



IBM Systems

IBM Systems Director  
Discovery Best Practices

*Version 6.1.1*







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Discovery Best Practices

*Version 6.1.1*

**Note**

Before using this information and the product it supports, read the information in “Notices” on page 37.

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## Chapter 1. Discovery overview and considerations

The information and examples in this paper use IBM® Systems Director, versions 6.1 and 6.1.1. For later versions of IBM Systems Director, task steps, aspects of the graphical user interface (GUI), and other information might be different. See the information center for the later versions of IBM Systems Director for updated discovery information.

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### Types of discovery

IBM Systems Director provides three ways to discover resources: Getting started discovery (also called Initial discovery), System discovery, and Advanced system discovery.

#### Getting started discovery

*Getting started discovery* is available on the Start page. It is also called Initial discovery. The Discover button is displayed only when IBM Systems Director is first installed and you have not clicked the Discover button to perform a Getting started discovery.

**Note:** If you perform a System discovery or Advanced system discovery, but do not click the Discover button for Getting started discovery, the Discover button is still displayed.

After the Discover button is clicked, the Discover button is no longer displayed on the Start page and the following types of systems on the local subnet are discovered:

- Systems running Common Agent, version 6.1 or later
- Systems running Platform Agent, version 6.1 or later
- Systems running IBM Director Agent, version 5.20
- Agentless-managed systems

The pie chart is updated indicating the number of system types discovered.

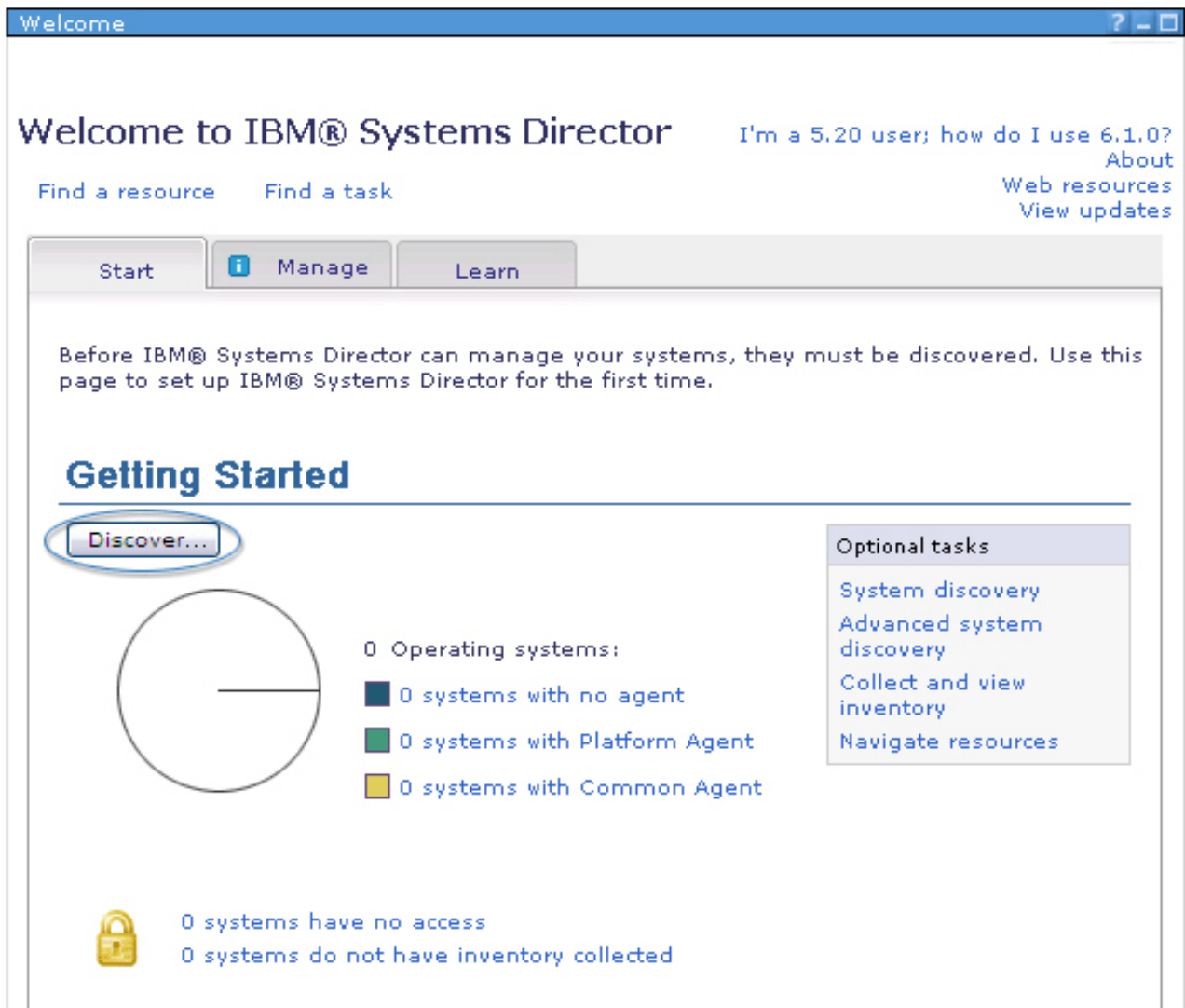


Figure 1. Getting started Discovery button on the Start page

## System discovery

*System discovery* provides basic discovery capabilities, including specifying a system by its IP address, its host name, or specifying a range of IP addresses. You can further refine the discovery by specifying a resource type.

### Best practice recommendations:

1. Only discover those systems that you intend to manage with IBM Systems Director. For example, if the management interfaces of your networking equipment are on a single subnet, yet you do not intend to manage your networking equipment with IBM Systems Director, do not discover devices on that subnet.
2. When discovering a range of IP addresses, use the smallest range possible. For example, if you have a subnet 10.1.1.0/24, but all of your systems are within the first 100 addresses, use 10.1.1.1-10.1.1.100 as the range, instead of 10.1.1.1-10.1.1.254.
3. The maximum permitted range of IP addresses is 254.

System Discovery

Select the discovery method

Single system (IP address)  
 Multiple systems (Range of IP addresses)  
 Single system (Hostname)

Starting IP address:

9 . 42 . 211 . 1

Ending IP address:

9 . 42 . 211 . 100

Select resource type:

All

Discover

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Discovered Systems

Actions						
Name	Type	Access	Problems	Compliance	IP Ad	

Figure 2. System discovery

After specifying the discovery criteria, click Discover and the discovery process starts. A progress indicator is displayed.

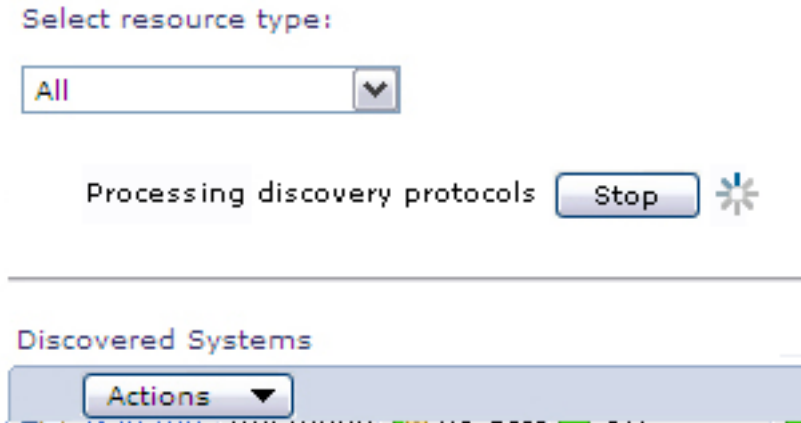


Figure 3. Discovery progress indicator

As resources are discovered, they are displayed in the Discovered Systems table.

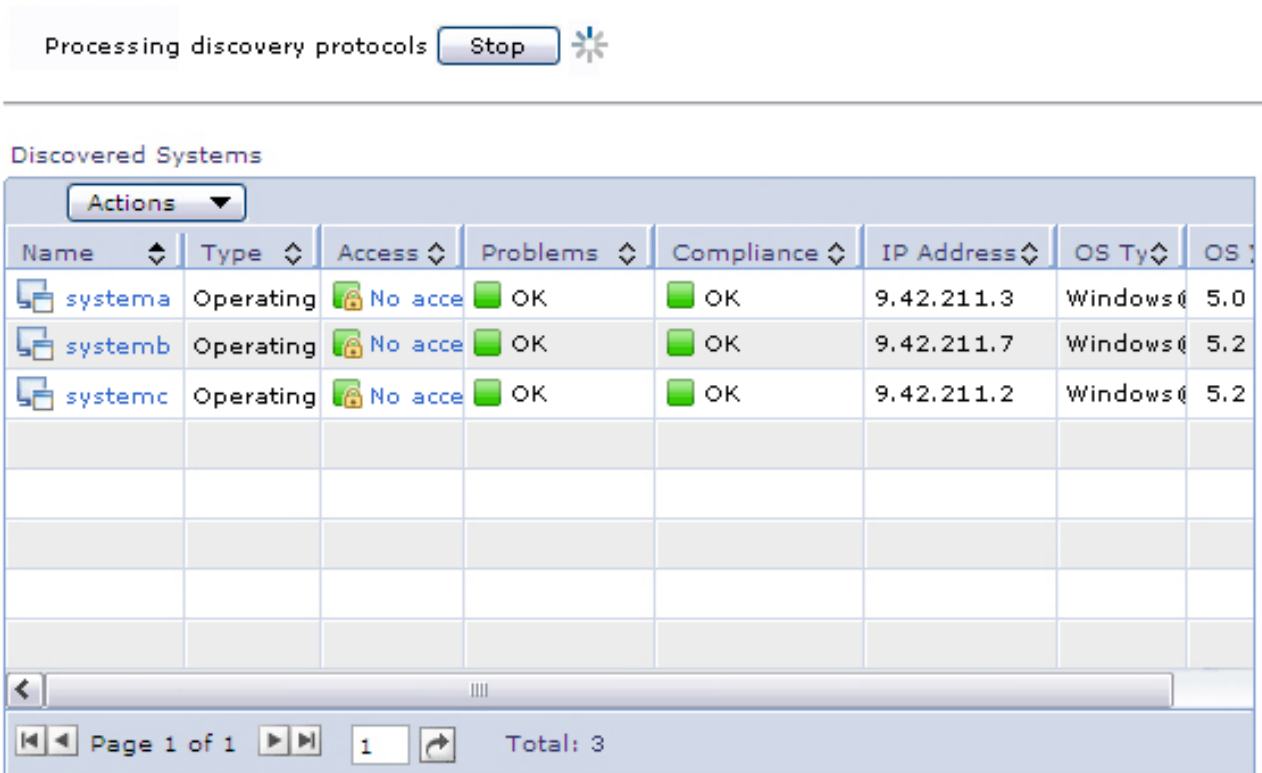


Figure 4. Resources displayed as they are discovered

**Note:** The Discovered Systems table only displays resources that are discovered during the current discovery. If a resource has been discovered previously, it is not displayed in this table. To view all discovered resources, use Navigate Resources.

