



DistributedDirector Enhancements for Cisco IOS Release 12.1(5)T

This feature module describes the DistributedDirector Enhancements for Cisco IOS Release 12.1(5)T feature and includes the following sections:

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Feature Overview

The DistributedDirector Enhancements for Cisco IOS Release 12.1(5)T feature consists of the following modified features for the DistributedDirector, which were introduced in Cisco IOS Release 11.1(28)IA:

- Enhanced Fault Tolerance with Multiple Resource Records
- Event Recording with Syslog
- Enhanced Server Verification with Multiple Port Connect Tests

The DistributedDirector Enhancements for Cisco IOS Release 12.1(5)T feature also consists of several unrelated new commands. These commands can be found in the Command Reference section.

Enhanced Fault Tolerance with Multiple Resource Records

Before this enhancement, DistributedDirector would return a single Resource Record (RR) in each Domain Name System (DNS) response. A single RR is normally sufficient, but for some applications, server failover will occur more rapidly when applications are provided IP addresses of multiple servers.

The Enhanced Fault Tolerance with Multiple Resource Records feature enables DistributedDirector to return multiple RRs. The number of RRs returned in a single reply is configurable. The default number of RRs returned is one.

Event Recording with Syslog

The Event Recording with Syslog feature enables DistributedDirector to log events by way of the industry-standard syslog system. Server state is logged, providing a useful log of when servers are considered up or down. The logging priority level is notification with priority level five. Additionally, the server selection process, DNS request, and DNS response may be logged. The logging priority level is informational with priority level six.

Enhanced Server Verification with Multiple Port Connect Tests

Before this enhancement, DistributedDirector could evaluate server status by performing a TCP connect test to a single server port. The Enhanced Server Verification with Multiple Port Connect Tests feature allows multiple port connect tests to be specified. If any one of the connect tests fails, the server is considered down.

Benefits

The features provided in Cisco IOS Release 12.1(5)T help make networks that use DistributedDirector more robust. These features ensure that applications have more useful information and perform better server verification, and they allow administrators to track DistributedDirector better. In particular:

- The Enhanced Fault Tolerance with Multiple Resource Records feature provides better fault tolerance for clients.
- The Event Recording with Syslog feature provides the ability to examine DNS traffic and the way in which servers are chosen.
- The Enhanced Server Verification with Multiple Port Connect Tests feature better reflects the reality that some services span several ports and require that all ports be up.

Restrictions

Enhanced Fault Tolerance with Multiple Resource Records

Configuring DistributedDirector to return a large number of records can reduce the benefit of using DistributedDirector to select the best server.

Event Recording with Syslog

Extensive syslog output is provided when logging server selection. Therefore, this feature should not be used when a heavy request load is expected.

Related Documents

For more information on the Cisco DistributedDirector, see the following documents, which are located on Cisco Connection Online (CCO) at <http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml>:

- *Cisco DistributedDirector 2500 Series Installation and Configuration Guide*
- *Cisco DistributedDirector 4700-M Installation and Configuration Guide*
- *Release Notes for Cisco DistributedDirector System Software*
- *Cisco DistributedDirector Enhancements for Release 11.1(18)IA*

- *Cisco DistributedDirector Enhancements for Release 11.1(25)IA*
- *Cisco DistributedDirector Enhancements for Release 11.1(28)IA*

Supported Platforms

- Cisco DistributedDirector 2501
- Cisco DistributedDirector 2502
- Cisco DistributedDirector 4700

Determining Platform Support Through Cisco Feature Navigator

Cisco IOS software is packaged in feature sets that support specific platforms. To get updated information regarding platform support for this feature, access Cisco Feature Navigator. Cisco Feature Navigator dynamically updates the list of supported platforms as new platform support is added for the feature.

Cisco Feature Navigator is a web-based tool that enables you to determine which Cisco IOS software images support a specific set of features and which features are supported in a specific Cisco IOS image. You can search by feature or release. Under the release section, you can compare releases side by side to display both the features unique to each software release and the features in common.

To access Cisco Feature Navigator, you must have an account on Cisco.com. If you have forgotten or lost your account information, send a blank e-mail to cco-locksmith@cisco.com. An automatic check will verify that your e-mail address is registered with Cisco.com. If the check is successful, account details with a new random password will be e-mailed to you. Qualified users can establish an account on Cisco.com by following the directions at <http://www.cisco.com/register>.

