



CHAPTER 6

Discovering Devices

After you configure device credentials, you can run discovery to bring the physical resources into the VFrame database. After you run discovery, the discovered devices appear on the Resources tab.

The following topics provide more information:

- [Understanding Discovery, page 6-1](#)
- [Discovering Devices, page 6-6](#)
- [Troubleshooting Discovery, page 6-19](#)
- [Discovery Reference, page 6-20](#)

Understanding Discovery

These topics describe the basic concepts of resource discovery:

- [Understanding Discovery Jobs, page 6-2](#)
- [Understanding How Discovery, Rediscovery, and Reinventory Differ, page 6-4](#)
- [Device Rediscovery Tips, page 6-5](#)

Understanding Discovery Jobs

Discovery brings the physical resources of the data center into the VFrame database. Physical resources are network devices, such as Ethernet switches and service modules; storage devices, such as NAS filers, MDS switches, storage managers, and storage arrays; and servers, such as application servers and LOM managers. When you run discovery, use the Schedule Editor dialog box to specify the scope of discovery as well as the type of elements you want discovered. The result is a discovery job, which you can rerun whenever you want.

You can discover the following elements:

Network

- **Network Devices**—Cisco Discovery Protocol (CDP) is used for network discovery. Enter the DNS name or IP address of a CDP seed device (any device on which the CDP protocol is enabled and an SNMP read community string is configured). VFrame discovers all neighboring switches (in the specified distance) starting with the ones directly connected to the seed device and obtains information about those devices.

Storage

- **NAS filers**—Enter the IP address or DNS name of the NAS filer; VFrame discovers the NAS filer, its volumes, Quota Trees (QTrees), and Common Internet File System (CIFS) shares.
- **SAN Fabric Devices**—You can use one or two physical SAN fabrics. Enter the IP address or DNS name of the seed MDS switch for each physical fabric. VFrame discovers all neighboring MDS switches in each fabric that have member ports in the same active VSANs as the seed switch. VFrame also discovers the connected device World Wide Names (WWN) for each discovered MDS switch. For details about SAN fabric devices, see [SAN Fabric Devices, page 3-5](#).
- **Storage Managers**—When you select a storage manager and run discovery, VFrame discovers the storage arrays configured to be discovered through the storage manager and the related port and logical unit information.

Before you run storage manager discovery to discover storage arrays and their components, you must use a storage manager template to define macros. With macros, you control the logical units and ports that should be visible to a particular server. You can use these macros for inventory of storage array

ports and logical units and for logical unit masking and unmasking. For details about storage manager templates, see [Storage Manager Templates, page 11-73](#).

For details about storage managers, see [Storage Managers, page 3-5](#).

Servers

Application servers are discovered using the inventory operating system (OS). Running the inventory OS is a process through which VFrame obtains hardware details about the server. When a server is PXE booted, VFrame responds to the PXE boot request by providing an IP address and the inventory OS. After the inventory OS runs on the server, VFrame obtains the server's hardware inventory, such as its CPU, speed, memory, and system partitions.

- DHCP—You must configure a Dynamic Host Configuration Protocol (DHCP) range in VFrame to provide a pool of IP addresses VFrame can use during server discovery or golden image creation from model servers. For the procedure on how to configure the DHCP range, see [Adding or Modifying DHCP IP Address Ranges, page 5-6](#).

In order for VFrame to discover application or model servers, you must PXE boot the servers. During PXE boot, the server sends a DHCP request. VFrame responds to the DHCP request only on its server communication interface, so make sure that the server is set up correctly, otherwise the server will not be discovered (see [Setting Up Servers, page 3-20](#)).

For more information about DHCP, see [Understanding How VFrame Uses DHCP, page 5-1](#).

- LOM Managers—You must select a lights-out management (LOM) manager and run discovery to obtain the IP addresses of the LOM interfaces.

VFrame uses LOM managers and LOM configuration macros to control the power of the servers. VFrame runs the macros on the specified LOM manager to retrieve a list of LOM interfaces associated with the physical servers, to power on and power off the servers, and to obtain the power status of the servers.

For details about LOM manager templates, see [LOM Manager Templates, page 11-81](#).

Understanding How Discovery, Rediscovery, and Reinventory Differ

When you create a discovery job, you can specify that the job run multiple times on a regular schedule. For example, you could have the job run every week.

The benefit of rerunning discovery jobs is that it allows VFrame to notice changes in the network. For example, if you run a network discovery job using 2 as the CDP distance, and you add a new switch to the network within that distance to the CDP seed device defined in the discovery job, the rediscovery of the CDP seed will notice the new switch and add it to the VFrame database. You can then select it in the device selector on the Resources tab and manage it.

Additionally, discovery jobs reevaluate the resources that were previously discovered. It is this activity of reexamining known devices that is called rediscovery. During a discovery job, if VFrame evaluates an already known device, it runs the inventory process on the device. (Inventory is initially run when you first manage a device, and subsequent inventories are considered reinventories.)

During rediscovery and reinventory, VFrame can identify many configuration changes, such as the addition of security contexts to a managed FWSM or new VLANs on managed switches. These changes are reflected in the database, and you can manage the new resources.

After rediscovery and reinventory, the database will reflect the current state of the resource configuration. However, if you made configuration changes that VFrame cannot accommodate (such as deleting a managed VLAN from a switch), the process will raise fault alarms identifying the problematic changes.