When the discovery is complete, the progress indicator is replaced by the Discover button and the table displays all the resources detected during the discovery.

Discover

Discovered Systems

Actions							
Name	Type	Access	Problems	Compliance	IP Address	OS Ty	OS V
systemc	Operating	No acce	OK	OK	9.42.211.2	Windows	5.2
systema	Operating	No acce	OK	OK	9.42.211.3	Windows	5.0
systemb	Operating	No acce	OK	OK	9.42.211.7	Windows	5.2
switch1	Switch	Partial	OK	OK	9.42.211.12		
devsys1	Operating	No acce	OK	OK	9.42.211.14	Windows	5.2
devsys2	Operating	No acce	OK	OK	9.42.211.24	Windows	5.0
bladesys	BladeCent	Offline	OK	OK	9.42.211.28		
devsys3	Operating	No acce	OK	OK	9.42.211.31	Windows	5.2
devsys4	Operating	No acce	OK	OK	9.42.211.36	Windows	5.2
devsys5	Operating	No acce	OK	OK	9.42.211.37	Windows	5.0

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### Advanced system discovery

*Advanced system discovery* uses a discovery profile to further refine the discovery of resources. In the profile, you can specify the resource type and the discovery protocol to use. For many types of resources, you can optionally specify to request access to the resource upon discovery and initiate an inventory collection.

**Best practice recommendation:** If you have a dynamic environment, especially one where new systems are continually deployed, consider running Advanced system discovery on a reoccurring schedule to make sure your list of systems is current.

On the Advanced systems discovery page, you create a discovery profile using the Discovery Profile wizard. It is displayed when you click **Create**. For detailed information about the wizard, see “Creating commonly used discovery profiles” on page 15.



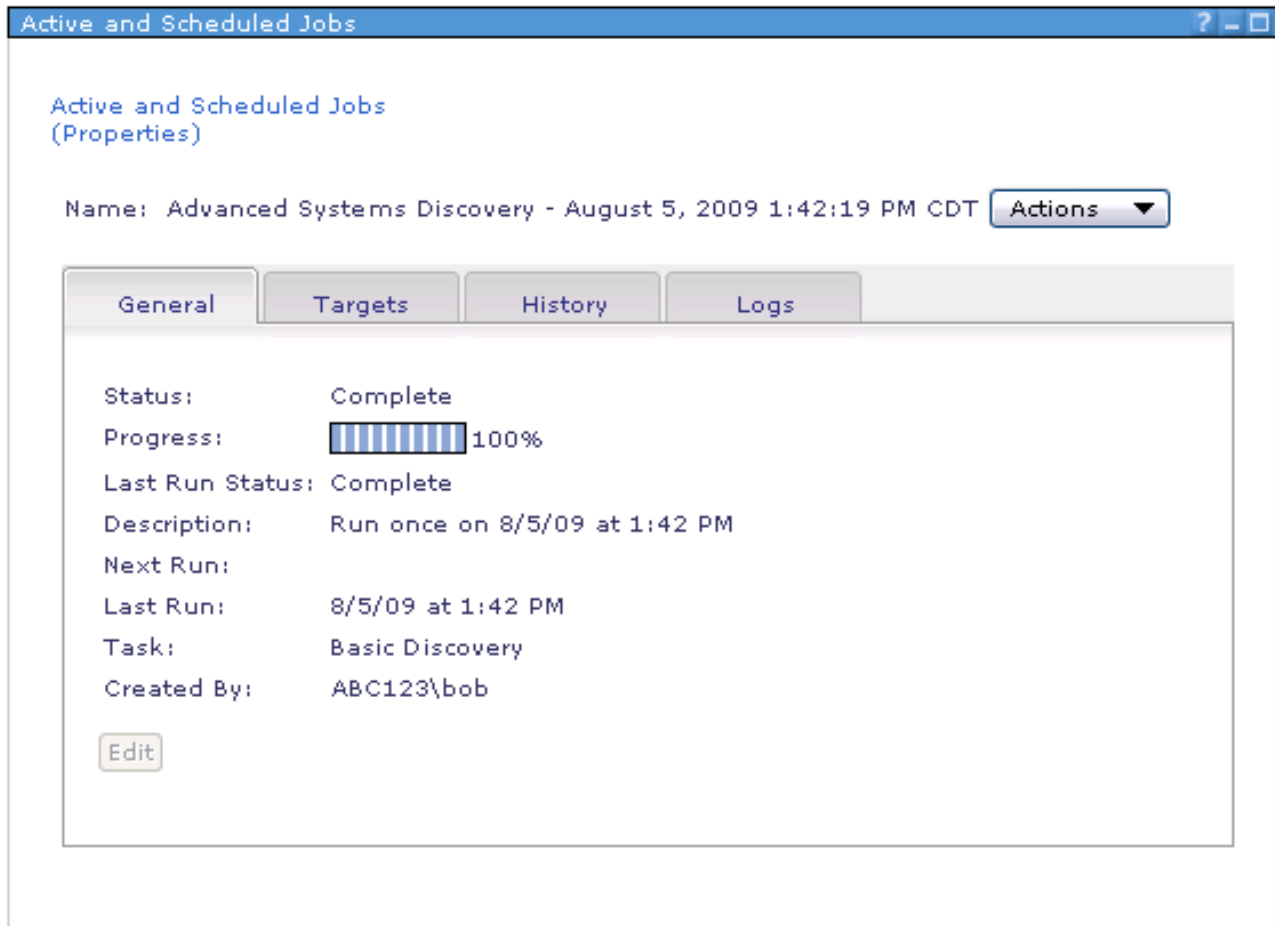


Figure 6. Progress indicator on the Active and Scheduled Jobs Properties page

## Choosing which discovery to use

When deciding whether to use Getting started discovery (also called Initial discovery), System discovery, or Advanced system discovery, there are certain criteria that you should consider.

Table 1. Recommended use of each discovery type

Discovery type	Recommended for use when
Getting started discovery	<ul style="list-style-type: none"> <li>Your management server (the system running IBM Systems Director Server and all managed resources reside on a single subnet, for example, small and medium business (SMB) and small office or home office (SOHO) environments.</li> <li>The subnet is densely populated with many types of agents or resources.</li> <li>Efficiency is not required. For example, discovering a sparsely populated subnet by processing the entire subnet range takes longer because many requests using many protocols must complete.</li> </ul>
System discovery	<ul style="list-style-type: none"> <li>You are managing a single subnet, or a few subnets, and you want to manage all resources on those subnets or all resources of a given type.</li> <li>The subnet is a densely populated single range of IP addresses for a single resource type that you want to discover at one time.</li> <li>You need to discover System x<sup>®</sup> servers with an IPMI baseboard management controller (BMC).</li> </ul>

Table 1. Recommended use of each discovery type (continued)

Discovery type	Recommended for use when
Advanced system discovery	<ul style="list-style-type: none"> <li>• Discovering resources in many subnets.</li> <li>• Selecting multiple IP address ranges to discover a specific resource type.</li> <li>• Various resource types must be discovered, each resource type using a targeted discovery profile.</li> </ul>

## Advantages and disadvantages of discovery types

Each type of discovery has advantages and disadvantages. Understanding this information can help you decide which discovery type is best for your systems-management environment.

Table 2. Advantages and disadvantages of discovery types

Discovery type	Advantages	Disadvantages
Getting started (Initial) discovery	Single-click discovery	<ul style="list-style-type: none"> <li>• Discovers only agents in the local subnet. Agents include: <ul style="list-style-type: none"> <li>– IBM Systems Director Common Agent, version 6.1 or later</li> <li>– IBM Systems Director Platform Agent, version 6.1 or later</li> <li>– IBM Director Agent, versions 5.10 and 5.20</li> <li>– IBM Director Core Services, versions 5.10 and 5.20</li> <li>– Agentless-managed systems</li> </ul> </li> <li>• An inefficient form of discovery because it attempts all agent-related discovery protocols on the local subnet. This inefficiency can result in the management server timing out on a discovery request.</li> </ul>
System discovery	<ul style="list-style-type: none"> <li>• Single-step task that discovers all systems without requiring information about what type of resource is located at each IP address.</li> <li>• Discovers a specific system using an IP address or host name.</li> <li>• Discovers multiple systems using a range of IP addresses.</li> <li>• Can limit discovery based on the resource type.</li> <li>• Can discover System x servers with an IPMI baseboard management controller (BMC).</li> </ul>	<ul style="list-style-type: none"> <li>• Does not display any resources already discovered. <b>Tip:</b> Use Navigate resources to view resources that are already discovered.</li> <li>• Discovers one system or IP address range per resource-type combination at a time. It is an inefficient form of discovery because it attempts all discovery protocols for the given resource type on all specified IP addresses. This inefficiency can result in the management server timing out on a discovery request.</li> <li>• Cannot be scheduled</li> </ul>

Table 2. Advantages and disadvantages of discovery types (continued)

Discovery type	Advantages	Disadvantages
Advanced system discovery	<ul style="list-style-type: none"> <li>• Provides a wizard to guide you through the configuration process</li> <li>• Provides finer categories of resource types for selection</li> <li>• Discovers multiple systems using a range of IP addresses</li> <li>• Provides discovery-protocol selection for the most efficient discovery of target resources</li> <li>• Discovers multiple ranges of IP addresses</li> <li>• Schedules to run discovery on a recurring basis</li> <li>• Imports a list of resources or ranges of IP addresses to discover</li> <li>• Provides an option to automatically request access to discovered systems</li> <li>• Provides an option to automatically start inventory collection of discovered systems</li> </ul>	<ul style="list-style-type: none"> <li>• Does not provide a progress indicator for discovery completion. Instead, use the job progress indicator on the Active and Scheduled Jobs page. For information, see “Determining the progress of a discovery job” on page 34.</li> <li>• Cannot discover multiple resource types in a single discovery profile.</li> <li>• Cannot discover System x servers with an IPMI baseboard management controller (BMC).</li> <li>• Takes more time and system knowledge to configure due to extensive options and settings.</li> </ul>

## Tips for efficient discovery

When selecting and configuring discovery, consider the types of resources in your environment, the protocol best suited for each resource, and other settings in the configuration.