Cisco Feature Navigator is updated regularly when major Cisco IOS software releases and technology releases occur. For the most current information, go to the Cisco Feature Navigator home page at the following URL:

<http://www.cisco.com/go/fn>

Availability of Cisco IOS Software Images

Platform support for particular Cisco IOS software releases is dependent on the availability of the software images for those platforms. Software images for some platforms may be deferred, delayed, or changed without prior notice. For updated information about platform support and availability of software images for each Cisco IOS software release, refer to the online release notes or, if supported, Cisco Feature Navigator.

Supported Standards, MIBs, and RFCs

Standards

None

MIBs

None

To obtain lists of supported MIBs by platform and Cisco IOS release, and to download MIB modules, go to the Cisco MIB website on Cisco.com at the following URL:

<http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml>

RFCs

None

Configuration Tasks

See the following sections for configuration tasks for this feature. Each task is optional.

- Configuring Enhanced Fault Tolerance with Multiple Resource Records(Optional)
- Configuring Event Recording with Syslog (Optional)
- Configuring Enhanced Server Verification with Multiple Port Connect Tests (Optional)
- Verifying Enhanced Fault Tolerance with Multiple Resource Records (Optional)
- Verifying Event Recording with Syslog (Optional)
- Verifying Enhanced Server Verification with Multiple Port Connect Tests (Optional)

Configuring Enhanced Fault Tolerance with Multiple Resource Records

To configure the Enhanced Fault Tolerance with Multiple Resource Records feature on the DistributedDirector for a host name, use the following command in global configuration mode:

| Command | Purpose |
|---|--|
| Router(config)# ip director host <i>host-name</i> [a mx] multiple <i>integer</i> | Configures the number of RRs that the DistributedDirector returns for each DNS response. |

Configuring Event Recording with Syslog

To configure the Event Recording with Syslog feature on the DistributedDirector for a host name, use the following commands in global configuration mode:

| Command | Purpose |
|--|---|
| Router(config)# logging <i>host</i> Router(config)# logging trap informational Router(config)# ip director host <i>host-name</i> [a mx] logging | Configures the DistributedDirector to log events to syslog. |

Configuring Enhanced Server Verification with Multiple Port Connect Tests

To configure the Enhanced Server Verification with Multiple Port Connect Tests feature on the DistributedDirector, use the following commands in global configuration mode:

| Command | Purpose |
|--|---|
| <pre>Router(config)# ip director host host-name [a mx] connect port-1 [interval] connection-interval n Router(config)# ip director host host-name [a mx] connect port-2 [interval] connection-interval n Router(config)# ip director host host-name [a mx] connect port-n [interval] connection-interval n</pre> | <p>Enables the DistributedDirector to verify that a server is available.</p> <p>When you configure multiple ip director host connect commands for the same host name but with different port numbers, the DistributedDirector verifies that all of the ports are accessible. If any of the ports is not accessible, the host is considered down.</p> |

Verifying Enhanced Fault Tolerance with Multiple Resource Records

To verify that the DistributedDirector is configured to return the best servers for RRs for each DNS, use the **show ip director hosts** command.

Verifying Event Recording with Syslog

To verify that the DistributedDirector is configured to send to syslog the DNS request and response information, use the **show ip director hosts** command.

Verifying Enhanced Server Verification with Multiple Port Connect Tests

To verify that the DistributedDirector is configured with a specific connection interval to specified distributed servers, use the **show ip director hosts** command.

Configuration Examples

This section provides the following configuration examples:

- Enhanced Fault Tolerance with Multiple Resource Records Example
- Event Recording with Syslog Example
- Enhanced Server Verification with Multiple Port Connect Tests Example

Enhanced Fault Tolerance with Multiple Resource Records Example

In the following examples, the DistributedDirector is configured to return the best three servers for A resource record on host name `www.xyz.com`, the best two servers for A resource record on host name `alias.xyz.com`, and the best two servers for MX resource `mail.xyz.com`, respectively:

```
ip director host www.xyz.com multiple 3
ip director host alias.xyz.com a multiple 2
ip director host mail.xyz.com mx multiple 2
```

Event Recording with Syslog Example

Before configuring the DistributedDirector to syslog events regarding DNS requests on a specific resource record, the following must be typed on the command line:

```
logging 172.21.34.2
logging trap informational
```



Note

The IP address specified above is the IP address of the log server in which the syslog messages get recorded.

