



Dynamic Feedback Protocol Support in DistributedDirector

This feature module describes the Dynamic Feedback Protocol (DFP) Support in DistributedDirector feature and includes the following sections:

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Feature Overview

DistributedDirector can obtain load information from Cisco LocalDirector, Catalyst 4840g, and other clients using Dynamic Feedback Protocol (DFP). This protocol allows the user to configure the DistributedDirector to communicate with various DFP agents. The DistributedDirector tells the DFP agents how often they should report load information; then the DFP agent can tell the DistributedDirector which LocalDirector cluster to remove from providing service.

Benefits

DFP support enables DistributedDirector to make server and site selection on the basis of server load, in addition to other DistributedDirector metrics.

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

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 web site on Cisco Connection Online (CCO) at <http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml>.

RFCs

None

Configuration Tasks

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

- Configuring DFP Support in DistributedDirector (Optional)
- Verifying DFP Support in DistributedDirector (Optional)

Configuring DFP Support in DistributedDirector

To configure DFP support in DistributedDirector, use the following command in global configuration mode:

Command	Purpose
Router(config)# ip director dfp <i>ip-address</i> [<i>port</i>] [retry <i>n</i>] [attempts <i>n</i>] [timeout <i>n</i>]	Configures the DistributedDirector DFP agent with which the DistributedDirector should communicate.

Verifying DFP Support in DistributedDirector

To verify that the DistributedDirector is configured with DFP support for all specified IP addresses, use the **show ip director dfp** command. To verify that the DistributedDirector is configured with DFP support for a single IP address, use the **show ip director dfp** command.

Configuration Examples

This section provides the following configuration example DFP Support in DistributedDirector Example.

DFP Support in DistributedDirector Example

In the following example, the DistributedDirector is configured to communicate with a specified DFP agent:

```
ip director dfp 10.0.0.1 retry 3 attempts 60 timeout 6000
```

Command Reference

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

- **ip director default-weights**
- **ip director dfp**
- **ip director dfp security**
- **ip director host priority**
- **ip director host weights**
- **ip director server availability**
- **ip director server port availability**
- **show ip director dfp**

ip director default-weights

To configure default weight metrics for the DistributedDirector, use the **ip director default-weights** global configuration command. To restore the default, use the **no** form of this command.

```
ip director default-weights {[drp-int n] [drp-ext n] [drp-ser n] [drp-rtt n] [random n]
[admin n] [portion n] [availability n] [route-map n]}
```

```
no ip director default-weights {[drp-int n] [drp-ext n] [drp-ser n] [drp-rtt n] [random n]
[admin n] [portion n] [availability n] [route-map n]}
```

Syntax Description	
drp-int <i>n</i>	<p>(Optional) Director Response Protocol (DRP) internal metric. The range is 1 to 100.</p> <p>This option sends a DRP request to all DRP server agents, asking them for the distance from themselves to the edge of their Border Gateway Protocol (BGP) autonomous system in the direction of the client originating the Domain Name System (DNS) query. This distance can be used along with the DRP external metric (drp-ext) to help determine the distance between the router and the client originating the DNS query.</p> <p>If the client and the DRP server agent are in the same autonomous system, this metric returns the Interior Gateway Protocol (IGP) cost metric between the client and the DRP server agent.</p>
drp-ext <i>n</i>	<p>(Optional) DRP external metric. The range is 1 to 100.</p> <p>This option sends a DRP request to all DRP server agents, asking them for the BGP distance between them and the client originating the DNS query. This distance represents the number of BGP hops between the autonomous system of the DRP server agent and the autonomous system of the client originating the DNS query. Because this is BGP information, the DRP server agents need to have access to full Internet BGP information in order for this metric to be useful.</p>
drp-ser <i>n</i>	<p>(Optional) DRP server metric. The range is 1 to 100.</p> <p>This option sends a DRP request to all DRP server agents, asking them for the IGP route metric between them and the distributed servers that they support. This distance can be used with the DRP internal metric (drp-int) to get a finer distance calculation between the distributed servers and the edge of the BGP autonomous system in the direction of the client originating the DistributedDirector query.</p> <p>If a true BGP border router is used as a DRP server agent, the DRP server metric will return the IGP route metric between the distributed server and the BGP border router (autonomous system edge). Because DRP server metrics should not change frequently, DistributedDirector issues DRP server queries (and caches the results) every 10 minutes.</p>
drp-rtt <i>n</i>	<p>(Optional) DRP round-trip time metric. The range is 1 to 100.</p> <p>This option sends a DRP request to all DRP server agents, asking them for the round-trip time between the DRP agent and the client originating the DNS query.</p>