### Specifying IP address ranges

When specifying a range of IP addresses, remember the following considerations:

- Only discover those systems that you intend to manage with IBM Systems Director. For example, if the management interfaces of your networking equipment are on a single subnet, yet you do not intend to manage your networking equipment with IBM Systems Director, do not discover devices on that subnet.
- When discovering a range of IP addresses, use the smallest range possible. For example, if you have a subnet 10.1.1.0/24, but all of your systems are within the first 100 addresses, use 10.1.1.1-10.1.1.100 as the range, instead of 10.1.1.1-10.1.1.254.
- The maximum permitted range of IP addresses is 254.

### Scheduling discovery

When scheduling discovery, remember the following considerations:

- If you have a dynamic environment, especially one where new systems are continually deployed, consider running Advanced system discovery on a reoccurring schedule to make sure your list of systems is current.
- Do not schedule a discovery to run too frequently. Very frequent discoveries can negatively affect IBM Systems Director Server.
- Schedule discoveries to start after making network changes (when systems are added, system configurations change, and so on).
- The frequency for scheduled discoveries should be in days, rather than hours.

- When you schedule or write a script to discover a block of systems, and you also request access or automatically collect inventory, make sure you add sufficient wait time for all the actions to complete.

## Resource types and their associated protocol

Table 3. Resource type that you want to discover and the protocol to use in the discovery profile

Resource type	Discovery profile selections to use	Optional profile selections available
Agentless-managed systems enabled for Simple Network Management Protocol (SNMP)	On the Profile Properties page, make the following selections: <ul style="list-style-type: none"> <li>• For System type, select <b>Operating System</b>.</li> <li>• For System subtype, select <b>Systems with No Agent</b>.</li> </ul> On the Protocol Selection page, select <b>SNMP Discovery</b> .	None
Agentless-managed systems running Linux <sup>®</sup> or AIX <sup>®</sup>	On the Profile Properties page, make the following selections: <ul style="list-style-type: none"> <li>• For System type, select <b>Operating System</b>.</li> <li>• For System subtype, select <b>Systems with No Agent</b>.</li> </ul> On the Protocol Selection page, select <b>Secure shell (SSH) Discovery</b> .	Request access and inventory collection <sup>2</sup>
Agentless-managed systems running Windows <sup>®</sup>	On the Profile Properties page, make the following selections: <ul style="list-style-type: none"> <li>• For System type, select <b>Operating System</b>.</li> <li>• For System subtype, select <b>Systems with No Agent</b>.</li> </ul> On the Protocol Selection page, select <b>Windows (DCOM) Discovery</b> .	Request access and inventory collection <sup>2</sup>
BladeCenter <sup>®</sup> chassis by way of an advanced management module	On the Profile Properties page, make the following selections: <ul style="list-style-type: none"> <li>• For System type, select <b>BladeCenter Chassis</b>.</li> <li>• For System subtype, select <b>BladeCenter Chassis</b>.</li> </ul> On the Protocol Selection page, select <b>Service Location Protocol (SLP) Discovery</b> .	None
BladeCenter chassis by way of a management module	On the Profile Properties page, make the following selections: <ul style="list-style-type: none"> <li>• For System type, select <b>BladeCenter Chassis</b>.</li> <li>• For System subtype, select <b>BladeCenter Chassis</b>.</li> </ul> On the Protocol Selection page, select <b>Service Location Protocol (SLP) Discovery</b> .	None
eServer <sup>™</sup> 325, 326, and 326m model servers discovered by way of an Integrated Systems Management Processor (ISMP)	You cannot use Advanced System Discovery to discover this resource type. Instead, use System Discovery and specify an IP address or range of IP addresses. <b>Note:</b> Although the service processor in the eServer 325, 326, and 326m models is called an ISMP, it is a baseboard management controller (BMC).	Not applicable
HMC managing IBM Power systems	On the Profile Properties page, make the following selections: <ul style="list-style-type: none"> <li>• For System type, select <b>Server</b>.</li> <li>• For System subtype, select <b>HMC Managing Power Systems</b>.</li> </ul> On the Protocol Selection page, select <b>Service Location Protocol (SLP) Discovery</b> .	None
HMC managing System z <sup>®</sup> servers	On the Profile Properties page, make the following selections: <ul style="list-style-type: none"> <li>• For System type, select <b>Server</b>.</li> <li>• For System subtype, select <b>HMC Managing System z</b>.</li> </ul> On the Protocol Selection page, select <b>SNMP Discovery</b> .	None

Table 3. Resource type that you want to discover and the protocol to use in the discovery profile (continued)

Resource type	Discovery profile selections to use	Optional profile selections available
IBM Director Agent, versions 5.10 and 5.20, managed systems	<p>On the Profile Properties page, make the following selections:</p> <ul style="list-style-type: none"> <li>For System type, select <b>Operating System</b>.</li> <li>For System subtype, select <b>Systems with Common Agent</b>.</li> </ul> <p>On the Protocol Selection page, select <b>IPC Discovery</b>.</p>	None
IBM Director Core Services, versions 5.10 and 5.20, managed systems	<p>On the Profile Properties page, make the following selections:</p> <ul style="list-style-type: none"> <li>For System type, select <b>Operating System</b>.</li> <li>For System subtype, select <b>Systems with Platform Agent</b>.</li> </ul> <p>On the Protocol Selection page, select <b>Common Information Model (CIM) Discovery</b>, <b>Secure shell (SSH) Discovery</b>, and <b>Windows (DCOM) Discovery</b>.</p>	Request access and inventory collection <sup>2</sup>
IBM Power servers with service processors	<p>On the Profile Properties page, make the following selections:</p> <ul style="list-style-type: none"> <li>For System type, select <b>Server</b>.</li> <li>For System subtype, select <b>Power System Servers with Service Processors</b>.</li> </ul> <p>On the Protocol Selection page, select <b>Service Location Protocol (SLP) Discovery</b>.</p>	None
IBM Systems Director Common Agent, version 6.1 or later, managed systems	<p>On the Profile Properties page, make the following selections:</p> <ul style="list-style-type: none"> <li>For System type, select <b>Operating System</b>.</li> <li>For System subtype, select <b>Systems with Common Agent</b>.</li> </ul> <p>On the Protocol Selection page, if you have an existing infrastructure of CAS from another Tivoli® product, select <b>Agent Manager Discovery</b>; otherwise, select <b>Common Agent Services (CAS) Discovery</b>.</p>	<p>For Agent Manager Discovery, none.</p> <p>For Common Agent Services (CAS) Discovery, request access and inventory collection.<sup>2</sup></p>
IBM Systems Director Platform Agent, version 6.1 or later, managed systems	<p>On the Profile Properties page, make the following selections:</p> <ul style="list-style-type: none"> <li>For System type, select <b>Operating System</b>.</li> <li>For System subtype, select <b>Systems with Platform Agent</b>.</li> </ul> <p>On the Protocol Selection page, select <b>Common Information Model (CIM) Discovery</b>, <b>Secure shell (SSH) Discovery</b>, and <b>Windows (DCOM) Discovery</b>.</p>	Request access and inventory collection <sup>2</sup>
IVM managing IBM Power systems	<p>On the Profile Properties page, make the following selections:</p> <ul style="list-style-type: none"> <li>For System type, select <b>Server</b>.</li> <li>For System subtype, select <b>IVM Managing Power Systems</b>.</li> </ul> <p>On the Protocol Selection page, select <b>Service Location Protocol (SLP) Discovery</b>.</p>	None
Printers	<p>On the Profile Properties page, make the following selections:</p> <ul style="list-style-type: none"> <li>For System type, select <b>Generic System</b>.</li> <li>For System subtype, select <b>Printer</b>.</li> </ul> <p>On the Protocol Selection page, select <b>SNMP Device Discovery</b>.</p>	None
Storage devices	<p>On the Profile Properties page, make the following selections:</p> <ul style="list-style-type: none"> <li>For System type, select <b>Operating System</b>.</li> <li>For System subtype, select <b>All</b>.</li> </ul> <p>On the Protocol Selection page, select <b>Storage Management Initiative Specification (SMI-S) Discovery</b>.</p>	Request access and inventory collection <sup>2</sup>

Table 3. Resource type that you want to discover and the protocol to use in the discovery profile (continued)