In the following examples, the DistributedDirector is configured to syslog events regarding DNS requests on A resource record for host name `www.xyz.com`, DNS requests on A resource record for host name `alias.xyz.com`, and DNS requests on MX host name `mail.xyz.com`, respectively:

```
ip director host www.xyz.com logging
ip director host alias.xyz.com a logging
ip director host mail.xyz.com mx logging
```

Enhanced Server Verification with Multiple Port Connect Tests Example

In the following example, the DistributedDirector is configured with a connection interval of 5 minutes to distributed servers on port 80 and port 90. The distributed servers will only be considered accessible if both port 80 and port 90 are accessible:

```
ip director host www.xyz.com connect 80 5
ip director host www.xyz.com connect 90 5
```

Command Reference

This section documents new and modified commands. The enhanced feature commands and new DistributedDirector commands are listed below. All other commands used with this feature are documented in the “Command Summary” and “Reference” sections of the Cisco DistributedDirector installation and configuration guides.

New Commands

- **ip director access-group local**
- **ip director drp retries**
- **ip director drp timeout**
- **ip director drp timeout lookup**
- **ip director drp timeout measure**
- **ip director host active-close**
- **ip director host tolerance**
- **ip director host verify-url**
- **ip director server reinstatement**
- **ip director server route-map**
- **ip director server verify-url**

- **ip director server weights**
- **show ip director drp**

Modified Commands

- **ip director host connect**
- **ip director host logging**
- **ip director host multiple**

ip director access-group local

To configure the DistributedDirector to process only Domain Name System (DNS) queries for host names that are configured directly through command-line interface (CLI) commands or Text (TXT) Resource Records (RRs), use the **ip director access-group local** global configuration command. To turn off this configuration, use the **no** form of this command.

ip director access-group local

no ip director access-group local

Syntax Description This command has no arguments or keywords.

Defaults All DNS queries are processed by the director code.

Command Modes Global configuration

| Command History | Release | Modification |
|-----------------|----------|------------------------------|
| | 12.1(5)T | This command was introduced. |

Usage Guidelines If the primary director agent is considered the official name server for the entire domain, the **ip director access-group local** command should be used to allow the DistributedDirector to directly handle the configured host names only.

Examples The following example configures the DistributedDirector to process only DNS queries for host names that are configured directly through CLI commands or TXT RRs:

```
ip director access-group local
```

ip director drp retries

To configure the maximum number of Director Response Protocol (DRP) query retries for the DistributedDirector, use the **ip director drp retries** global configuration command. To restore the default, use the **no** form of this command.

ip director drp retries *attempts*

no ip director drp retries *attempts*

| | | |
|---------------------------|---|---|
| Syntax Description | <i>attempts</i> | Number of retry attempts. The default value is 2. |
| Defaults | The attempts default value is 2. | |
| Command Modes | Global configuration | |
| Command History | Release | Modification |
| | 12.1(5)T | This command was introduced. |
| Usage Guidelines | If the DistributedDirector is slow when determining if a DRP agent is not responding, the ip director drp retries command can be used to limit the number of retry attempts to each DRP agent so that the DistributedDirector can respond to clients faster. | |
| Examples | The following example configures one DRP query retry for the DistributedDirector: <pre>ip director drp retries 1</pre> | |

ip director drp timeout

To configure the DistributedDirector to set a disconnection time interval for all Director Response Protocol (DRP) queries, use the **ip director drp timeout** global configuration command. To set each DRP query timeout back to the default, use the **no** form of this command.

ip director drp timeout *seconds*

no ip director drp timeout *seconds*

Syntax Description

| | |
|----------------|---|
| <i>seconds</i> | Disconnection time interval, in seconds, for all DRP queries. |
|----------------|---|

Defaults

Lookup query timeout default value is 1 second.
Measure query timeout default value is 4 seconds.

Command Modes

Global configuration

Command History

| Release | Modification |
|----------|------------------------------|
| 12.1(5)T | This command was introduced. |

Usage Guidelines

If the DistributedDirector takes a long time to realize that a DRP agent is not responding, the **ip director drp timeout** command can be used to shorten the time length so that the DistributedDirector can respond to its clients faster.



Note

If the time interval for the DRP query is too short, there is a risk that the DistributedDirector might miss a slightly late response from the DRP agent. Measure query timeout should be longer than lookup query timeout. If the time interval value for the measure query timeout is too short, the DistributedDirector might miss a slightly late response from the DRP agent.