random <i>n</i>	(Optional) Random metric. The range is 1 to 100. This option selects a random number for each distributed server and defines the “best” server as the one with the smallest random number assignment. Using this metric alone results in random redirection of clients to the distributed servers. Because this metric requires no routing table information, it does not trigger DRP requests to the DRP server agents.
admin <i>n</i>	(Optional) Administrative metric. The range is 1 to 100. This option specifies a simple preference of one server over another. If the administrative metric has been explicitly set to zero, the Director will not consider the server, so the server is taken out of service.
portion <i>n</i>	(Optional) Portion metric. The range is 1 to 100. This option assigns a load “portion” to each server such that servers with a higher portion value will receive a larger percentage of connections at any one time.
availability <i>n</i>	(Optional) Availability metric. The range is 1 to 65,535. This option specifies the load information for the DistributedDirector. The default value is 65,535.
route-map <i>n</i>	(Optional) Route-map metric. The range is 1 to 100. This option specifies if a server should be offered to a client.

Defaults

The availability default value is 65,535.

Command Modes

Global configuration

Command History

Release	Modification
11.1(18)IA	This command was introduced.
12.1(5)T	The availability and route-map metrics were added.

Usage Guidelines

Not all of the metrics need to be configured; however, at least one metric must be configured when this command is used.

Default weights are used for all host names sorted by the DistributedDirector. To override default weights for a certain host, specify host-specific weights in the private DNS server configuration.

When the associated metric is referenced in the sorting decision, it will always be multiplied by the appropriate metric weight. In this way, you can specify that some metrics be weighted more than others. You may determine the weights that you want to use through experimentation. The weights given do not need to add up to 100.

The new availability metric allows the DistributedDirector to attempt to create a TCP connection to each distributed server on a configured port over a configurable time interval.

Examples

The following command configures default weights for the internal and external metrics:

```
ip director default-weights drp-int 10 drp-ext 90
```

Related Commands

Command	Description
debug ip director parse	Shows debugging information for DistributedDirector parsing of TXT information.
debug ip director sort	Shows debugging information for DistributedDirector IP address sorting.
ip director access-list	Defines an access list for the DistributedDirector that specifies which subdomain names and host names should be sorted.
ip director cache	Enables the sorting cache on the DistributedDirector.
ip director host priority	Configures the order in which the DistributedDirector considers metrics when picking a server.
ip director host weights	Sets host-specific weights for the metrics that the DistributedDirector uses to determine the best server within a specific host name.
ip director server admin-pref	Configures a per-service administrative preference value.
ip director server portion	Sets the portion value for a specific server.
ip director server preference	Specifies DistributedDirector preference of one server over others or takes a server out of service.
show ip director default-weights	Shows the DistributedDirector default weights.
show ip director servers	Displays the DistributedDirector server preference information.

ip director dfp

To configure the DistributedDirector Dynamic Feedback Protocol (DFP) agent with which the DistributedDirector should communicate, use the **ip director dfp** global configuration command. To turn off the DFP agent, use the **no** form of this command.

ip director dfp *ip-address* [*port*] [**retry** *n*] [**attempts** *n*] [**timeout** *n*]

no ip director dfp *ip-address* [*port*] [**retry** *n*] [**attempts** *n*] [**timeout** *n*]

Syntax Description

<i>ip-address</i>	IP address.
<i>port</i>	(Optional) Port number to which the distributed servers are configured. The default value is 8080.
retry <i>n</i>	(Optional) Number of times a connection will be attempted. The default value is 5 attempts.
attempts <i>n</i>	(Optional) Delay, in seconds, between each attempt. The default value is 10,000 seconds.
timeout <i>n</i>	(Optional) Maximum amount of time, in seconds, for which DFP information is assumed valid. The default value is 10,000 seconds.

Syntax Description

The port default value is 8080.
 The retry default value is 5 attempts.
 The attempts default value is 10,000 seconds.
 The timeout default value is 10,000 seconds.

Command Modes

Global configuration

Command History

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

Usage Guidelines

A connection is attempted a specified number of times with a delay of a specified number of seconds between each attempt. Once a connection is established, the DFP protocol will run. If a time interval update has not occurred for this DFP session, the connection breaks and is reestablished as described above.