Resource type	Discovery profile selections to use	Optional profile selections available
Switches and bridges <sup>1</sup>	On the Profile Properties page, make the following selections: <ul style="list-style-type: none"> <li>For System type, select <b>Switch</b>.</li> <li>For System subtype, select <b>Switch Module</b>.</li> </ul> On the Protocol Selection page, select <b>SNMP Discovery</b> .	None
System x server discovered by way of an integrated management module	On the Profile Properties page, make the following selections: <ul style="list-style-type: none"> <li>For System type, select <b>Server</b>.</li> <li>For System subtype, select <b>System x Servers with Service Processors</b>.</li> </ul> On the Protocol Selection page, select <b>Service Location Protocol (SLP) Discovery</b> .	None
System x server discovered by way of an IPMI BMC	You cannot use Advanced System Discovery to discover this resource type. Instead, use System Discovery and specify an IP address or range of IP addresses.	Not applicable
System x server discovered by way of a Remote Supervisor Adapter or Remote Supervisor Adapter II	On the Profile Properties page, make the following selections: <ul style="list-style-type: none"> <li>For System type, select <b>Server</b>.</li> <li>For System subtype, select <b>System x Servers with Service Processors</b>.</li> </ul> On the Protocol Selection page, select <b>Service Location Protocol (SLP) Discovery</b> .	None
<ol style="list-style-type: none"> <li>Pass-through modules do not provide SNMP support.</li> <li>Using request access and inventory collection might cause the discovery process to take much longer to complete. Consider using only when you are discovering storage or when you expect to discover a limited number of resources.</li> </ol>		

## Discovery protocols and their associated resource types

Table 4. Discovery protocols and their associated resource types

Discovery protocol	Use it to discover
Agent Manager	IBM Systems Director Common Agent, version 6.1 or later <b>Note:</b> This protocol is not intended to discover Tivoli Common Agent.
Common Agent Services	IBM Systems Director Common Agent, version 6.1 or later
Common Information Model (CIM)	<ul style="list-style-type: none"> <li>IBM Systems Director Platform Agent, version 6.1 or later</li> <li>IBM Director Core Services, versions 5.10 and 5.20</li> </ul> <b>Note:</b> To be sure of effectively discovering these types of resources, use CIM in conjunction with Secure shell (SSH) and Windows Distributed Component Object Model (DCOM).
Interprocess Communication (IPC)	IBM Director Agent, versions 5.10 and 5.20
Secure shell (SSH) <b>Note:</b> Also see Common Information Model (CIM)	Agentless-managed systems running Linux or AIX

Table 4. Discovery protocols and their associated resource types (continued)

Discovery protocol	Use it to discover
Service Location Protocol (SLP)	<ul style="list-style-type: none"> <li>• IBM BladeCenter chassis</li> <li>• HMC managing IBM Power systems</li> <li>• IVM managing IBM Power systems</li> <li>• IBM Power servers with service processors</li> <li>• System x servers with the following service processors:               <ul style="list-style-type: none"> <li>– Remote Supervisor Adapter</li> <li>– Remote Supervisor Adapter II</li> <li>– Integrated management module</li> </ul> </li> </ul> <p><b>Note:</b> Advanced System Discovery cannot be used to discover systems with IPMI baseboard management controllers (BMCs). Instead, use System Discovery and choose the Server type to discover systems with a BMC.</p>
Simple Network Management Protocol (SNMP)	<ul style="list-style-type: none"> <li>• Agentless-managed systems that have SNMP enabled</li> <li>• HMC managing System z servers</li> <li>• Printers</li> <li>• Switches and bridges</li> </ul>
Storage Management Initiative Specification (SMI-S)	Storage devices
Windows Distributed Component Object Model (DCOM)  <b>Note:</b> Also see Common Information Model (CIM)	Agentless-managed systems running Windows



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## Chapter 2. Useful discovery tasks

### About this task

This section includes instructions for performing some useful tasks that make it easier for you to discover and manage the variety of resources on your networks. These tasks include creating Advanced system discovery profiles that enable you to target specific types of resources and scheduling discoveries to run once or on a recurring schedule. Additional tasks include determining the progress of a discovery and using the command-line interface (CLI) to discover resources.

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### Creating commonly used discovery profiles

You can use the Advanced discovery profile wizard to create profiles that efficiently discover specific types of resources.

#### Discovering IBM BladeCenter chassis

You can use advanced discovery to create and run a discovery profile specifically designed to discover IBM BladeCenter chassis.

#### About this task

To discover BladeCenter chassis, complete the following steps:

1. On the Discovery Manager summary page, click **Advanced System Discovery** under Optional tasks.
2. On the Advanced System Discovery page, click **Create**. The Advanced Discovery Wizard opens and the Welcome page is displayed.
3. Click **Next**. The Profile Properties page is displayed.
4. In the **Profile name** field, type a descriptive name for the profile.
5. In the **System type** list, select **BladeCenter chassis**.
6. In the **Profile description** field, type a brief description for the profile.
7. Click **Next**. The Protocol Selection page is displayed.
8. Select **Service Location Protocol (SLP) Discovery** for the discovery profile.
9. Click **Next**. The Service Location Protocol Configuration page is displayed.
10. Select the discovery method that you want to use to discover your resources.

**Attention:** Do not configure unicast and also configure multicast or broadcast for this type of profile. This configuration page allows you to configure information for unicast, multicast, broadcast, and directory agents at the same time. However, when you configure unicast and also configure multicast or broadcast, only unicast is used. (Discovery uses Directory agents whenever you enable them, in addition to unicast, multicast, or broadcast.) If you do configure more than one method, the following priorities determine which method is used to perform the discovery:

- a. Multicast and broadcast is the default choice. You can configure either or both, and this configuration is used if you do not configure unicast.
- b. Unicast is used when it is configured. When unicast is configured, multicast and broadcast are not used.
- c. Directory agents are used when they are configured, in addition to unicast, multicast, or broadcast.

Option	Description
<b>Unicast</b>	<p>The recommended method to discover BladeCenter chassis when the network configuration does not allow multicast or when you specify the IP addresses for the systems you want to discover. It can also be used effectively when the number of IP addresses that will not be discovered in a specified IP address range is limited.</p> <p>Using unicast, IBM Systems Director sends packets directly to each IP address to determine if that IP address is a BladeCenter chassis. The easiest way to specify many IP addresses that you want to discover is to import a list of all known BladeCenter chassis IP addresses.</p>
<b>Directory agents</b>	<p>Directory agents can discover a very large number of resources in a very efficient manner. However, you must set up and configure your own directory agent.</p> <p>For more information about setting up and configuring a directory agent, see the related links at the bottom of step 13 on page 17.</p>
<b>Multicast and broadcast</b>	<p>(Default) Multicast and broadcast is the preferred discovery choice, especially when you do not know the IP addresses for the systems you want to discover. However, your network configuration must support multicast and broadcast. (When your network configuration does not support multicast and broadcast, unicast is recommended.)</p> <p>Using multicast and broadcast, IBM Systems Director sends packets only once. Multicast-enabled routers relay the packets to the IP addresses of each listening resource (even across multiple subnets) to determine if the IP address is a BladeCenter chassis.</p>

11. If configuring unicast, you can add IP addresses either individually or as a range, or you can import the addresses.

Option	Description
Add a single IP address	<ol style="list-style-type: none"> <li>1. Select <b>Add a single IP address</b>.</li> <li>2. In the <b>Single IP address or beginning range</b> field, type the IP address of the resource that you want to discover.</li> <li>3. Click <b>Add</b> to add the IP address to the list.</li> <li>4. Repeat this procedure until you have added all the IP addresses.</li> </ol>
Add a range of IP addresses	<p><b>Note:</b> For best practice recommendations about IP address ranges, see “Tips for efficient discovery” on page 9.</p> <ol style="list-style-type: none"> <li>1. Select <b>Add a range of IP addresses</b>.</li> <li>2. For the IP address range that contains the resources that you want to discover, type the first IP address value in the <b>Single IP address or beginning range</b> field and the last IP address value in the <b>Ending range</b> field. <b>Note:</b> The maximum permitted range of IP addresses is 254.</li> <li>3. Click <b>Add</b> to add the IP addresses to the list.</li> <li>4. Repeat this procedure until you have added all the IP address ranges.</li> </ol>
Import IP addresses	<p>For information about the import file format, see “Importing system information for discovery” on page 35.</p> <ol style="list-style-type: none"> <li>1. Select <b>Import</b>.</li> <li>2. In the <b>Select the file that you want to import</b> field, type in the name of the import file or click <b>Browse</b> to search for the file. <b>Notes:</b> <ol style="list-style-type: none"> <li>a. The file must be located on the system running the Web browser that you are using to view IBM Systems Director.</li> <li>b. Make sure that the file you use is a line delimited file with one IP address or one IP address range per line.</li> </ol> </li> <li>3. Click <b>OK</b> to import the IP addresses.</li> </ol>

12. If configuring multicast and broadcast, select to enable either and set the timeout period.
  - a. Select **Enable multicast** to enable multicast.
  - b. In the **Timeout period (seconds)** field, select the number of seconds for the server to wait until timing out.
  - c. Select **Enable general broadcast** to enable general broadcast.
13. If configuring directory agents, specify either an IP address or a host name and set the scope.

Option	Description
Add a directory agent using its IP address	<ol style="list-style-type: none"> <li>1. Select <b>Add IP address</b>.</li> <li>2. In the <b>IP address</b> field, type the IP address of the directory agent that you want to discover.</li> <li>3. Click <b>Add</b> to add the IP address to the list.</li> <li>4. Repeat this procedure until you have added all the IP addresses.</li> </ol>
Add a directory agent using its host name	<ol style="list-style-type: none"> <li>1. Select <b>Add host name</b>.</li> <li>2. In the <b>Host name</b> field, type the host name of the directory agent that you want to discover.</li> <li>3. Click <b>Add</b> to add the host name to the list.</li> <li>4. Repeat this procedure until you have added all the host names.</li> </ol>

Each directory agent is associated with a scope. A discovery request is targeted to find only those directory agents that are associated with the specified scope. The directory agent shipped with IBM Systems Director has a default scope of DEFAULT and that is the default scope value used when searching for directory agents. If you want to search for directory agents with scopes other than DEFAULT, complete the following steps:

- a. In the **Scope** field, type the name of a scope that you have defined previously.
- b. Click **Add** to add the scope to the list.
- c. Repeat this procedure until you have added all the scopes.