Examples

The following example configures the DistributedDirector to set a disconnection time interval for all DRP queries every 3 seconds:

```
ip director drp timeout 3
```

Related Commands

| Command | Description |
|--|---|
| ip director drp timeout lookup | Configures the maximum amount of time that the DistributedDirector waits to resend a DRP lookup query. |
| ip director drp timeout measure | Configures the maximum amount of time that the DistributedDirector waits to resend a DRP measure query. |

ip director drp timeout lookup

To configure the maximum amount of time that the DistributedDirector waits to resend a Director Response Protocol (DRP) lookup query, use the **ip director drp timeout lookup** global configuration command. To restore the DRP lookup default, use the **no** form of this command.

ip director drp timeout lookup *seconds*

no ip director drp timeout lookup *seconds*

| Syntax Description | <i>seconds</i> | Time interval, in seconds, to resend a DRP lookup query. The default value is 1 second. | | | | | | |
|--|---|---|--------------|--------------------------------|--|--|---|--|
| Defaults | The seconds default value is 1 second. | | | | | | | |
| Command Modes | Global configuration | | | | | | | |
| Command History | <table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>12.1(5)T</td> <td>This command was introduced.</td> </tr> </tbody> </table> | Release | Modification | 12.1(5)T | This command was introduced. | | | |
| Release | Modification | | | | | | | |
| 12.1(5)T | This command was introduced. | | | | | | | |
| Usage Guidelines | A lookup query is answered immediately by a DRP agent by looking up the existing internal tables. | | | | | | | |
| Examples | <p>The following example configures the DistributedDirector to wait 1 second to resend a DRP lookup query:</p> <pre>ip director drp timeout lookup 1</pre> | | | | | | | |
| Related Commands | <table border="1"> <thead> <tr> <th>Command</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>ip director drp timeout</td> <td>Configures the DistributedDirector to set a disconnection time interval for all DRP queries.</td> </tr> <tr> <td>ip director drp timeout measure</td> <td>Configures the maximum amount of time that the DistributedDirector waits to resend a DRP measure query.</td> </tr> </tbody> </table> | Command | Description | ip director drp timeout | Configures the DistributedDirector to set a disconnection time interval for all DRP queries. | ip director drp timeout measure | Configures the maximum amount of time that the DistributedDirector waits to resend a DRP measure query. | |
| Command | Description | | | | | | | |
| ip director drp timeout | Configures the DistributedDirector to set a disconnection time interval for all DRP queries. | | | | | | | |
| ip director drp timeout measure | Configures the maximum amount of time that the DistributedDirector waits to resend a DRP measure query. | | | | | | | |

ip director drp timeout measure

To configure the maximum amount of time that the DistributedDirector waits to resend a Director Response Protocol (DRP) measure query, use the **ip director drp timeout measure** global configuration command. To restore the DRP measure query default, use the **no** form of this command.

ip director drp timeout measure *seconds*

no ip director drp timeout measure *seconds*

Syntax Description

| | |
|----------------|---|
| <i>seconds</i> | Time interval, in seconds, for the DRP measure query. The default value is 4 seconds. |
|----------------|---|

Defaults

The seconds default value is 4 seconds.

Command Modes

Global configuration

Command History

| Release | Modification |
|----------|------------------------------|
| 12.1(5)T | This command was introduced. |

Usage Guidelines

A timeout measure query allows the DRP agent to return extended external information and, as a result, incurs longer delays.



Note

Measure query timeout should be longer than lookup query timeout. If the time interval value for the measure query timeout is too short, the DistributedDirector might miss a slightly late response from the DRP agent.

Examples

The following example configures the DistributedDirector to wait 2 seconds to resend a DRP measure query:

```
ip director drp timeout measure 2
```

Related Commands

| Command | Description |
|---------------------------------------|--|
| ip director drp timeout | Configures the DistributedDirector to set a disconnection time interval for all DRP queries. |
| ip director drp timeout lookup | Configures the maximum amount of time that the DistributedDirector waits to resend a DRP lookup query. |

ip director host active-close

To specify that DistributedDirector close the TCP connection using the standard TCP close procedure, use the **ip director host active-close** command in global configuration mode. To restore this command to its default, use the **no** form of this command.

ip director host *host-name query-type active-close*

no ip director host *host-name query-type active-close*

| Syntax Description | |
|--------------------|--|
| <i>host-name</i> | Name of the host that maps to one or more IP addresses. Do not use an IP address. |
| <i>query-type</i> | (Optional) Query-type <i>a</i> indicates that the configuration is used for processing DNS address (A) queries for the specified host name. Query-type <i>mx</i> indicates that the configuration is for processing Mail eXchange (MX) queries for the specified host name. If no query type is specified, <i>a</i> is set by default. |

Defaults TCP connections are reset.