Device Rediscovery Tips

These are some tips that might help you understand what happens during rediscovery, and how to avoid some pitfalls:

- **Network Rediscovery**—When the Ethernet switches and service modules are rediscovered, the device inventory is updated and the updated list is displayed in the device selector in the Resources tab. You can manage any new VLANs or FWSM security contexts.
- **SAN Fabric Rediscovery**—When the SAN fabric devices, such as the MDS switches in the fabric, and the VSANs, switch ports, targets, and initiators associated with the switches are rediscovered, the device inventory is updated and the updated list is displayed in the device selector in the Resources tab.

We recommend that you do not move the seed switch from one fabric to another. If you need to move it, first select another switch to serve as the seed switch for that fabric, and then move it, otherwise discovery will fail.

VFrame supports two fabrics, for example, Fabric 1 and Fabric 2. If you need to discard the existing physical switch topology and use a new topology as Fabric 1 or Fabric 2, we recommend that you do the following:

- Delete the existing Fabric 1 and Fabric 2 from the Resources tab.
- Specify a new seed device and reschedule discovery.

We highly recommend that you follow these steps. VFrame does not enforce it to accommodate extreme hardware failures. For example, if all switches in Fabric 2 failed, and you had to replace them with new switches and cable them exactly the same way.

- **LOM Manager Rediscovery**— When the LOM managers are rediscovered, any changes in the server inventory are reflected in the LOM manager's associated details table on the Resources tab. If you added servers to the inventory, discover the new servers using the procedure described in [Discovering Application Servers for Unassociated LOM Interfaces](#), page 6-15.

Discovering Devices

The following topics describe how to discover devices:

- [Discovering Ethernet Switches and Service Modules](#), page 6-6
- [Discovering Storage Devices](#), page 6-8
- [Discovering Servers](#), page 6-13
- [Viewing the Discovery Status](#), page 6-17
- [Rescheduling or Uncheduling Discovery Jobs](#), page 6-18

Discovering Ethernet Switches and Service Modules

You can discover network devices such as an Ethernet switch and its service modules.

Before You Begin

- Set up the Ethernet switch and service modules (see [Setting Up Ethernet Switches](#), page 3-11 and [Setting Up Network Services](#), page 3-13).
- Configure Ethernet switch and network services credentials in VFrame (see [Configuring Network Credentials](#), page 4-8 and [Configuring Network Services Credentials](#), page 4-9).
- Make sure that the seed device is connected to the network and can be reached (pinged) from the VFrame Data Center Director.

Procedure

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- Step 1** Select **Tools > Discovery** to open the Discovery tab (see [Discovery Tab](#), page 6-21).
 - Step 2** Click **New** to open the Schedule Editor dialog box. The Network tab is selected by default (see [Network Tab](#), page 6-25).
 - Step 3** (Optional) To change the system-assigned job name, select the name and enter a new one.

- Step 4** Do one of the following:
- To use the devices that you have already managed as CDP seeds, select the **Rediscover Currently Managed Devices** check box.
 - To use a new device as the CDP seed, or to control which devices are used, enter the DNS name or the IP address of a device that is running CDP in the **Seeds** field. A seed device is used as the root device for network discovery.
- Step 5** In the **Distance** field, select the number of CDP hops to use in the discovery. This number defines the scope of the discovery. For example, if you select 1, then any device running CDP that is connected to your specified seeds is also discovered and added to VFrame. The default is 0, which means that only the devices you specify are discovered.
- Step 6** In the **Type of Discovery** field, select one of the following:
- **Run Now**—To start the discovery job immediately when you click **OK**.
 - **Schedule**—To select a schedule for the job to run it in the future. Select the date and time when you want the job to run.
- If you schedule the discovery job, you can also select **Enable Repeat** to schedule the job to be rerun until you cancel the job. Select the frequency time period (such as hour or day), and enter the number of time periods for the recurrence schedule. For example, selecting **2 Weeks** causes the discovery job to be rerun every 2 weeks until canceled.
- Step 7** Click **OK**.

VFrame creates a discovery job and adds it to the jobs list on the Discovery tab. When the job starts, you can view its progress by selecting it in the upper pane. The messages generated during the job's progress appear in the Job Logs pane (the lower pane).

If discovery is successful, the discovered Ethernet switches, line cards, supervisor engine, and service modules in the switch are displayed in the device selector on the Resources tab under Network Devices.

If a device is unsupported, it appears under Unsupported Devices in the device selector on the Resources tab.

Next Step

After you discover the Ethernet switch and service modules, you can manage them (see [Managing and Unmanaging Ethernet Switches, page 7-11](#) and [Managing and Unmanaging Service Modules, page 7-17](#)).

Related Topics

- [Understanding Discovery, page 6-1](#)
- [Configuring Network Credentials, page 4-8](#)

Discovering Storage Devices

The following topics describe how to discover storage devices:

- [Discovering SAN Fabric Devices and Their Components, page 6-8](#)
- [Discovering NAS Filers and Their Components, page 6-10](#)
- [Discovering Storage Arrays and Their Components Through Storage Managers, page 6-11](#)

Discovering SAN Fabric Devices and Their Components

You can discover the MDS switches and their VSANs in one or two physical SAN fabrics. For each physical fabric the active VSANs in the seed switch determine which additional MDS switches are discovered.