For more information about setting up and configuring directory agents, see the following:

- <http://www.openslp.org/doc/html/UsersGuide/Installation.html>
- 

14. Click **Next**. The Access request page is displayed.
15. Optional: When setting access request automation, you can choose to deactivate or activate (with the appropriate login information) the feature.

Option	Description
<b>Activating access request automation</b>	<ol style="list-style-type: none"> <li>1. Select <b>Activate - use the following user login information</b>.</li> <li>2. In the <b>User ID</b> field, type a valid user ID for the resource.</li> <li>3. In the <b>Password</b> field, type the password for the user ID.</li> </ol> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>• You can specify only one user ID and password. It is recommended that the user ID have full supervisor privileges.</li> <li>• To accommodate multiple user IDs, copy this discovery profile for each user ID and change the user ID and password information in the copied discovery profile.</li> </ul>
<b>Deactivating access request automation</b>	Select <b>Deactivate</b> .

16. Click **Next**. The Summary page is displayed.
17. Click **Finish**. The profile is displayed on the Advanced System Discovery page.
18. Select the newly created profile and click **Run**. The Run - Advanced Systems Discovery window is displayed.
19. By default, **Run Now** is selected. To run the discovery profile immediately, click **OK**. To learn about scheduling the profile to run at a specific time, see "Scheduling a discovery" on page 33.

## Discovering systems running IBM Director Agent 5.10 and 5.20

You can use advanced discovery to create and run a discovery profile specifically designed to discover IBM Director Agent, versions 5.10 and 5.20.

## About this task

**Note:** Access request automation and inventory discovery automation are not supported by the Interprocess Communication (IPC) protocol. Instead, you must request access and collect inventory manually using the tasks provided by IBM Systems Director.

To discover systems running IBM Director Agent, complete the following steps:

1. On the Discovery Manager summary page, click **Advanced System Discovery** under Optional tasks.
2. On the Advanced System Discovery page, click **Create**. The Advanced Discovery Wizard opens and the Welcome page is displayed.
3. Click **Next**. The Profile Properties page is displayed.
4. In the **Profile name** field, type a descriptive name for the profile.
5. In the **System type** list, select **Operating System**.
6. In the **System subtype** list, select **Systems with Common Agent**.
7. In the **Profile description** field, type a brief description for the profile.
8. Click **Next**. The Protocol Selection page is displayed.
9. Select **IPC Discovery** for the discovery profile.
10. Click **Next**. The IPC Configuration page is displayed.
11. Select one or more methods that you want to use to discover your resources.

**Attention:** This page allows you to configure settings for all available methods: unicast, multicast, general broadcast, directed broadcast, and relay broadcast. The profile will use each method that you configure.

Option	Description
<b>Unicast</b>	<p>The recommended method to discover instances of IBM Director Agent when the network configuration does not allow multicast or when you can specify the IP addresses for the systems you want to discover. Unicast goes directly to each IP address and determines if there is an agent.</p> <p>The most efficient and quick way to provide a specific list of IP addresses to discover is to import a list of all known IBM Director Agent IP addresses.</p>
<b>Multicast and broadcast</b>	<p>(Default) Multicast and broadcast is the preferred discovery choice, especially when you do not know the IP addresses for the systems you want to discover. However, your network configuration must support multicast and broadcast. (When your network configuration does not support multicast and broadcast, unicast is recommended.)</p> <p>Using multicast and broadcast, IBM Systems Director sends packets only once. Multicast-enabled routers relay the packets to the IP addresses of the listening resources (even across multiple subnets) to discover service agents.</p>
<b>General broadcast</b>	<p>General broadcast requires no configuration. However, this method typically does not perform well across subnets due to network and routing limitations. When you enable general broadcast, IBM Systems Director issues a general IP broadcast to discover service agents. Some environments might not allow the use of general IP broadcast to discover systems, in which case do not select this option.</p>

Option	Description
Relay broadcast	Requires minimal configuration and provides discovery across subnets. This discovery method is useful when IBM Systems Director and the managed systems belong to different subnets and the network is configured to filter broadcast requests across those subnets.

12. If configuring unicast, you can add IP addresses either individually or as a range, or you can import the addresses.

Option	Description
Add a single IP address	<ol style="list-style-type: none"> <li>1. Select <b>Add a single IP address</b>.</li> <li>2. In the <b>Single IP address or beginning range</b> field, type the IP address of the resource that you want to discover.</li> <li>3. Click <b>Add</b> to add the IP address to the list.</li> <li>4. Repeat this procedure until you have added all the IP addresses.</li> </ol>
Add a range of IP addresses	<p><b>Note:</b> For best practice recommendations about IP address ranges, see “Tips for efficient discovery” on page 9.</p> <ol style="list-style-type: none"> <li>1. Select <b>Add a range of IP addresses</b>.</li> <li>2. For the IP address range that contains the resources that you want to discover, type the first IP address value in the <b>Single IP address or beginning range</b> field and the last IP address value in the <b>Ending range</b> field. <b>Note:</b> The maximum permitted range of IP addresses is 254.</li> <li>3. Click <b>Add</b> to add the IP addresses to the list.</li> <li>4. Repeat this procedure until you have added all the IP address ranges.</li> </ol>
Import IP addresses	<p>For information about the import file format, see “Importing system information for discovery” on page 35.</p> <ol style="list-style-type: none"> <li>1. Select <b>Import</b>.</li> <li>2. In the <b>Select the file that you want to import</b> field, type in the name of the import file or click <b>Browse</b> to search for the file. <b>Notes:</b> <ol style="list-style-type: none"> <li>a. The file must be located on the system running the Web browser that you are using to view IBM Systems Director.</li> <li>b. Make sure that the file you use is a line delimited file with one IP address or one IP address range per line.</li> </ol> </li> <li>3. Click <b>OK</b> to import the IP addresses.</li> </ol>

13. If configuring multicast and broadcast, select to enable either, configure them, and set the timeout period.
- a. To enable multicast, select **Enable multicast** and in the **Multicast IP address** field, type the IP address that multicast discovery will use.
  - b. In the **Timeout period (seconds)** field, select the number of seconds for the server to wait until timing out.
  - c. To enable general broadcast, select **Enable general broadcast**.
  - d. To enable directed broadcast, select **Enable directed broadcast** and in the **IP address** field, type the IP address that directed broadcast discovery will use. In the **Subnet mask** field, type the subnet mask that directed broadcast discovery will use.

14. If configuring relay broadcast, specify an instance of IBM Director Agent that will send the broadcast.
  - a. In the **IP address** field, type the IP address of IBM Director Agent.
  - b. In the **Subnet mask** field, type the subnet mask of IBM Director Agent.
  - c. Click **Add** to add the host name to the **Table of relay data** list.
  - d. Repeat this procedure until you have added all instances of IBM Director Agent.
  - e. To remove an instance of IBM Director Agent from the list, select it and click **Delete**.
15. Click **Next**. The Access request page is displayed.
16. When setting access request automation, you can choose to deactivate or activate (with the appropriate login information) the feature.

Option	Description
Activating access request automation	<ol style="list-style-type: none"> <li>1. Select <b>Activate - use the following user login information</b>.</li> <li>2. In the <b>User ID</b> field, type a valid user ID for the resource.</li> <li>3. In the <b>Password</b> field, type the password for the user ID.</li> </ol> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>• You can specify only one user ID and password. It is recommended that the user ID have full supervisor privileges.</li> <li>• To accommodate multiple user IDs, copy this discovery profile for each user ID and change the user ID and password information in the copied discovery profile.</li> </ul>
Deactivating access request automation	Select <b>Deactivate</b> .

17. Click **Next**. The Inventory Discovery page is displayed.
18. Optional: When setting inventory discovery automation, you can choose to deactivate or activate (with an associated inventory profile) the feature.

**Note:** If you want to activate inventory discovery automation, you need to also activate access request automation. Performing the inventory discovery can add a significant load on the IBM Systems Director server and slow the overall discovery process.

Option	Description
Activating inventory discovery automation	<ol style="list-style-type: none"> <li>1. Select <b>Activate - use the following inventory profile</b>.</li> <li>2. Select <b>Default profile</b>.</li> </ol>
Deactivating inventory discovery automation	Select <b>Deactivate</b> .

19. Click **Next**. The Summary page is displayed.
20. Click **Finish**. The profile is displayed on the Advanced System Discovery page.
21. Select the newly created profile and click **Run**. The Run - Advanced Systems Discovery window is displayed.

22. By default, **Run Now** is selected. To run the discovery profile immediately, click **OK**. To learn about scheduling the profile to run at a specific time, see “Scheduling a discovery” on page 33.

## Discovering systems running Common Agent 6.1 or later

You can use advanced discovery to create and run a discovery profile specifically designed to discover Common Agent version 6.1 or later.

### About this task

To discover systems running Common Agent, complete the following steps:

1. On the Discovery Manager summary page, click **Advanced System Discovery** under Optional tasks.
2. On the Advanced System Discovery page, click **Create**. The Advanced Discovery Wizard opens and the Welcome page is displayed.
3. Click **Next**. The Profile Properties page is displayed.
4. In the **Profile name** field, type a descriptive name for the profile.
5. In the **System type** list, select **Operating System**.
6. In the **System subtype** list, select **Systems with Common Agent**.
7. In the **Profile description** field, type a brief description for the profile.
8. Click **Next**. The Protocol Selection page is displayed.
9. Select **Common Agent Services (CAS) Discovery** for the discovery profile.
10. Click **Next**. The CAS Configuration page is displayed.
11. Select the discovery method to discover your resources.

**Attention:** Do not configure unicast and also configure multicast or broadcast for this type of profile. This configuration page allows you to configure information for unicast, multicast, broadcast, and directory agents at the same time. However, when you configure unicast and also configure multicast or broadcast, only unicast is used. (Discovery uses Directory agents whenever you enable them, in addition to unicast, multicast, or broadcast.) If you do configure more than one method, the following priorities determine which method is used to perform the discovery:

- a. Multicast and broadcast is the default choice. You can configure either or both, and this configuration is used if you do not configure unicast.
- b. Unicast is used when it is configured. When unicast is configured, multicast and broadcast are not used.
- c. Directory agents are used when they are configured, in addition to unicast, multicast, or broadcast.