Command Modes Global configuration

| Command History | Release | Modification |
|-----------------|----------|------------------------------|
| | 12.1(5)T | This command was introduced. |

Usage Guidelines By default, DistributedDirector resets TCP connections when performing connect tests, because a standard TCP close can consume excessive memory resources. The **ip director host active-close** command overrides this behavior, resulting in a standard TCP close rather than a TCP reset.

Examples The following example sets the connect test interval to 5 minutes for the distributed servers on port 80 for the host www.xyz.com and specifies that the TCP connection is closed using the standard TCP close procedure when performing the connect tests.

```
ip director host www.xyz.com connect 80 5
ip director host www.xyz.com active-close
```

| Related Commands | Command | Description |
|------------------|--|---|
| | ip director host connect | Enables DistributedDirector to verify that a server is available. |
| | ip director server connect-interval | Configures a per-service TCP connection interval. |

ip director host connect

To enable the DistributedDirector to verify that a server is available, use the **ip director host connect** global configuration command. The DistributedDirector redirects clients only to servers that respond. To turn off connection parameters, use the **no** form of this command.

ip director host *host-name* [**a** | **mx**] **connect** *port* [**interval**] *time*

no ip director host *host-name* [**a** | **mx**] **connect**

Syntax Description

| | |
|------------------|--|
| <i>host-name</i> | Name of the host that maps to one or more IP addresses. Do not use an IP address. |
| a | (Optional) Indicates that the configuration is for processing Domain Name System (DNS) address (A) queries for the specified host name. If no query type is specified, a is set by default. |
| mx | (Optional) Indicates that the configuration is for processing Mail eXchange (MX) queries for the specified host name. |
| <i>port</i> | Port number to which the distributed servers are configured. |
| interval | (Optional) Configures the connection interval to be a time in seconds instead of minutes. |
| <i>time</i> | Time in minutes (or seconds if the interval keyword is used) between availability checks. |

Defaults

No connection parameter is set.
The default query type is **a**.

Command Modes

Global configuration

Command History

| Release | Modification |
|-------------------------|--|
| 11.1(1)IA | This command was introduced. |
| 11.1(25)IA and 12.0(5)T | The a and mx keywords were added. |
| 11.1(28)IA and 12.1(5)T | The Enhanced Server Verification with Multiple Port Connect Tests functionality was added. |

Usage Guidelines

Beginning with Cisco IOS Release 11.1(28)IA, the **ip director host connect** command supports the Enhanced Server Verification with Multiple Port Connect Tests feature. When you enter several **ip director host connect** commands for the same host name but with different port numbers, the DistributedDirector verifies that all of the ports are accessible. The DistributedDirector will only consider the server accessible if all of the ports are accessible.

Examples

The following example sets the time to 5 minutes for the distributed servers on port 80 and port 90. The distributed servers will only be considered accessible if both port 80 and port 90 are accessible:

```
ip director host www.xyz.com connect 80 5
ip director host www.xyz.com connect 90 5
```

ip director host logging

To configure the DistributedDirector to log events to syslog, use the **ip director host logging** global configuration command. To turn off metric priorities, use the **no** form of this command.

ip director host *host-name* [**a** | **mx**] **logging**

no ip director host *host-name* [**a** | **mx**] **logging**

Syntax Description

| | |
|------------------|--|
| <i>host-name</i> | Name of the host that maps to one or more IP addresses. Do not use an IP address. |
| a | (Optional) Indicates that the configuration is for processing Domain Name System (DNS) address (A) queries for the specified host name. If no query type is specified, a is set by default. |
| mx | (Optional) Indicates that the configuration is for processing Mail eXchange (MX) queries for the specified host name. |

Defaults

The default query type is **a**.