Before You Begin

- Set up the MDS switch (see [Setting Up MDS Switches, page 3-16](#)).
- Configure SAN Fabric credentials in VFrame (see [Configuring SNMP Credentials for SAN Fabric Devices, page 4-11](#)).

Procedure

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- Step 1** Select **Tools > Discovery** to open the Discovery tab (see [Discovery Tab, page 6-21](#)).
 - Step 2** Click **New** to open the Schedule Editor dialog box.
 - Step 3** Click the **SAN Fabric Devices** tab (see [SAN Fabric Devices Tab, page 6-27](#)).

- Step 4** (Optional) To change the system-assigned job name, select the name and enter a new one.
- Step 5** Do one of the following:
- To use the seed devices that you used previously, select **Rediscover Currently Managed Fabrics**.
 - To discover a single physical SAN fabric, enter the IP address or DNS name of the seed MDS switch in the **Seed 1** field.
 - To discover two physical SAN fabrics, enter the IP address or DSN name of the seed MDS switch for the first fabric in the **Seed 1** and the one for the second fabric in the **Seed 2** field.
- Step 6** In the **Type of Discovery** field, select one of the following:
- **Run Now**—To start the discovery job immediately when you click **OK**.
 - **Schedule**—To select a schedule for the job to run it in the future. Select the date and time when you want the job to run.
- If you schedule the discovery job, you can also select **Enable Repeat** to schedule the job to be rerun until you cancel the job. Select the frequency time period (such as hour or day), and enter the number of time periods for the recurrence schedule. For example, selecting **2 Weeks** causes the discovery job to be rerun every 2 weeks until canceled.
- Step 7** Click **OK**.

VFrame creates a discovery job and adds it to the jobs list on the Discovery tab. When the job starts, you can view its progress by selecting it in the upper pane. The messages generated during the job's progress appear in the Job Logs pane (the lower pane).

If discovery is successful, then for each physical SAN fabric the seed MDS switch, its active VSANs, and all of the MDS switches that participate in those VSANs are discovered and appear in the device selector on the Resources tab. The switch ports are also discovered, but they appear in the details table.

Next Step

After you discover the SAN fabric seed MDS switch, you can manage its components, such as its VSANs, storage array target ports, and LUNs (see [Managing and Unmanaging SAN Fabric Components, page 7-22](#)).

Related Topics

- [Understanding Discovery, page 6-1](#)
- [Configuring SNMP Credentials for SAN Fabric Devices, page 4-11](#)

Discovering NAS Filers and Their Components

You can discover NAS filers and its volumes, QTrees, and CIFS shares.

Before You Begin

- Set up the NAS filer (see [Setting Up NAS Filers, page 3-16](#)).
- Configure NAS credentials in VFrame (see [Configuring NAS Credentials, page 4-10](#)).

Procedure

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- Step 1** Select **Tools > Discovery** to open the Discovery tab (see [Discovery Tab, page 6-21](#)).
 - Step 2** Click **New** to open the Schedule Editor dialog box.
 - Step 3** Click the **NAS Filers** tab (see [NAS Filers Tab, page 6-26](#)).
 - Step 4** (Optional) To change the system-assigned job name, select the name and enter a new one.
 - Step 5** Do one of the following:
 - To use the IP address or DNS name of a previously discovered NAS filer, select the **Rediscover Currently Managed NAS Filers** check box, then select the NAS filer from the displayed list.
 - In the **IP Address/DNS Name** field, enter the IP address or DNS name of the NAS filer.
 - Step 6** In the **Type of Discovery** field, select one of the following:
 - **Run Now**—To start the discovery job immediately when you click **OK**.
 - **Schedule**—To select a schedule for the job to run it in the future. Select the date and time when you want the job to run.

If you schedule the discovery job, you can also select **Enable Repeat** to schedule the job to be rerun until you cancel the job. Select the frequency time period (such as hour or day), and enter the number of time periods for the recurrence schedule. For example, selecting **2 Weeks** causes the discovery job to be rerun every 2 weeks until canceled.

Step 7 Click **OK**.

VFrame creates a discovery job and adds it to the jobs list on the Discovery tab. When the job starts, you can view its progress by selecting it in the upper pane. The messages generated during the job's progress appear in the Job Logs pane (the lower pane).

If discovery is successful, the discovered NAS filer appears in the device selector on the Resources tab. The volumes, QTrees, and CIFS shares appear in the details table.

Next Step

After you discover the NAS filer, you can manage its volumes, QTrees and CIFS shares (see [Managing and Unmanaging NAS Filer Components, page 7-20](#)).

Related Topics

- [Understanding Discovery, page 6-1](#)
- [Configuring NAS Credentials, page 4-10](#)

Discovering Storage Arrays and Their Components Through Storage Managers

You can discover storage arrays and their port and logical unit information by discovering storage managers.

Before You Begin

You must do the following tasks before you run storage manager discovery to discover storage arrays and their components:

1. Set up the storage manager (see [Setting Up Storage Managers, page 3-18](#)).
2. Create storage manager templates (see [Creating and Modifying Storage Manager Templates, page 11-77](#)).

3. Define the storage managers for the storage manager templates (see [Defining Storage Managers, page 11-80](#)).
4. Configure the storage manager credentials in VFrame (see [Configuring Storage Manager Credentials, page 4-13](#)).