Option	Description
Unicast	<p>The recommended method to discover instances of Common Agent when the network configuration does not allow multicast or when you can specify the IP addresses for the systems you want to discover. Unicast goes directly to each IP address and determines if there is an agent.</p> <p>The easiest way to provide a list of IP addresses to discover is to import a list of all known Common Agent IP addresses.</p>

Option	Description
Directory agents	Directory agents can discover a very large number of resources in a very efficient manner. However, you must setup and configure your own directory agent. For more information, see <a href="http://www.openslp.org/doc/html/UsersGuide/Installation.html">http://www.openslp.org/doc/html/UsersGuide/Installation.html</a> .
Multicast and broadcast	(Default) Multicast and broadcast is the preferred discovery choice, especially when you do not know the IP addresses for the systems you want to discover. However, your network configuration must support multicast and broadcast. (When your network configuration does not support multicast and broadcast, unicast is recommended.)  Using multicast and broadcast, IBM Systems Director sends packets only once. Multicast-enabled routers relay the packets to the IP addresses of the listening resources (even across multiple subnets) to discover service agents.

12. If configuring unicast, you can add IP addresses either individually or as a range, or you can import the addresses.

Option	Description
Add a single IP address	<ol style="list-style-type: none"> <li>1. Select <b>Add a single IP address</b>.</li> <li>2. In the <b>Single IP address or beginning range</b> field, type the IP address of the resource that you want to discover.</li> <li>3. Click <b>Add</b> to add the IP address to the list.</li> <li>4. Repeat this procedure until you have added all the IP addresses.</li> </ol>
Add a range of IP addresses	<p><b>Note:</b> For best practice recommendations about IP address ranges, see “Tips for efficient discovery” on page 9.</p> <ol style="list-style-type: none"> <li>1. Select <b>Add a range of IP addresses</b>.</li> <li>2. For the IP address range that contains the resources that you want to discover, type the first IP address value in the <b>Single IP address or beginning range</b> field and the last IP address value in the <b>Ending range</b> field. <b>Note:</b> The maximum permitted range of IP addresses is 254.</li> <li>3. Click <b>Add</b> to add the IP addresses to the list.</li> <li>4. Repeat this procedure until you have added all the IP address ranges.</li> </ol>
Import IP addresses	<p>For information about the import file format, see “Importing system information for discovery” on page 35.</p> <ol style="list-style-type: none"> <li>1. Select <b>Import</b>.</li> <li>2. In the <b>Select the file that you want to import</b> field, type in the name of the import file or click <b>Browse</b> to search for the file. <b>Notes:</b> <ol style="list-style-type: none"> <li>a. The file must be located on the system running the Web browser that you are using to view IBM Systems Director.</li> <li>b. Make sure that the file you use is a line delimited file with one IP address or one IP address range per line.</li> </ol> </li> <li>3. Click <b>OK</b> to import the IP addresses.</li> </ol>

13. If configuring multicast and broadcast, select to enable either and set the timeout period.

- a. Select **Enable multicast** to enable multicast.
  - b. In the **Timeout period (seconds)** field, select the number of seconds for the server to wait until timing out.
  - c. Select **Enable general broadcast** to enable general broadcast.
14. If configuring directory agents, specify either an IP address or a host name and set the scope.

Option	Description
<b>Add a directory agent using its IP address</b>	<ol style="list-style-type: none"> <li>1. Select <b>Add IP address</b>.</li> <li>2. In the <b>IP address</b> field, type the IP address of the directory agent that you want to discover.</li> <li>3. Click <b>Add</b> to add the IP address to the list.</li> <li>4. Repeat this procedure until you have added all the IP addresses.</li> </ol>
<b>Add a directory agent using its host name</b>	<ol style="list-style-type: none"> <li>1. Select <b>Add host name</b>.</li> <li>2. In the <b>Host name</b> field, type the host name of the directory agent that you want to discover.</li> <li>3. Click <b>Add</b> to add the host name to the list.</li> <li>4. Repeat this procedure until you have added all the host names.</li> </ol>

Each directory agent is associated with a scope. A discovery request is targeted to find only those directory agents that are associated with the specified scope. The directory agent shipped with IBM Systems Director has a default scope of DEFAULT and that is the default scope value used when searching for directory agents. If you want to search for directory agents with scopes other than DEFAULT, complete the following steps:

- a. In the **Scope** field, type the name of a scope that you have defined previously.
- b. Click **Add** to add the scope to the list.
- c. Repeat this procedure until you have added all the scopes.

For more information about setting up and configuring directory agents, see the following:

- <http://www.openslp.org/doc/html/UsersGuide/Installation.html>
- 

15. Click **Next**. The Access request page is displayed.
16. When setting access request automation, you can choose to deactivate or activate (with the appropriate login information) the feature.

Option	Description
<b>Activating access request automation</b>	<ol style="list-style-type: none"> <li>1. Select <b>Activate - use the following user login information</b>.</li> <li>2. In the <b>User ID</b> field, type a valid user ID for the resource.</li> <li>3. In the <b>Password</b> field, type the password for the user ID.</li> </ol> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>• You can specify only one user ID and password. It is recommended that the user ID have full supervisor privileges.</li> <li>• To accommodate multiple user IDs, copy this discovery profile for each user ID and change the user ID and password information in the copied discovery profile.</li> </ul>

Option	Description
Deactivating access request automation	Select <b>Deactivate</b> .

17. Click **Next**. The Inventory Discovery page is displayed.
18. Optional: When setting inventory discovery automation, you can choose to deactivate or activate (with an associated inventory profile) the feature.

**Note:** If you want to activate inventory discovery automation, you need to also activate access request automation. Performing the inventory discovery can add a significant load on the IBM Systems Director server and slow the overall discovery process.

Option	Description
Activating inventory discovery automation	1. Select <b>Activate - use the following inventory profile</b> . 2. Select <b>Default profile</b> .
Deactivating inventory discovery automation	Select <b>Deactivate</b> .

19. Click **Next**. The Summary page is displayed.
20. Click **Finish**. The profile is displayed on the Advanced System Discovery page.
21. Select the newly created profile and click **Run**. The Run - Advanced Systems Discovery window is displayed.
22. By default, **Run Now** is selected. To run the discovery profile immediately, click **OK**. To learn about scheduling the profile to run at a specific time, see "Scheduling a discovery" on page 33.

## Discovering systems running Platform Agent

You can use advanced discovery to create and run a discovery profile specifically designed to discover IBM Systems Director Platform Agent, version 6.1 or later.

### About this task

To discover systems running Platform Agent, complete the following steps:

1. On the Discovery Manager summary page, click **Advanced System Discovery** under Optional tasks.
2. On the Advanced System Discovery page, click **Create**. The Advanced Discovery Wizard opens and the Welcome page is displayed.
3. Click **Next**. The Profile Properties page is displayed.
4. In the **Profile name** field, type a descriptive name for the profile.
5. In the **System type** list, select **Operating System**.
6. In the **System subtype** list, select **Systems with Platform Agent**.
7. In the **Profile description** field, type a brief description for the profile.
8. Click **Next**. The Protocol Selection page is displayed.
9. Select **Common Information Model (CIM) Discovery** for the discovery profile.
10. Click **Next**. The CIM Configuration page is displayed.
11. Select the discovery method to discover your resources.

**Attention:** Do not configure unicast and also configure multicast or broadcast for this type of profile. This configuration page allows you to configure information for unicast, multicast, broadcast, and directory agents at the same time. However, when you configure unicast and also configure multicast or broadcast, only unicast is used. (Discovery uses Directory agents whenever you enable them, in addition to unicast, multicast, or broadcast.) If you do configure more than one method, the following priorities determine which method is used to perform the discovery:

- a. Multicast and broadcast is the default choice. You can configure either or both, and this configuration is used if you do not configure unicast.
- b. Unicast is used when it is configured. When unicast is configured, multicast and broadcast are not used.
- c. Directory agents are used when they are configured, in addition to unicast, multicast, or broadcast.

Option	Description
<b>Unicast</b>	<p>The recommended method to discover instances of Platform Agent when the network configuration does not allow multicast or when you can specify the IP addresses for the systems you want to discover. Unicast goes directly to each IP address and determines if there is an agent.</p> <p>The most efficient and quick way to provide a list of IP addresses to discover is to import a list of all known Platform Agent IP addresses.</p>
<b>Directory agents</b>	<p>Directory agents can discover a very large number of resources in a very efficient manner. However, you must setup and configure their own directory agent.</p>
<b>Multicast and broadcast</b>	<p>(Default) Multicast and broadcast is the preferred discovery choice, especially when you do not know the IP addresses for the systems you want to discover. However, your network configuration must support multicast and broadcast. (When your network configuration does not support multicast and broadcast, unicast is recommended.)</p> <p>Using multicast and broadcast, IBM Systems Director sends packets only once. Multicast-enabled routers relay the packets to the IP addresses of the listening resources (even across multiple subnets) to discover service agents.</p>

12. If configuring unicast, you can add IP addresses either individually or as a range, or you can import the addresses.

Option	Description
<b>Add a single IP address</b>	<ol style="list-style-type: none"> <li>1. Select <b>Add a single IP address</b>.</li> <li>2. In the <b>Single IP address or beginning range</b> field, type the IP address of the resource that you want to discover.</li> <li>3. Click <b>Add</b> to add the IP address to the list.</li> <li>4. Repeat this procedure until you have added all the IP addresses.</li> </ol>

Option	Description
<b>Add a range of IP addresses</b>	<p><b>Note:</b> For best practice recommendations about IP address ranges, see “Tips for efficient discovery” on page 9.</p> <ol style="list-style-type: none"> <li>1. Select <b>Add a range of IP addresses</b>.</li> <li>2. For the IP address range that contains the resources that you want to discover, type the first IP address value in the <b>Single IP address or beginning range</b> field and the last IP address value in the <b>Ending range</b> field.  <b>Note:</b> The maximum permitted range of IP addresses is 254.</li> <li>3. Click <b>Add</b> to add the IP addresses to the list.</li> <li>4. Repeat this procedure until you have added all the IP address ranges.</li> </ol>
<b>Import IP addresses</b>	<p>For information about the import file format, see “Importing system information for discovery” on page 35.</p> <ol style="list-style-type: none"> <li>1. Select <b>Import</b>.</li> <li>2. In the <b>Select the file that you want to import</b> field, type in the name of the import file or click <b>Browse</b> to search for the file.  <b>Notes:</b> <ol style="list-style-type: none"> <li>a. The file must be located on the system running the Web browser that you are using to view IBM Systems Director.</li> <li>b. Make sure that the file you use is a line delimited file with one IP address or one IP address range per line.</li> </ol> </li> <li>3. Click <b>OK</b> to import the IP addresses.</li> </ol>

13. If configuring multicast and broadcast, select to enable either and set the timeout period.
  - a. Select **Enable multicast** to enable multicast.
  - b. In the **Timeout period (seconds)** field, select the number of seconds for the server to wait until timing out.
  - c. Select **Enable general broadcast** to enable general broadcast.
14. If configuring directory agents, specify either an IP address or a host name and set the scope.