Command Modes

Global configuration

Command History

| Release | Modification |
|------------|---|
| 11.1(28)IA | This command was introduced. |
| 12.1(5)T | This command was integrated into the Cisco IOS Release 12.1(5)T |

Usage Guidelines

The Event Recording with Syslog feature provides the ability to examine DNS traffic and the way in which servers are chosen. Server state is logged by default, providing a useful log of when servers are considered up or down. Additionally, the server selection process may be logged. In both cases, the logging priority level is informational.



Caution

Extensive syslog output is provided when logging server selection. Therefore, this feature should not be used when a heavy request load is expected.

Examples

Before configuring the DistributedDirector to syslog events regarding DNS requests on a specific resource record, the following must be typed on the command line:

```
logging 172.21.34.2
logging trap informational
```

**Note**

The IP address specified above is the IP address of the log server in which the syslog messages get recorded.

The following examples configure the DistributedDirector to syslog events regarding DNS requests on A resource record for host name www.xyz.com, DNS requests on A resource record for host name alias.xyz.com, and DNS requests on MX host name mail.xyz.com, respectively:

```
ip director host www.xyz.com logging
ip director host alias.xyz.com a logging
ip director host mail.xyz.com mx logging
```

ip director host multiple

To configure the number of Resource Records (RRs) that the DistributedDirector returns for each Domain Name System (DNS) response, use the **ip director host multiple** global configuration command. To configure the DistributedDirector to return only the best RR for each DNS response, use the **no** form of this command.

ip director host *host-name* [**a** | **mx**] **multiple** *integer*

no ip director host *host-name* [**a** | **mx**] **multiple**

| Syntax Description | | |
|--------------------|------------------|---|
| | <i>host-name</i> | Name of the host that maps to one or more IP addresses. Do not use an IP address. |
| | a | (Optional) Indicates that the configuration is for processing DNS address (A) queries for the specified host name. If no query type is specified, a is set by default. |
| | mx | (Optional) Indicates that the configuration is for processing Mail eXchange (MX) queries for the specified host name. |
| | <i>integer</i> | Number of servers that are returned. |

Defaults The default query type is **a**.

Command Modes Global configuration

| Command History | Release | Modification |
|-----------------|------------|---|
| | 11.1(28)IA | This command was introduced. |
| | 12.1(5)T | This command was integrated into the Cisco IOS Release 12.1(5)T |

Usage Guidelines Configuring the DistributedDirector to return a large number of records could reduce the benefit of using a DistributedDirector to select the best server.

Examples The following examples configure the DistributedDirector to return the best three servers for A resource record on host name `www.xyz.com`, the best two servers for A resource record on host name `alias.xyz.com`, and the best two servers for MX resource `mail.xyz.com`, respectively:

```
ip director host www.xyz.com multiple 3
ip director host alias.xyz.com a multiple 2
ip director host mail.xyz.com mx multiple 2
```

ip director host tolerance

To associate a tolerance of a specified load range with a specified priority level, use the **ip director host tolerance** global configuration command. To turn off director tolerance, use the **no** form of this command.

ip director host *host-name* **tolerance** *priority-level* *percentage*

no ip director host *host-name* **tolerance** *priority-level* *percentage*

| Syntax Description | | |
|--------------------|-----------------------|---|
| | <i>host-name</i> | Host name. |
| | <i>priority-level</i> | Order in which the DistributedDirector considers the importance of different metrics when it selects the best server for a host name. |
| | <i>percentage</i> | Load range. The range is 1 to 100. |

Defaults Disabled

Command Modes Global configuration

| Command History | Release | Modification |
|-----------------|----------|------------------------------|
| | 12.1(5)T | This command was introduced. |

Usage Guidelines If two or more remote servers have metrics at the same level of importance that is within a specified load range of each other, consider them to be the same and thus causing a tie. In this case, the next importance level will be used to break the tie.