Procedure

- Step 1** Select **Tools > Discovery** to open the Discovery tab (see [Discovery Tab, page 6-21](#)).
- Step 2** Click **New** to open the Schedule Editor dialog box.
- Step 3** Click the **Storage Manager** tab (see [Storage Managers Tab, page 6-29](#)).
- Step 4** (Optional) To change the system-assigned job name, select the name and enter a new one.
- Step 5** Select the storage managers you want to discover.
- Step 6** In the **Type of Discovery** field, select one of the following:
- **Run Now**—To start the discovery job immediately when you click **OK**.
 - **Schedule**—To select a schedule for the job to run it in the future. Select the date and time when you want the job to run.

If you schedule the discovery job, you can also select **Enable Repeat** to schedule the job to be rerun until you cancel the job. Select the frequency time period (such as hour or day), and enter the number of time periods for the recurrence schedule. For example, selecting **2 Weeks** causes the discovery job to be rerun every 2 weeks until canceled.

- Step 7** Click **OK**.

VFrame creates a discovery job and adds it to the jobs list on the Discovery tab. When the job starts, you can view its progress by selecting it in the upper pane. The messages generated during the job's progress appear in the Job Logs pane (the lower pane).

If discovery is successful, the storage arrays that are configured to be discovered through the selected storage managers and their port and logical unit information appear in the device selector on the Resources tab.

Next Steps

After you discover the storage manager, you can manage the LUNs and ports in the storage array (see [Managing and Unmanaging Storage Arrays and Their Components, page 7-27](#)).

Related Topics

- [Understanding Discovery, page 6-1](#)
- [Configuring Storage Manager Credentials, page 4-13](#)

Discovering Servers

[Table 6-1](#) is an overview of the steps you must take before you discover servers.

Table 6-1 *Workflow for Server Discovery*

	Task
Step 1	Configure a DHCP IP address range and configure DHCP helpers if necessary. See these topics: <ul style="list-style-type: none"> • Configuring DHCP in VFrame, page 5-6 • Configuring DHCP Relay Agents in Ethernet Switches, page 5-4
Step 2	Discover the LOM interfaces and server inventory defined on the LOM managers. See Discovering LOM Interfaces and the Server Inventory Through LOM Managers, page 6-13 .
Step 3	Discover the servers for unassociated LOM interfaces. See Discovering Application Servers for Unassociated LOM Interfaces, page 6-15 .

Discovering LOM Interfaces and the Server Inventory Through LOM Managers

Before you can discover servers, you must discover the server inventory as it is defined on the LOM managers. The inventory includes information about the LOM interfaces on each server. VFrame discovers and manages the server by controlling it through the LOM interface.

Before You Begin

You must do the following tasks before you discover LOM interfaces and the server inventory:

1. Set up the LOM manager. See these topics:
 - [Creating the LOM Interface and Application Server Inventory File, page 3-24](#)
 - [Configuring VFrame as a LOM Manager, page 3-26](#)
 - [Setting Up Independent LOM Managers, page 3-28](#)
2. (Optional) Create LOM manager templates (see [Creating and Modifying LOM Manager Templates, page 11-84](#)). If the predefined templates fit your needs, you can use them instead of creating your own.
3. Define the LOM managers based on the LOM manager templates (see [Defining LOM Managers, page 11-87](#)).
4. Configure the LOM Manager and LOM interface credentials in VFrame (see [Configuring Server Credentials, page 4-14](#)).

Procedure

-
- Step 1 Select **Tools > Discovery** to open the Discovery tab (see [Discovery Tab, page 6-21](#)).
 - Step 2 Click **New** to open the Schedule Editor dialog box.
 - Step 3 Click the **LOM Managers** tab (see [LOM Managers Tab, page 6-30](#)).
 - Step 4 (Optional) To change the system-assigned job name, select the name and enter a new one.
 - Step 5 Select the LOM managers whose inventory you want to discover.
 - Step 6 In the **Type of Discovery** field, select one of the following:
 - **Run Now**—To start the discovery job immediately when you click **OK**.
 - **Schedule**—To select a schedule for the job to run it in the future. Select the date and time when you want the job to run.

If you schedule the discovery job, you can also select **Enable Repeat** to schedule the job to be rerun until you cancel the job. Select the frequency time period (such as hour or day), and enter the number of time periods for the recurrence schedule. For example, selecting **2 Weeks** causes the discovery job to be rerun every 2 weeks until canceled.

Step 7 Click **OK**.

VFrame creates a discovery job and adds it to the jobs list on the Discovery tab. When the job starts, you can view its progress by selecting it in the upper pane. The messages generated during the job's progress appear in the Job Logs pane (the lower pane).

If discovery is successful, the LOM interfaces and server inventory appear in the Details Table associated with each discovered LOM manager on the Resources tab (right-click the LOM manager in the device selector and click **Show Details Table**).

Related Topics

- [Understanding Discovery, page 6-1](#)
- [LOM Manager Templates, page 11-81](#)
- [Configuring Server Credentials, page 4-14](#)

Discovering Application Servers for Unassociated LOM Interfaces

After you discover a LOM manager, the details table for the LOM manager lists all LOM interfaces contained in the LOM manager's inventory. Any LOM interfaces that belong to undiscovered servers are listed in the Unassociated LOMs section of the table. These are the servers that you need to discover. After discovering a server, the server is added to the Servers folder in the device selector.