Option	Description
<b>Add a directory agent using its IP address</b>	<ol style="list-style-type: none"> <li>1. Select <b>Add IP address</b>.</li> <li>2. In the <b>IP address</b> field, type the IP address of the directory agent that you want to discover.</li> <li>3. Click <b>Add</b> to add the IP address to the list.</li> <li>4. Repeat this procedure until you have added all the IP addresses.</li> </ol>
<b>Add a directory agent using its host name</b>	<ol style="list-style-type: none"> <li>1. Select <b>Add host name</b>.</li> <li>2. In the <b>Host name</b> field, type the host name of the directory agent that you want to discover.</li> <li>3. Click <b>Add</b> to add the host name to the list.</li> <li>4. Repeat this procedure until you have added all the host names.</li> </ol>

Each directory agent is associated with a scope. A discovery request is targeted to find only those directory agents that are associated with the specified scope. The directory agent shipped with IBM Systems Director has a default scope of DEFAULT and that is the default scope value used when searching for directory agents. If you want to search for directory agents with scopes other than DEFAULT, complete the following steps:

- a. In the **Scope** field, type the name of a scope that you have defined previously.
- b. Click **Add** to add the scope to the list.
- c. Repeat this procedure until you have added all the scopes.

For more information about setting up and configuring directory agents, see the following:

- <http://www.openslp.org/doc/html/UsersGuide/Installation.html>
- 

15. Click **Next**. The Access request page is displayed.
16. When setting access request automation, you can choose to deactivate or activate (with the appropriate login information) the feature.

Option	Description
Activating access request automation	<ol style="list-style-type: none"> <li>1. Select <b>Activate - use the following user login information</b>.</li> <li>2. In the <b>User ID</b> field, type a valid user ID for the resource.</li> <li>3. In the <b>Password</b> field, type the password for the user ID.</li> </ol> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>• You can specify only one user ID and password. It is recommended that the user ID have full supervisor privileges.</li> <li>• To accommodate multiple user IDs, copy this discovery profile for each user ID and change the user ID and password information in the copied discovery profile.</li> </ul>
Deactivating access request automation	Select <b>Deactivate</b> .

17. Click **Next**. The Inventory Discovery page is displayed.
18. Optional: When setting inventory discovery automation, you can choose to deactivate or activate (with an associated inventory profile) the feature.

**Note:** If you want to activate inventory discovery automation, you need to also activate access request automation. Performing the inventory discovery can add a significant load on the IBM Systems Director server and slow the overall discovery process.

Option	Description
Activating inventory discovery automation	<ol style="list-style-type: none"> <li>1. Select <b>Activate - use the following inventory profile</b>.</li> <li>2. Select <b>Default profile</b>.</li> </ol>
Deactivating inventory discovery automation	Select <b>Deactivate</b> .

19. Click **Next**. The Summary page is displayed.
20. Click **Finish**. The profile is displayed on the Advanced System Discovery page.
21. Select the newly created profile and click **Run**. The Run - Advanced Systems Discovery window is displayed.
22. By default, **Run Now** is selected. To run the discovery profile immediately, click **OK**. To learn about scheduling the profile to run at a specific time, see "Scheduling a discovery" on page 33.

## Discovering agentless-managed systems running Linux

You can use advanced discovery to create and run a discovery profile specifically designed to discover agentless-managed systems running Linux.

### About this task

To discover agentless-managed systems running Linux, complete the following steps:

1. On the Discovery Manager summary page, click **Advanced System Discovery** under Optional tasks.
2. On the Advanced System Discovery page, click **Create**. The Advanced Discovery Wizard opens and the Welcome page is displayed.
3. Click **Next**. The Profile Properties page is displayed.
4. In the **Profile name** field, type a descriptive name for the profile.
5. In the **System type** list, select **Operating System**.
6. In the **System subtype** list, select **Systems with No Agent**.
7. In the **Profile description** field, type a brief description for the profile.
8. Click **Next**. The Protocol Selection page is displayed.
9. Select **Secure Shell (SSH) Discovery** for the discovery profile.
10. Click **Next**. The SSH Configuration page is displayed.
11. Configure either unicast or multicast and broadcast (general or directed) to discover your resources and then optionally configure broadcast relays. You can configure one or more of the following methods:
12. Add the IP addresses either individually or as a range, or you can import the addresses.

Option	Description
Add a single IP address	<ol style="list-style-type: none"><li>1. Select <b>Add a single IP address</b>.</li><li>2. In the <b>Single IP address or beginning range</b> field, type the IP address of the resource that you want to discover.</li><li>3. Click <b>Add</b> to add the IP address to the list.</li><li>4. Repeat this procedure until you have added all the IP addresses.</li></ol>
Add a range of IP addresses	<p><b>Note:</b> For best practice recommendations about IP address ranges, see “Tips for efficient discovery” on page 9.</p> <ol style="list-style-type: none"><li>1. Select <b>Add a range of IP addresses</b>.</li><li>2. For the IP address range that contains the resources that you want to discover, type the first IP address value in the <b>Single IP address or beginning range</b> field and the last IP address value in the <b>Ending range</b> field. <b>Note:</b> The maximum permitted range of IP addresses is 254.</li><li>3. Click <b>Add</b> to add the IP addresses to the list.</li><li>4. Repeat this procedure until you have added all the IP address ranges.</li></ol>

Option	Description
<b>Import IP addresses</b>	<p>For information about the import file format, see “Importing system information for discovery” on page 35.</p> <ol style="list-style-type: none"> <li>1. Select <b>Import</b>.</li> <li>2. In the <b>Select the file that you want to import</b> field, type in the name of the import file or click <b>Browse</b> to search for the file.</li> </ol> <p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>a. The file must be located on the system running the Web browser that you are using to view IBM Systems Director.</li> <li>b. Make sure that the file you use is a line delimited file with one IP address or one IP address range per line.</li> </ol> <ol style="list-style-type: none"> <li>3. Click <b>OK</b> to import the IP addresses.</li> </ol>

13. Click **Next**. The Access request page is displayed.
14. When setting access request automation, you can choose to deactivate or activate (with the appropriate login information) the feature.

Option	Description
<b>Activating access request automation</b>	<ol style="list-style-type: none"> <li>1. Select <b>Activate - use the following user login information</b>.</li> <li>2. In the <b>User ID</b> field, type a valid user ID for the resource.</li> <li>3. In the <b>Password</b> field, type the password for the user ID.</li> </ol> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>• You can specify only one user ID and password. It is recommended that the user ID have full supervisor privileges.</li> <li>• To accommodate multiple user IDs, copy this discovery profile for each user ID and change the user ID and password information in the copied discovery profile.</li> </ul>
<b>Deactivating access request automation</b>	Select <b>Deactivate</b> .

15. Click **Next**. The Inventory Discovery page is displayed.
16. Optional: When setting inventory discovery automation, you can choose to deactivate or activate (with an associated inventory profile) the feature.

**Note:** If you want to activate inventory discovery automation, you need to also activate access request automation. Performing the inventory discovery can add a significant load on the IBM Systems Director server and slow the overall discovery process.

Option	Description
<b>Activating inventory discovery automation</b>	<ol style="list-style-type: none"> <li>1. Select <b>Activate - use the following inventory profile</b>.</li> <li>2. Select <b>Default profile</b>.</li> </ol>
<b>Deactivating inventory discovery automation</b>	Select <b>Deactivate</b> .

17. Click **Next**. The Summary page is displayed.
18. Click **Finish**. The profile is displayed on the Advanced System Discovery page.

19. Select the newly created profile and click **Run**. The Run - Advanced Systems Discovery window is displayed.
20. By default, **Run Now** is selected. To run the discovery profile immediately, click **OK**. To learn about scheduling the profile to run at a specific time, see “Scheduling a discovery” on page 33.

## Discovering agentless-managed systems running Windows

You can use advanced discovery to create and run a discovery profile specifically designed to discover agentless-managed systems running Windows.

### About this task

To discover agentless-managed systems running Windows, complete the following steps:

1. On the Discovery Manager summary page, click **Advanced System Discovery** under Optional tasks.
2. On the Advanced System Discovery page, click **Create**. The Advanced Discovery Wizard opens and the Welcome page is displayed.
3. Click **Next**. The Profile Properties page is displayed.
4. In the **Profile name** field, type a descriptive name for the profile.
5. In the **System type** list, select **Operating System**.
6. In the **System subtype** list, select **Systems with No Agent**.
7. In the **Profile description** field, type a brief description for the profile.
8. Click **Next**. The Protocol Selection page is displayed.
9. Select **Windows (DCOM) Discovery** for the discovery profile.
10. Click **Next**. The DCOM Configuration page is displayed.
11. Add the IP addresses either individually or as a range, or you can import the addresses.