Examples The following example configures the DistributedDirector to be directed to the closest server farm (measured with the round-trip time metric) as long as the load on the two server farms is within 20 percent of each other.

```
ip director host www.xyz.com priority availability 1 drp-rtt 2
ip director host www.xyz.com port 80
ip director host www.xyz.com tolerance 1 20
```

ip director host verify-url

To configure the DistributedDirector to search for a specified URL string with a specified host name every specified number of seconds, use the **ip director host verify-url** global configuration command. To turn off this URL search, use the **no** form of this command.

ip director host *host-name* **verify-url** *string* **connection-interval** *seconds*

no ip director host *host-name* **verify-url** *string* **connection-interval** *seconds*

Syntax Description

| | |
|----------------------------|--|
| <i>host-name</i> | Host name. |
| <i>string</i> | Full URL or path name. |
| connection-interval | Time interval for availability checks. |
| <i>seconds</i> | Time, in seconds, between availability checks. |

Defaults

Disabled

Command Modes

Global configuration

Command History

| Release | Modification |
|----------|------------------------------|
| 12.1(5)T | This command was introduced. |

Usage Guidelines

If a URL is found and an HTTP reply code is received, the DistributedDirector marks all servers associated with the host name as being up. If an error code is received, the DistributedDirector marks all servers associated with the host name as being down, thus removing them from potential selection.

If verification URLs have been configured for both the host name and the specific server, the status returned from the connection on behalf of the specific server will override the configuration because it is considered more specific than a single host name. The same URL may be specified for verifying multiple pairs, in which case the smallest configured availability checks will be used for all pairs and one connection will be made to verify all pairs.



Caution

Using the **ip director host verify-url** command in conjunction with the **ip director host connect** command will cause the DistributedDirector to run one instance of each keepalive process simultaneously. Using the two commands together may cause IP address availability to flap in the event that the **ip director host connect** probe succeeds and the **ip director host verify-url** probe fails or vice versa. It is not recommended to run both of these probes for the same domain.

Examples

The following example configures the DistributedDirector to search for the URL string `http://www.xyz.com/index.html`:

```
ip director host www.xyz.com port-service 80
ip director host www.xyz.com verify-url http://www.xyz.com/index.html connection-interval
120
```

ip director server reinstatement

To configure the DistributedDirector to automatically detect if a server is running and mark it as available, use the **ip director server reinstatement** global configuration command. To restore the default, use the **no** form of this command.

ip director server *ip-address* reinstatement

no ip director server *ip-address* reinstatement

Syntax Description

| | |
|-------------------|-------------|
| <i>ip-address</i> | IP address. |
|-------------------|-------------|

Defaults

Automatic server reinstatement is enabled.

Command Modes

Global configuration

Command History

| Release | Modification |
|----------|------------------------------|
| 12.1(5)T | This command was introduced. |

Usage Guidelines

If the DistributedDirector detects that a server is unavailable and the DistributedDirector has enabled the server to be restored to its previous effective state, the **ip director server reinstatement** command must be run to bring the server back when the server is up again.

When the DistributedDirector detects that a server is unavailable, it no longer attempts to create a TCP connection to the server unless it is explicitly told to do so by the users.

Examples

The following example configures the DistributedDirector to automatically detect if server 10.0.01 is running. If server 10.0.0.1 is not running, traffic is redirected to server 10.0.0.2.

```
ip director server 10.0.0.1 reinstatement
ip director server 10.0.0.2 reinstatement
```

ip director server route-map

To configure the DistributedDirector to use the source autonomous systems identifier as a server-selection criterion, use the **ip director server route-map** global configuration command. To restore the default, use the **no** form of this command.

ip director server *ip-address* **route-map** *map-name*

no ip director server *ip-address* **route-map** *map-name*

| Syntax Description | | |
|--------------------|-------------------|------------------------|
| | <i>ip-address</i> | IP address. |
| | <i>map-name</i> | Name of the route map. |

Defaults Disabled

Command Modes Global configuration

| Command History | Release | Modification |
|-----------------|----------|------------------------------|
| | 12.1(5)T | This command was introduced. |

Usage Guidelines The Internet is divided into autonomous systems. Each autonomous system has a numeric identifier that is used by routing protocols. The **ip director server route-map** command provides a way for the DistributedDirector to use the source autonomous system (the autonomous system in which the client resides) identifier as a server-selection criterion.

The route-map mechanism is normally used in Cisco IOS software to map or associate routes from one routing protocol to another. For example, a route learned via Open Shortest Path First (OSPF) could be passed or mapped to Routing Information Protocol (RIP). The **ip director server route-map** command uses the existing route-map infrastructure to access routing data.

To use the **ip director server route-map** command, the **ip host**, **ip dns primary**, and **ip director host** commands must first be configured in order for the route-map feature to run correctly.