Before You Begin

- Set up the server (see [Setting Up Application Servers, page 3-20](#)).
- Discover the LOM managers (see [Discovering LOM Interfaces and the Server Inventory Through LOM Managers, page 6-13](#)).

- Create an appropriate DHCP IP address range for use during server discovery (see [Adding or Modifying DHCP IP Address Ranges, page 5-6](#)).
- Configure the LOM interface credentials in VFrame (see [Configuring Server Credentials, page 4-14](#)).

Procedure

Step 1 From the Resources tab (select **View > Resources**), right-click the LOM manager in the device selector and select **Show Details Table**.

The details table lists the LOM interface information for each server listed in the LOM manager's inventory file.

Step 2 From the filter field, select **Unassociated LOMs**. This list contains all of the servers that have not yet been discovered, based on their LOM interfaces.

Step 3 Select one or more unassociated LOM interfaces, right-click and select **Power Off**. This action ensures that all servers are powered off.



Tip We recommend that you select a maximum of 10 interfaces at a time to keep resource utilization reasonable. You should also not select more servers than you have IP addresses in your DHCP IP address range table.

Step 4 Right-click the unassociated LOM interfaces you powered off and select **Power On**.

Powering on the server boots it. If the server is configured correctly, it PXE boots. VFrame acts as the DHCP server and responds to the boot message with these items:

- IP address from the appropriate DHCP IP address range.
- The inventory OS. After the inventory OS runs on the server, VFrame obtains the server's hardware inventory, such as its CPU type, speed, memory, and system partitions.

It will take some time for the servers to finish booting and sending their physical attributes to VFrame. When the process finishes, the servers appear in the Servers folder in the device selector.

Tips

- You can also discover the server by PXE booting it directly (outside of the VFrame interface). We recommend that you use a serial terminal connection to connect to the servers. Messages that are not displayed on the LOM web interface are displayed on the serial terminal.

Next Step

After you discover the servers, you can manage them (see [Managing and Unmanaging Application Servers](#), page 7-30).

Related Topics

- [Understanding Discovery](#), page 6-1
- [Configuring Server Credentials](#), page 4-14

Viewing the Discovery Status

You can view the status of discovery jobs on the Discovery tab. If there are a large number of jobs, you can filter the list to show only those jobs that interest you, such as those scheduled to run in the future or those currently running.

Procedure

-
- Step 1** Select **Tools > Discovery** to open the Discovery tab (see [Discovery Tab](#), page 6-21).
- The upper pane includes a list of discovery jobs with summary information about each job.
- To reduce the number of jobs displayed, click **Filter**, select the job characteristics that interest you, and click **OK**. Jobs that do not satisfy the filter are not displayed.
- Click **Show All** to remove the filter.
- Step 2** To view the detailed log messages for a job, select the job in the upper pane. The log for the job appears in the Job Logs pane in the lower half of the window. The job log includes all messages returned during the job. It is continually updated for currently running jobs.
- You can filter this list by selecting a severity level, which shows you only messages of the selected severity level.

Click the **Task Results** tab to view messages related to macro execution for LOM manager and storage manager discovery jobs.

Related Topics

- [Understanding Discovery, page 6-1](#)
- [Schedule Editor Dialog Box, page 6-24](#)

Rescheduling or Uncheduling Discovery Jobs

You can reschedule or unchedule discovery jobs from the Discovery tab (select **Tools > Discovery**). Changing the job schedule is typically done for jobs that are scheduled to recur, that is, to perform periodic rediscovery. Rediscovery updates the device inventory and identifies changes to resources that VFrame already knows about.

These are your options for discovery job management:

- **Reschedule**—You can reschedule any job, even one that is not scheduled to repeat. Select the job, and click **Reschedule**. You can then change any characteristic of the job. This activity is essentially the same as creating the initial discovery job, and in some cases rescheduling actually creates a new discovery job. For detailed information on creating discovery jobs, see these topics:
 - [Discovering Ethernet Switches and Service Modules, page 6-6](#)
 - [Discovering Storage Devices, page 6-8](#)
 - [Discovering Servers, page 6-13](#)
- **Unschedule**—You can unchedule any job that is scheduled to start at some future time. These jobs have the Scheduled status. Select the desired job and click **Unschedule**. This prevents the job from running. If you change your mind, you can reschedule the job. Note that you cannot delete a discovery job after you create it.

Related Topics

- [Understanding Discovery Jobs, page 6-2](#)
- [Understanding How Discovery, Rediscovery, and Reinventory Differ, page 6-4](#)
- [Device Rediscovery Tips, page 6-5](#)

Troubleshooting Discovery

These are some problems you might encounter when discovering devices and their solutions:

- [You cannot discover the Ethernet switch.](#)
- [VFrame did not save the DHCP range that you just created.](#)
- [The switch port's MAC address reported by SNMP is invalid.](#)
- [Service modules are getting module missing faults, but they are physically present and functional.](#)

Problem You cannot discover the Ethernet switch.

Solution This problem can occur if you did not configure the SNMP read community string on the physical switch. Configure the SNMP credentials on the switch, enter the same credentials in VFrame, then try to discover the switch again.