Examples

The following example configures the DistributedDirector to communicate with a specified DFP agent:

```
ip director dfp 10.0.0.1 retry 3 attempts 60 timeout 6000
```

ip director dfp security

To configure a security key for use when connecting to the Dynamic Feedback Protocol (DFP) client named, use the **ip director dfp security** global configuration command. To turn off the security key, use the **no** form of this command.

```
ip director dfp security ip-address md5 string [timeout]
```

```
no ip director dfp security ip-address md5 string [timeout]
```

Syntax Description

<i>ip-address</i>	IP address for the service.
md5	Security data authentication. Message Digest 5.
<i>string</i>	Security key.
<i>timeout</i>	(Optional) Amount of time, in seconds, during which DistributedDirector will continue to accept a previously defined security key. The default value is 0 seconds.

Defaults

The timeout default value is 0 seconds.

Command Modes

Global configuration

Command History

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

Usage Guidelines

The **ip director dfp security** command should be entered before configuring the **ip director dfp** command, resulting in a connection being made, but it can be entered independently of making a connection.

DFP allows servers to take themselves Out-of-Service and place themselves back In-Service. This function could result in a security risk because a network that is hacked could be shut down even though all the servers are still performing. An optional security vector is included in DFP to allow each message to be verified. The security vector is used to describe the security algorithm being used and to provide the data for that algorithm. The security vector itself is also extensible in that it specifies which security algorithm is being used. This specification allows different levels of security from MD5 to Data Encryption Standard (DES) to be used without overhauling the protocol and disrupting any installed base of equipment. If a receiving unit is configured for the specified security type, all DFP packets must contain that security vector or they are ignored. If a receiving unit is not configured for any security type, the security vector does not have to be present, and if it is present, it is ignored while the rest of the message is processed normally.

Examples

The following example configures the security key hello:

```
ip director dfp security 10.0.0.1 md5 hello 60
```

Related Commands	Command	Purpose
	ip director dfp	Configures the DistributedDirector DFP agent with which the DistributedDirector should communicate.

ip director host priority

To configure the order in which the DistributedDirector considers metrics when picking a server, use the **ip director host priority** global configuration command. To turn off metric priorities, use the **no** form of this command.

```
ip director host host-name priority {[drp-int n] [drp-ext n] [drp-ser n] [drp-rtt n] [random n]
[admin n] [portion n] [availability n] [route-map n]}
```

```
no ip director host host-name priority {[drp-int n] [drp-ext n] [drp-ser n] [drp-rtt n]
[random n] [admin n] [portion n] [availability n] [route-map n]}
```

Syntax Description

<i>host-name</i>	Name of the host that maps to one or more IP addresses. Do not use an IP address.
drp-int <i>n</i>	(Optional) Director Response Protocol (DRP) internal metric. The range is 1 to 100. This option sends a DRP request to all DRP server agents, asking them for the distance from themselves to the edge of their Border Gateway Protocol (BGP) autonomous system in the direction of the client originating the Domain Name System (DNS) query. This distance can be used along with the DRP external metric (drp-ext) to help determine the distance between the router and the client originating the DNS query. If the client and the DRP server agent are in the same autonomous system, this metric returns the Interior Gateway Protocol (IGP) cost metric between the client and the DRP server agent.
drp-ext <i>n</i>	(Optional) DRP external metric. The range is 1 to 100. This option sends a DRP request to all DRP server agents, asking them for the BGP distance between them and the client originating the DNS query. This distance represents the number of BGP hops between the autonomous system of the DRP server agent and the autonomous system of the client originating the DNS query. Because this is BGP information, the DRP server agents need to have access to full Internet BGP information in order for this metric to be useful.
drp-ser <i>n</i>	(Optional) DRP server metric. The range is 1 to 100. This option sends a DRP request to all DRP server agents, asking them for the IGP route metric between them and the distributed servers that they support. This distance can be used with the DRP internal metric (drp-int) to get a finer distance calculation between the distributed servers and the edge of the BGP autonomous system in the direction of the client originating the DistributedDirector query. If a true BGP border router is used as a DRP server agent, the DRP server metric will return the IGP route metric between the distributed server and the BGP border router (autonomous system edge). Because DRP server metrics should not change frequently, DistributedDirector issues DRP server queries (and caches the results) every 10 minutes.