Examples

The following example configures the DistributedDirector to have all clients using autonomous system 200 to use server A and all other clients to use server B:

```
ip host www.xyz.com 10.0.0.1 10.0.0.2
ip dns primary www.xyz.com soa ns.xyz.com blank.com
ip director host www.xyz.com priority route-map 1
ip director server 10.0.0.1 route-map block200
ip director server 10.0.0.2 route-map allow200
ip as-path access-list 100 permit 200
ip as-path access-list 101 deny 200
route-map allow 200 permit 1
match as-path 100
route-map block200 permit 1
match as-path 101
```

Related Commands

| Command | Description |
|-------------------------|--|
| ip director host | Defines the virtual host name to be used for the distributed servers. |
| ip dns primary | Identifies the DistributedDirector as the primary DNS name server for a domain and identifies the DistributedDirector as the Start of Authority (SOA) record source. |
| ip host | Defines a static host-name-to-address mapping in the host cache. |

ip director server verify-url

To configure the DistributedDirector to search for a specified URL string with a specified server every specified number of seconds, use the **ip director server verify-url** global configuration command. To turn off this URL search, use the **no** form of this command.

ip director server *ip-address port verify-url string connection-interval seconds*

no ip director server *ip-address port verify-url string connection-interval seconds*

| Syntax Description | | |
|--------------------|----------------------------|--|
| | <i>ip-address</i> | IP address. |
| | <i>port</i> | Port number to be associated with the host. |
| | <i>string</i> | Full URL or path name. |
| | connection-interval | Time interval for availability checks. |
| | <i>seconds</i> | Time, in seconds, between availability checks. |

Defaults Disabled

Command Modes Global configuration

| Command History | Release | Modification |
|-----------------|----------|------------------------------|
| | 12.1(5)T | This command was introduced. |

Usage Guidelines If a URL is found and an HTTP reply code is received, the DistributedDirector marks all servers associated with the host name as being up. If an error code is received, the DistributedDirector marks all servers associated with the host name as being down, thus removing them from potential selection.



Note

If verification URLs have been configured for both the host name and the specific server, the status returned from the connection on behalf of the specific server will override the configuration because it is considered more specific than a single host name. The same URL may be specified for verifying multiple pairs, in which case the smallest configured availability checks will be used for all pairs and one connection will be made to verify all pairs.

Examples The following example configures the DistributedDirector to search for the server 10.0.0.1 with the URL string `http://www.xyz.com/index.html`:

```
ip director server 10.0.0.1 80 verify-url http://www.xyz.com/index.html
connection-interval 120
```

ip director server weights

To configure a “per-service per-metric” weight, use the **ip director server weights** global configuration command. To turn off metric weight, use the **no** form of this command.

ip director server *ip-address port weights metric-name metric-weight*

no ip director server *ip-address port weights metric-name metric-weight*

Syntax Description

| | |
|----------------------|---|
| <i>ip-address</i> | IP address. |
| <i>port</i> | Port number to be associated with the host. |
| <i>metric-name</i> | Metric name. |
| <i>metric-weight</i> | Metric weight. |

Defaults

Disabled

Command Modes

Global configuration

Command History

| Release | Modification |
|----------|------------------------------|
| 12.1(5)T | This command was introduced. |

Usage Guidelines

When the metric name is referenced with respect to this server and port, the value of the metric will be multiplied by the metric weight given.

Examples

The following example configures the DistributedDirector to check port 80 for an availability metric of three.

```
ip director server 10.0.0.1 80 weights availability 3
```

show ip director drp

To display information that the DistributedDirector has about specific Director Response Protocol (DRP) agents, use the **show ip director drp** EXEC command.

```
show ip director drp [host-name | ip-address]
```

Syntax Description

| | |
|-------------------|------------------------|
| <i>host-name</i> | (Optional) Host name. |
| <i>ip-address</i> | (Optional) IP address. |

Command Modes

EXEC

Command History

| Release | Modification |
|----------|------------------------------|
| 12.1(5)T | This command was introduced. |

Usage Guidelines

The **show ip director drp** command displays host-specific statistics, such as the number of queries received and the number of replies sent for a host.

Examples

The following is sample output from the **show ip director drp** command:

```
Router# show ip director drp

DRP agent 172.21.34.2:
 14 requests, 6 replies, 4 requeries, 0 bad replies
Supported Servers:
 172.21.34.10
 172.21.34.11
DRP agent 192.168.34.2:
 14 requests, 6 replies, 4 requeries, 0 bad replies
Supported servers:
 192.168.34.10
```

■ show ip director drp