Problem VFrame did not save the DHCP range that you just created.

Solution This occurs if after entering the DHCP range in the DHCP entry dialog box, you did not click the **OK** button in the DHCP dialog box. Even though the address range appears in the DHCP table, you must click the **OK** button in the DHCP dialog box to save your additions, deletions, or changes to the table.

Problem The switch port's MAC address reported by SNMP is invalid.

Solution This occurs if the switch port that is connected to the server is down or is not associated with a VLAN. To resolve this, make sure that the switch port that is connected to the server is up, then run switch discovery again. The switch port configuration must contain the following commands:

```
switchport
switchport access vlan <vlan #>
no ip address
```

Make sure that the switch port configuration does not contain the **shutdown** command.

Problem Service modules are getting module missing faults, but they are physically present and functional.

Solution Check the SNMP community string settings on the switch. If you configured the same name for read and trap community strings, VFrame cannot identify that the discovery or inventory problem is the fact that VFrame does not have a valid SNMP read community string. Therefore, VFrame generates module missing faults. Reenable the read community string. Cisco recommends that you use unique read community strings, ones that are not the same as a trap community string. If you change the string name, you also need to update the device credentials in VFrame (select **Tools > Device Credentials**).

Discovery Reference

These topics describe the main tab and dialog boxes you use when discovering devices:

- [Discovery Tab, page 6-21](#)
- [Schedule Editor Dialog Box, page 6-24](#)

Discovery Tab

Use the Discovery tab to view the status of the discovery job, to specify the DHCP range for server discovery, and to initiate or schedule discovery for network devices, NAS filers, SAN fabric devices, storage managers, and LOM managers.

How to Get to This Page

Select **Tools > Discovery** to open the Discovery tab.

Related Topics

- [Understanding Discovery, page 6-1](#)
- [Discovering Devices, page 6-6](#)
- [Viewing the Discovery Status, page 6-17](#)
- [Rescheduling or Uncheduling Discovery Jobs, page 6-18](#)
- [Troubleshooting Discovery, page 6-19](#)

Field Reference

Table 6-2 *Discovery Tab*

Element	Description
DHCP button	Click this button to open the DHCP dialog box, in which you enter the DHCP IP address ranges for server discovery or golden image creation (see DHCP Dialog Box, page 5-9).
New button	Click this button to open the Schedule Editor dialog box, which enables you to schedule discovery for Ethernet switches, NAS filers, SAN fabric devices, storage managers, and LOM managers (see Schedule Editor Dialog Box, page 6-24).
Reschedule button	Click this button to reschedule the selected discovery job. The Schedule Editor dialog box opens for you to reschedule the job (see Rescheduling or Uncheduling Discovery Jobs, page 6-18). When the devices are rediscovered, the device inventory is updated and the updated list is displayed in the device selector in the Resources tab.
Unschedule button	Click this button to unschedule a scheduled discovery job, which effectively cancels the job. You cannot cancel a running job.

Table 6-2 Discovery Tab (continued)

Element	Description
Upper Pane	
Filter button If a filter is applied to the list, the button name is shown as: Filter... (filtered)	Opens the Filter dialog box, where you can select a job type to reduce the size of the job list and display only those jobs that you want to see. The following are filter elements: <ul style="list-style-type: none"> • Job Type—The type of job you want to see, related to the action performed by the job, arranged hierarchically in folders. Select a folder to select all job types in the folder. If you want to select only one or two job types, first deselect All, then make your selections. • Status—The job status. For example, you can elect to view jobs that are currently running or that are scheduled to run in the future. • Time Range—Whether to view all jobs no matter when they ran (All), or to view jobs that ran on specific dates within specific times (Range). • Max Results—The maximum number of results you want to see. For past jobs, the most recent ones are selected over older jobs. • Apply button—Click this button to apply your filter to the list without closing the Filter dialog box. Click OK to apply the filter and close the dialog box. • Reset—Click this button to reset all filter values to their defaults (which is to view all jobs without date and time restrictions).
Show All	Click this button to display all jobs, removing any filter that is currently set. To reapply the filter, click Filter to open the Filter dialog box (which retains the previous filter values), then click OK .
Name	The name assigned to the discovery job.
Type	The type of discovery job.
Status	The status of the job. The status Scheduled indicates the job is scheduled to run in the future. Scheduled and Unscheduled jobs do not have job log entries (in the bottom pane).
Start Time	The date and time the job started. For scheduled jobs, when it is scheduled to run next.
Percent Complete	How much of the job has finished.
Duration	The amount of time the job took to finish.

Table 6-2 Discovery Tab (continued)

Element	Description
Job Logs Tab (Lower Pane)	
The log shows the messages for the job you select from the upper pane. To change the sorting order of the messages, click the column title on which you want to sort.	
Job Log Filters	Use the filter to reduce the size of the list and show only those messages you want to see. Filter elements include: <ul style="list-style-type: none"> • Severity—The severity level of the message.
Time	The date and time the message was logged.
Severity	The severity level of the message.
Entry	The job log message received from the server.
Task Results Tab (Lower Pane)	
The Task Results tab shows the messages for the macro events for the LOM manager or storage manager discovery job you select from the upper panel, if any macros were executed during the job. To change the sorting order of the messages, click on the column title on which you want to sort.	
Each task has an associated job log you can view to see detailed execution information.	
Details button	Click this button to open the Log Record Details dialog box for the selected row, which is the same as double-clicking the row or selecting Show Details from the right-click shortcut menu. The Log Record Details dialog box displays the message information in a more readable format. You can use the < and > buttons to scroll through the task result summaries.
Logs button	Click this button to open the macro execution log for the selected row, if there is a log associated with the action. The log includes the commands sent to the device and the device prompts and responses. Logs are only available for user-defined macros.
Perl Routine button	Click this button to open the Perl file that was generated before running the macro for the selected row. This button is active only for user-defined macros.
Variable File button	Click this button to view the variable values that were generated before running the macro for the selected row. This button is active only for user-defined macros.
Status	The status of the action, indicating whether it was successful.

