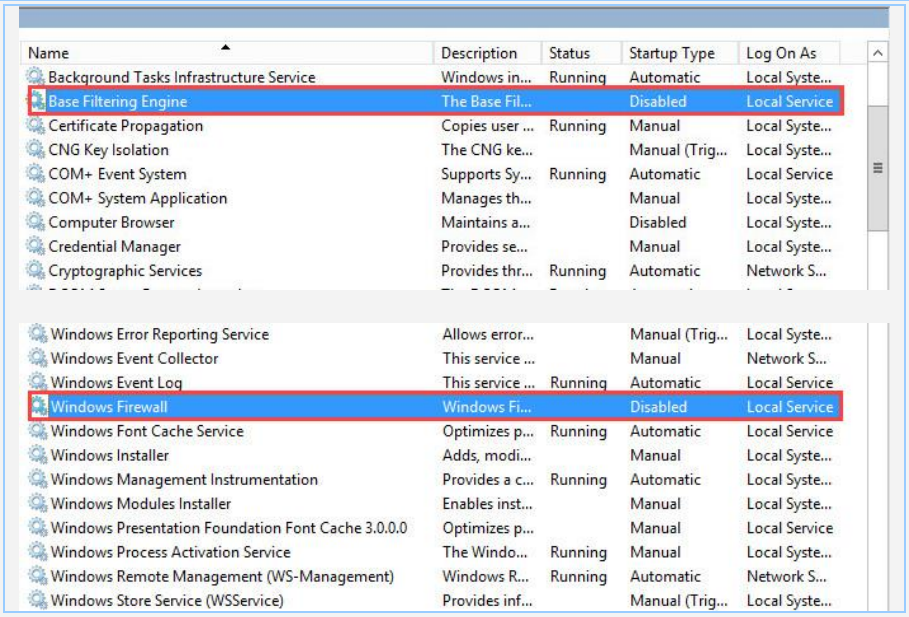
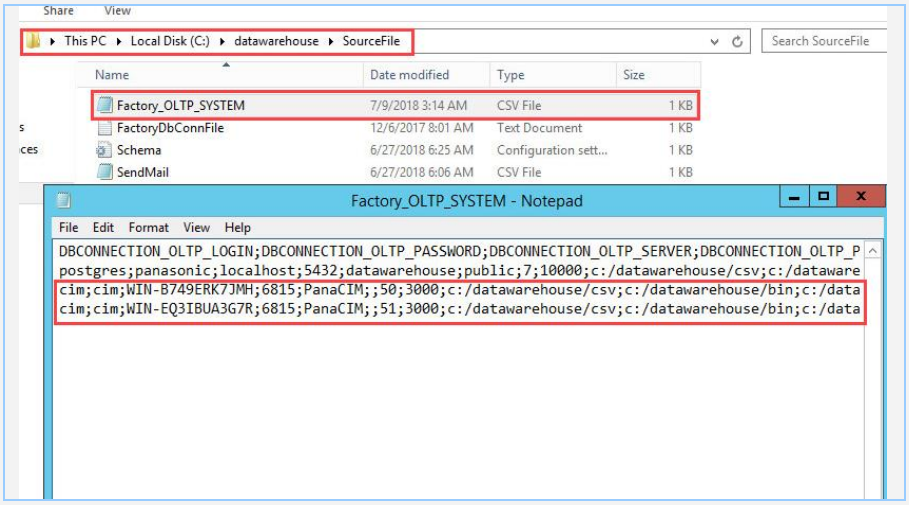
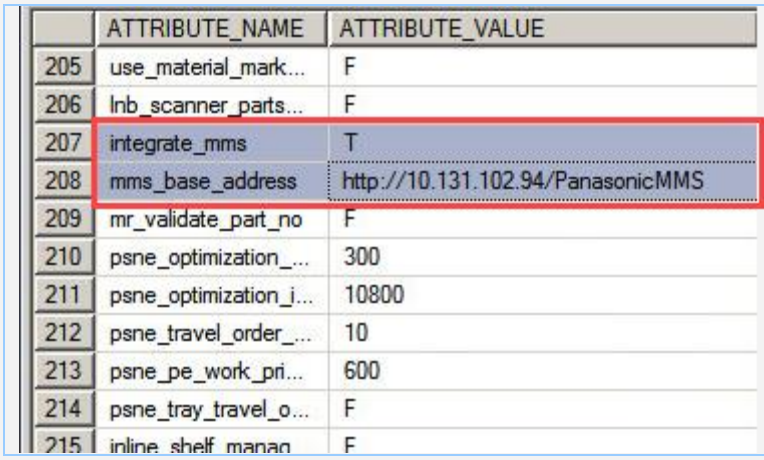
4 Troubleshooting Tips

The following table lists some useful troubleshooting tips for PanaCIM EE – MMS integration.

S.No.	Description	Screenshot
1	Ensure that the host file on all the machines have hostname and IP address entries for PanaCIM EE servers / Data Warehouse / MMS.	

2	Ensure that the EDP service option must be selected while installing the Communication Hub application.	
3	Ensure that the Communication Hub application has PanaCIM EE, Data Warehouse, and MMS service URLs updated for all rules that need to be configured.	

4	A rule must be published after modification in Communication Hub.	
5	After modifying and publishing a rule in Communication Hub or integrating Data Warehouse/PanaCIM EE, save the rules' **Publish List** in MMS.	
6	Ensure that Communication Hub / Data Warehouse / MMS application folders accessible by each other host machines.	

7	Ensure that the **Base Filtering** and **Windows Firewall** services are stopped/disabled for PanaCIM EE / Data Warehouse / MMS.	
8	Ensure that the **Factory_OLTP_SYSTEM** file has the valid entries for the integrated PanaCIM EE servers. The file is available in the **C:\datawarehouse\SourceFile** folder.	
9	Ensure that the **integrate_mms** is set to '**T**' and **mms_base_address** is updated in the **System_Config** table of the **PanaCIM** Database.	

	ATTRIBUTE_NAME	ATTRIBUTE_VALUE
205	use_material_mark...	F
206	lnb_scanner_parts...	F
207	integrate_mms	T
208	mms_base_address	http://10.131.102.94/PanasonicMMS
209	mr_validate_part_no	F
210	psne_optimization_...	300
211	psne_optimization_i...	10800
212	psne_travel_order_...	10
213	psne_pe_work_pri...	600
214	psne_tray_travel_o...	F
215	inline_shelf_manag	F