drp-rtt <i>n</i>	(Optional) DRP round-trip time metric. The range is 1 to 100. This option sends a DRP request to all DRP server agents, asking them for the round-trip time between the DRP agent and the client originating the DNS query.
random <i>n</i>	(Optional) Random metric. The range is 1 to 100. This option selects a random number for each distributed server and defines the “best” server as the one with the smallest random number assignment. Using this metric alone results in random redirection of clients to the distributed servers. Because this metric requires no routing table information, it does not trigger DRP requests to the DRP server agents.
admin <i>n</i>	(Optional) Administrative metric. The range is 1 to 100. This option specifies a simple preference of one server over another. If the administrative metric has been explicitly set to zero, the Director will not consider the server, so the server is taken out of service.
portion <i>n</i>	(Optional) Portion metric. The range is 1 to 100. This option assigns a load “portion” to each server such that servers with a higher portion value will receive a larger percentage of connections at any one time.
availability <i>n</i>	(Optional) Availability metric. The range is 1 to 65,535. This option specifies the load information for the DistributedDirector. The default value is 65,535.
route-map <i>n</i>	(Optional) Route-map metric. The range is 1 to 100. This option specifies if a server should be offered to a client.

Defaults

The availability default value is 65,535.

Command Modes

Global configuration

Command History

Release	Modification
11.1(18)IA	This command was introduced.
12.1(5)T	The availability and route-map metrics were added.

Usage Guidelines

Not all of the metrics need to be specified, but at least one must be specified.

The new availability metric allows the DistributedDirector to attempt to create a TCP connection to each distributed server on a configured port over a configurable time interval.

If multiple servers end up with the same metric value, the next metric is considered to determine the “best” server. If multiple metrics have the same priority value, the metrics are added to obtain a *composite metric*. For example, if two metrics have the same priority value, they are first multiplied by their weight values (if specified) and then added together to form the composite metric.

If you do not specify weights for a group of distributed servers, there are no default weights for the Director, and if you have specified priority values, the weight values are set to 1.

Any metrics that have a nonzero weight and that are assigned no priority value are set to a priority value of 101. They are considered after all other metrics that have priority values. As a result, if no priority values are specified for any metric, metrics are treated additively to form one composite metric.

If you do not use priority and multiple servers have the same metric value, the server whose last IP address was looked at will be returned as the “best” server. If you want to return a random IP address in the case of a tie, use metric priority with the **random** metric as the last criterion.

To turn off all priorities on all metrics associated with the defined host name, use the **no ip director host priority** command. You can turn off the priority for a specific metric or metrics using the **no ip director host *host-name* priority [drp-int *n*] [drp-ext *n*] [drp-ser *n*] [drp-rtt *n*] [random *n*] [admin *n*] [portion *n*] [availability *n*] [route-map *n*]** command.

Examples

The following example sets the external metric as the first priority and the administrative metric as the second priority:

```
ip director host www.xyz.com priority drp-ext 1 admin 2
```

Related Commands

Command	Description
ip director host connect	Enables the DistributedDirector to verify that a server is available.
show ip director hosts	Displays the DistributedDirector host information.

ip director host weights

To set host-specific weights for the metrics that the DistributedDirector uses to determine the best server within a specific host name, use the **ip director host weights** global configuration command. To turn off weights for a host, use the **no** form of this command.

```
ip director host host-name weights {[drp-int n] [drp-ext n] [drp-ser n] [drp-rtt n] [random n] [admin n] [portion n] [availability n] [route-map n]}
```

```
no ip director host host-name weights {[drp-int n] [drp-ext n] [drp-ser n] [drp-rtt n] [random n] [admin n] [portion n] [availability n] [route-map n]}
```

Syntax Description

<i>host-name</i>	Name of the host that maps to one or more IP addresses. Do not use an IP address.
drp-int <i>n</i>	(Optional) Director Response Protocol (DRP) internal metric. The range is 1 to 100. This option sends a DRP request to all DRP server agents, asking them for the distance from themselves to the edge of their Border Gateway Protocol (BGP) autonomous system in the direction of the client originating the Domain Name System (DNS) query. This distance can be used along with the DRP external metric (drp-ext) to help determine the distance between the router and the client originating the DNS query. If the client and the DRP server agent are in the same autonomous system, this metric returns the Interior Gateway Protocol (IGP) cost metric between the client and the DRP server agent.
drp-ext <i>n</i>	(Optional) DRP external metric. The range is 1 to 100. This option sends a DRP request to all DRP server agents, asking them for the BGP distance between them and the client originating the DNS query. This distance represents the number of BGP hops between the autonomous system of the DRP server agent and the autonomous system of the client originating the DNS query. Because this is BGP information, the DRP server agents need to have access to full Internet BGP information in order for this metric to be useful.
drp-ser <i>n</i>	(Optional) DRP server metric. The range is 1 to 100. This option sends a DRP request to all DRP server agents, asking them for the IGP route metric between them and the distributed servers that they support. This distance can be used with the DRP internal metric (drp-int) to get a finer distance calculation between the distributed servers and the edge of the BGP autonomous system in the direction of the client originating the DistributedDirector query. If a true BGP border router is used as a DRP server agent, the DRP server metric will return the IGP route metric between the distributed server and the BGP border router (autonomous system edge). Because DRP server metrics should not change frequently, DistributedDirector issues DRP server queries (and caches the results) every 10 minutes.