Table 6-2 *Discovery Tab (continued)*

Element	Description
Last Update Time	Time the action was completed.
Event Type	The type of event that occurred. Use the information in the Event Name field instead of this field.
Event Name	The type of event that occurred. For a complete list of event types, see Events, page 11-6 .
Action	The name of the action.
Action Type	Whether the action was system- or user-initiated. User-defined events or macros have the User action type.
Message	The error or informational message issued after the action occurred.
Resource	The physical resource associated with the target element.
Source SNE Name	The name of the service network element that performed the action. Because these are discovery jobs, which are not related to a specific service network, the service network element is typically the LOM manager or storage manager, and the source and target SNE names are the same.
Target SNE Name	The name of the target service network element on which the action occurred.
Prev. Reset Status	The status of the error before it was cleared. If there is no previous status, NA is displayed.
Reset By	The username of the person who cleared the error. If there is no previous error reset, NA is displayed.

Schedule Editor Dialog Box

Use the Schedule Editor dialog box to initiate or schedule discovery for network devices, NAS filers, SAN fabric devices, storage managers, and LOM managers. See these topics for detailed information:

- [Network Tab, page 6-25](#)
- [NAS Filers Tab, page 6-26](#)
- [SAN Fabric Devices Tab, page 6-27](#)

- [Storage Managers Tab, page 6-29](#)
- [LOM Managers Tab, page 6-30](#)

How to Get to This Dialog Box

Select **Tools > Discovery** to open the Discovery tab, then click **New** to open the Schedule Editor dialog box. Click the appropriate tabs to initiate or schedule discovery.

Network Tab

Use the Network tab for network device discovery. Enter the IP address of the CDP seed device. VFrame discovers all the neighboring switches (in the specified distance) that are directly connected to the seed device (Ethernet switch) and obtains information about those devices.

How to Get to This Tab

Select **Tools > Discovery** to open the Discovery tab, click **New** to open the Schedule Editor dialog box, and then click **Network**.

Related Topics

- [Discovering Ethernet Switches and Service Modules, page 6-6](#)
- [Understanding Discovery, page 6-1](#)

Field Reference

Table 6-3 *Network Tab*

Element	Description
Name	The name of the discovery job.
Rediscover Currently Managed Devices	Whether to use the devices that you have already managed as CDP seeds. You cannot enter additional CDP seeds if you select this check box.
Seeds	The DNS name or the IP address of CDP seed devices to which neighboring devices are connected. The seed device is used as the root device for network discovery.

Table 6-3 Network Tab (continued)

Element	Description
CDP Distance	Determines the extent of discovery and applies to all seed devices. If CDP distance is 1, only the immediate neighbors of the seed device are discovered. If CDP distance is 2, devices A and B that are directly connected to the seed devices are discovered and the immediate neighbors of A and B are also discovered. Default is 0.
Select Type of Discovery	
Run Now radio button	Click this radio button, and then click OK to start discovery immediately.
Schedule radio button	Click this radio button, set the start date and time, and then click OK to start discovery on the scheduled date and time. The time zone is the same as the one configured on VFrame.
Start Date	The date to begin discovery.
Start Time	The time to begin discovery.
Enable Repeat	Whether you want the discovery job to be rerun at the defined interval until the job is canceled.
Every	The frequency of time periods for repeating the discovery job. The default is 1. In the corresponding field, select the frequency time period: minutes, hours, days, or weeks. For example, selecting 2 Weeks causes the discovery job to be rerun every 2 weeks until canceled.

NAS Filers Tab

Use the NAS Filers tab for NAS filer discovery. When you provide the IP address or DNS name of the NAS filer, VFrame discovers the NAS filer, its volumes, QTrees, and CIFS shares.

How to Get to This Tab

Select **Tools > Discovery** to open the Discovery tab, click **New** to open the Schedule Editor dialog box, and then click **NAS Filers**.

Related Topics

- [Discovering NAS Filers and Their Components, page 6-10](#)
- [Understanding Discovery, page 6-1](#)

Field Reference**Table 6-4** *NAS Filers Tab*

Element	Description
Name	The name of the discovery job.
Rediscover Currently Managed NAS Filers	Whether to use the IP address or DNS name that you used previously for NAS filer discovery. You cannot enter additional IP addresses or DNS names if you select this check box.
IP Address/DNS Name	The IP address or the DNS name of the NAS filer.
Select Type of Discovery	
Run Now radio button	Click this radio button, and then click OK to start discovery immediately.
Schedule radio button	Click this radio button, set the start date and time, and then click OK to start discovery on the scheduled date and time. The time zone is the same as the one configured on VFrame.
Start Date	The date to begin discovery.
Start Time	The time to begin discovery.
Enable Repeat	Whether you want the discovery job to be rerun at the defined interval until the job is canceled.
Every	The frequency of time periods for repeating the discovery job. The default is 1. In the corresponding field, select the frequency time period: minutes, hours, days, or weeks. For example, selecting 2 Weeks causes the discovery job to be rerun every 2 weeks until canceled.