Option	Description
Add a single IP address	<ol style="list-style-type: none"> <li>1. Select <b>Add a single IP address</b>.</li> <li>2. In the <b>Single IP address or beginning range</b> field, type the IP address of the resource that you want to discover.</li> <li>3. Click <b>Add</b> to add the IP address to the list.</li> <li>4. Repeat this procedure until you have added all the IP addresses.</li> </ol>
Add a range of IP addresses	<p><b>Note:</b> For best practice recommendations about IP address ranges, see “Tips for efficient discovery” on page 9.</p> <ol style="list-style-type: none"> <li>1. Select <b>Add a range of IP addresses</b>.</li> <li>2. For the IP address range that contains the resources that you want to discover, type the first IP address value in the <b>Single IP address or beginning range</b> field and the last IP address value in the <b>Ending range</b> field. <b>Note:</b> The maximum permitted range of IP addresses is 254.</li> <li>3. Click <b>Add</b> to add the IP addresses to the list.</li> <li>4. Repeat this procedure until you have added all the IP address ranges.</li> </ol>

Option	Description
<b>Import IP addresses</b>	<p>For information about the import file format, see “Importing system information for discovery” on page 35.</p> <ol style="list-style-type: none"> <li>1. Select <b>Import</b>.</li> <li>2. In the <b>Select the file that you want to import</b> field, type in the name of the import file or click <b>Browse</b> to search for the file.</li> </ol> <p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>a. The file must be located on the system running the Web browser that you are using to view IBM Systems Director.</li> <li>b. Make sure that the file you use is a line delimited file with one IP address or one IP address range per line.</li> </ol> <ol style="list-style-type: none"> <li>3. Click <b>OK</b> to import the IP addresses.</li> </ol>

12. Click **Next**. The Access request page is displayed.
13. When setting access request automation, you can choose to deactivate or activate (with the appropriate login information) the feature.

Option	Description
<b>Activating access request automation</b>	<ol style="list-style-type: none"> <li>1. Select <b>Activate - use the following user login information</b>.</li> <li>2. In the <b>User ID</b> field, type a valid user ID for the resource.</li> <li>3. In the <b>Password</b> field, type the password for the user ID.</li> </ol> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>• You can specify only one user ID and password. It is recommended that the user ID have full supervisor privileges.</li> <li>• To accommodate multiple user IDs, copy this discovery profile for each user ID and change the user ID and password information in the copied discovery profile.</li> </ul>
<b>Deactivating access request automation</b>	Select <b>Deactivate</b> .

14. Click **Next**. The Inventory Discovery page is displayed.
15. Optional: When setting inventory discovery automation, you can choose to deactivate or activate (with an associated inventory profile) the feature.

**Note:** If you want to activate inventory discovery automation, you need to also activate access request automation. Performing the inventory discovery can add a significant load on the IBM Systems Director server and slow the overall discovery process.

Option	Description
<b>Activating inventory discovery automation</b>	<ol style="list-style-type: none"> <li>1. Select <b>Activate - use the following inventory profile</b>.</li> <li>2. Select <b>Default profile</b>.</li> </ol>
<b>Deactivating inventory discovery automation</b>	Select <b>Deactivate</b> .

16. Click **Next**. The Summary page is displayed.
17. Click **Finish**. The profile is displayed on the Advanced System Discovery page.

18. Select the newly created profile and click **Run**. The Run - Advanced Systems Discovery window is displayed.
19. By default, **Run Now** is selected. To run the discovery profile immediately, click **OK**. To learn about scheduling the profile to run at a specific time, see "Scheduling a discovery."

---

## Scheduling a discovery

After you create a discovery profile, you can schedule to run that discovery at a later time or immediately.

### Before you begin

#### Best practice recommendations:

- If you have a dynamic environment, especially one where new systems are continually deployed, consider running Advanced system discovery on a reoccurring schedule to make sure your list of systems is current.
- Do not schedule a discovery to run too frequently. Very frequent discoveries can negatively affect IBM Systems Director Server.
- Schedule discoveries to start after making network changes (when systems are added, system configurations change, and so on).
- The frequency for scheduled discoveries should be in days, rather than hours.
- When you schedule or write a script to discover a block of systems, and you also request access or automatically collect inventory, make sure you add sufficient wait time for all the actions to complete.

### About this task

To schedule a discovery, complete the following steps:

1. On the Advanced System Discovery page, select the discovery profile that you want to schedule and click **Run**.
2. The Run window opens and the Schedule page is displayed. On this page, you can choose to run the discovery (job) immediately or schedule the discovery to run at a later time.
  - a. A job name is required and the **Name** field provides a unique default name. To change the default name, type a job name in the field.
  - b. To run the job immediately, select **Run**. Otherwise, select **Schedule** to display a list of scheduling options.
  - c. In the **Schedule** list, select how frequently you want the job to run. The default setting is **Once**. Other values are Hourly, Daily, Weekly, Monthly, Yearly, or Custom. Also, you can specify whether to run the job on the weekend.
  - d. Select the time and date to run the job for the first time.
  - e. Select the time range for the job to repeat.
3. Click the **Notification** tab. On this page you can customize a notification that is sent by e-mail.
  - a. Select from the available criteria to customize when the e-mail notification is sent. You can specify that the e-mail be sent when one of the following criteria is met:
    - When the job begins.
    - When the job completes successfully.

- When the job fails. You can further customize this criterion to send notification when the job encounters any error, when the job encounters errors on a specified percentage of target systems, or when the job encounters errors on a specified number of systems. For example, if a job running on five systems encounters errors on two of the systems, and you have set the criterion threshold to 40%, the job sends the notification. If the job encounters errors on only one system, the notification is *not* sent.
- b. Type your e-mail address, e-mail server, and the port number for the e-mail server.

**Tip:** You can provide only one e-mail address.

4. Click the **Options** tab. On this page you can customize whether you want to use the time as set on the server or the target system. You can also specify whether you want the job to fail if a target system is unavailable or wait for the target system to become available.
5. Click **OK** to either run the job immediately or save the job, depending on your previous choices.

Click **Cancel** to exit from the Run window without running or saving the job.

If the job is created successfully, a message is displayed on the page from which you started the Scheduler. If the job creation fails, a message is displayed in the Run window so that you can correct the job.

## Results

The job is displayed on the Active and Scheduled Jobs page.

---

## Determining the progress of a discovery job

Because an advanced system discovery is run as a job, a progress indicator is not provided on the Advanced System Discovery page. However, a progress indicator for the job (*not* for the discovery process itself) is provided when you view the Properties page.

### Before you begin

Using the following best practice recommendations can help you monitor the progress of a discovery and possibly reduce the time required to complete it.

#### Best practice recommendations:

- Avoid managing newly discovered resources for a period of time after the discovery task finishes, because associated processing continues to run.
- When you schedule or write a script to discover a block of systems, and you also request access or automatically collect inventory, make sure you add sufficient wait time for all the actions to complete.
- Only discover those systems that you intend to manage with IBM Systems Director. For example, if the management interfaces of your networking equipment are on a single subnet, yet you do not intend to manage your networking equipment with IBM Systems Director, do not discover devices on that subnet.
- When discovering a range of IP addresses, use the smallest range possible. For example, if you have a subnet 10.1.1.0/24, but all of your systems are within the first 100 addresses, use 10.1.1.1-10.1.1.100 as the range, instead of 10.1.1.1-10.1.1.254.

## About this task

After you click **OK** in the Run window, a confirmation message is displayed at the top of the Advanced System Discovery page. Included with this message is the Display Properties button. Click this button to view the job Properties page. On the Properties page, you can view information about the job including a progress indicator that reports the progress of the job if it is running when you view the job properties. It does *not* indicate the progress of the discovery process that is included in the job.

If you want to view the Properties page for a job later, you can use the Active and Scheduled Jobs task. To view information about active and scheduled jobs, complete the following steps:

1. In the IBM Systems Director navigation area, expand **Task Management** and click **Active and Scheduled Jobs**.
2. On the Active and Scheduled Jobs page, double-click the job that you want view. The Properties page is displayed.

---

## Importing system information for discovery

When you create a discovery profile in the Advanced Discovery wizard, you have the option of importing IP addresses from a file. This option is available for all protocol configurations except Agent Manager and Storage Management Initiative Specification (SMI-S).

### Before you begin

The import file must meet the following criteria:

- A simple, ASCII text file with a file extension of TXT.
- Located on the system running the Web browser that you are using to view IBM Systems Director.
- Only one IP address or one IP address range is listed per line.
- An IP address range is written *start-end* where *start* is the starting IP address of the range and *end* is the ending IP address of the range, for example:  
1.1.1.1-1.1.1.254

**Note:** It is recommended to limit an IP address range to a single subnet, or no more than 254 addresses.

- Host names cannot be used.

### About this task

When you specify your protocol configuration settings, select **Import** to import the file you created. A file field is displayed. You can type the file name or click **Browse** to navigate to the file and select it. When finished, click **OK**.

---

## Discovering resources using command-line commands

Use the discovery CLI command to discover resources.

### About this task

You can use the command-line interface (CLI) instead of the IBM Systems Director Web interface to discover resources.

**Note:** You cannot use the command-line interface (CLI) to create, modify, delete, list, import, or export discovery profiles or custom queries. To complete those tasks, use the IBM Systems Director Web interface instead.

Complete the following steps to use the CLI to discover resources.

Use the discover command with the applicable options to discover resources. The discover command can mimic either system discovery or advanced system discovery depending on the options that you set.

#### **System discovery**

Issue the following command to discover resources of a specified type within a specified set of host names or set or range of IP addresses:

```
smcli discover -t system_type -i host_name_or_ip_address_list_or_range
```

#### **Advanced system discovery**

**Note:** If you will use a profile to discover resources, you must first create the profile in the IBM Systems Director Web interface. See [Creating a discovery profile](#) for information.

Issue the following command to discover resources based on a predefined discovery profile or profiles:

```
smcli discover -p profile_list
```

See discover command for further information, including examples, and the full syntax details for the command.

---

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