SAN Fabric Devices Tab

Use the SAN Fabric Devices tab for MDS switch and VSAN discovery. When you provide the IP address or DNS name of a seed MDS switch for a physical fabric, VFrame discovers the switch's active VSANs and all neighboring MDS switches in that physical fabric that have member ports in the same active VSANs.

How to Get to This Tab

Select **Tools > Discovery** to open the Discovery tab, click **New** to open the Schedule Editor dialog box, and then click **SAN Fabric Devices**.

Related Topics

- [Discovering SAN Fabric Devices and Their Components, page 6-8](#)
- [Understanding Discovery, page 6-1](#)

Field Reference

Table 6-5 ***SAN Fabric Devices Discovery Tab***

Element	Description
Name	The name of the discovery job.
Rediscover Currently Managed Fabrics	Whether to use the seed MDS switch IP addresses or DNS names that you had used previously for SAN fabric device discovery. You cannot enter additional seeds if you select this check box.
SAN Fabric Seed 1	The IP address or DNS name of the seed MDS switch in the first physical SAN fabric. If you have only one physical fabric, use only the Seed 1 field.
SAN Fabric Seed 2	The IP address or DNS name of the seed MDS switch in the second physical SAN fabric, if you have two fabrics.
Select Type of Discovery	
Run Now radio button	Click this radio button, and then click OK to start discovery immediately.
Schedule radio button	Click this radio button, set the start date and time, and then click OK to start discovery on the scheduled date and time. The time zone is the same as the one configured on VFrame.
Start Date	The date to begin discovery.
Start Time	The time to begin discovery.
Enable Repeat	Whether you want the discovery job to be rerun at the defined interval until the job is canceled.
Every	The frequency of time periods for repeating the discovery job. The default is 1. In the corresponding field, select the frequency time period: minutes, hours, days, or weeks. For example, selecting 2 Weeks causes the discovery job to be rerun every 2 weeks until canceled.

Storage Managers Tab

Use the Storage Manager tab to discover storage arrays through storage managers. When you select a storage manager and run discovery, VFrame discovers storage arrays that are configured to be discovered through that storage manager and the related port and logical unit information.

How to Get to This Tab

Select **Tools > Discovery** to open the Discovery tab, click **New** to open the Schedule Editor dialog box, and then click **Storage Managers**.

Related Topics

- [Discovering Storage Arrays and Their Components Through Storage Managers, page 6-11](#)
- [Understanding Discovery, page 6-1](#)

Field Reference

Table 6-6 Storage Manager Tab

Element	Description
Name	The name of the discovery job.
Managers	Lists the storage managers you defined. Select the storage managers whose storage arrays you want to discover. For information on defining storage managers, see Defining Storage Managers, page 11-80 .
Select Type of Discovery	
Run Now radio button	Click this radio button, and then click OK to start discovery immediately.
Schedule radio button	Click this radio button, set the start date and time, and then click OK to start discovery on the scheduled date and time. The time zone is the same as the one configured on VFrame.
Start Date	The date to begin discovery.
Start Time	The time to begin discovery.
Enable Repeat	Whether you want the discovery job to be rerun at the defined interval until the job is canceled.

Table 6-6 Storage Manager Tab (continued)

Element	Description
Every	The frequency of time periods for repeating the discovery job. The default is 1. In the corresponding field, select the frequency time period: minutes, hours, days, or weeks. For example, selecting 2 Weeks causes the discovery job to be rerun every 2 weeks until canceled.

LOM Managers Tab

Use the LOM Managers tab to discover LOM interfaces in a server through LOM managers.

How to Get to This Tab

Select **Tools > Discovery** to open the Discovery tab, click **New** to open the Schedule Editor dialog box, and then click **LOM Managers**.

Related Topics

- [Discovering LOM Interfaces and the Server Inventory Through LOM Managers, page 6-13](#)
- [Understanding Discovery, page 6-1](#)

Field Reference

Table 6-7 LOM Managers Tab

Element	Description
Name	The name of the discovery job.
Managers	LOM managers you defined. Select a LOM manager to run discovery. For information on defining LOM managers, see Defining LOM Managers, page 11-87 .
Select Type of Discovery	
Run Now radio button	Click this radio button, and then click OK to start discovery immediately.

Table 6-7 LOM Managers Tab (continued)

Element	Description
Schedule radio button	Click this radio button, set the start date and time, and then click OK to start discovery on the scheduled date and time. The time zone is the same as the one configured on VFrame.
Start Date	The date to begin discovery.
Start Time	The time to begin discovery.
Enable Repeat	Whether you want the discovery job to be rerun at the defined interval until the job is canceled.
Every	The frequency of time periods for repeating the discovery job. The default is 1. In the corresponding field, select the frequency time period: minutes, hours, days, or weeks. For example, selecting 2 Weeks causes the discovery job to be rerun every 2 weeks until canceled.