drp-rtt <i>n</i>	(Optional) DRP round-trip time metric. The range is 1 to 100. This option sends a DRP request to all DRP server agents, asking them for the round-trip time between the DRP agent and the client originating the DNS query.
random <i>n</i>	(Optional) Random metric. The range is 1 to 100. This option selects a random number for each distributed server and defines the “best” server as the one with the smallest random number assignment. Using this metric alone results in random redirection of clients to the distributed servers. Because this metric requires no routing table information, it does not trigger DRP requests to the DRP server agents.
admin <i>n</i>	(Optional) Administrative metric. The range is 1 to 100. This option specifies a simple preference of one server over another. If the administrative metric has been explicitly set to zero, the Director will not consider the server, so the server is taken out of service.
portion <i>n</i>	(Optional) Portion metric. The range is 1 to 100. This option assigns a load “portion” to each server such that servers with a higher portion value will receive a larger percentage of connections at any one time.
availability <i>n</i>	(Optional) Availability metric. The range is 1 to 65,535. This option specifies the load information for the DistributedDirector. The default value is 65,535.
route-map <i>n</i>	(Optional) Route-map metric. The range is 1 to 100. This option specifies if a server should be offered to a client.

**Note**

No host weights are set. If the **ip director default-weights** command is configured, the configured weights are the default.

Defaults

The availability default value is 65,535.

Command Modes

Global configuration

Command History

Release	Modification
11.1(25)IA	This command was introduced.
12.0(3)T	This command was integrated into the Cisco IOS Release 12.0(3)T.
12.1(5)T	The availability and route-map metrics were added.

Usage Guidelines

Use host-specific weights when you want to use different metric weights for different virtual host names (for example, www.xyz.com and ftp.xyz.com).

The new availability metric allows the DistributedDirector to attempt to create a TCP connection to each distributed server on a configured port over a configurable time interval.

If desired, host-specific weights can instead be configured on the DistributedDirector default DNS server.

For example, you could configure host-specific weights with the following DNS TXT record:

```
hostname in txt "ciscoDD: weights {[drp-int n] [drp-ext n] [drp-ser n] [random n]
[admin n]}"
```

To use the default weights for all metrics associated with this host name, use the **no ip director host weights** command. To use the default weights for a specific metric or metrics, use the **no ip director host *host-name* weights [drp-int n] [drp-ext n] [drp-ser n] [drp-rtt n] [random n] [admin n] [portion n] [availability n] [route-map n]** command.

Examples

The following example sets the DRP internal metric to 4:

```
ip director host www.xyz.com weights drp-int 4
```

Related Commands

Command	Description
ip director default-weights	Configures default weight metrics for the DistributedDirector.
show ip director hosts	Displays the DistributedDirector host information.

ip director server availability

To configure a default availability value for all ports on a server, use the **ip director server availability** global configuration command. To restore the default, use the **no** form of this command.

```
ip director server ip-address availability {availability-value | dfp [availability-value]}
```

```
no ip director server ip-address availability {availability-value | dfp [availability-value]}
```

Syntax Description

<i>ip-address</i>	IP address.
<i>availability-value</i>	Availability value as it would be represented on the DistributedDirector system. The range is 0 to 65,535.
dfp [<i>availability-value</i>]	Availability value as it would be represented on the LocalDirector system. The range for value is 0 to 65,535.

Defaults

The availability default value is 65,535.

Command Modes

Global configuration

Command History

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

Usage Guidelines

There are two methods for specifying a default availability value. These two methods exist because the LocalDirector and the DistributedDirector deal with values in two different ways. All metrics for the DistributedDirector are arranged such that lower is better; however the LocalDirector load information is calculated such that higher is better. Thus, the DistributedDirector translates the metric value upon receipt from the LocalDirector by subtracting the availability from the maximum possible value of 65,535.

Examples

To configure a default availability to be used if there is no other valid availability information, the following configuration would suffice. The following example shows how to specify the LocalDirector load and DistributedDirector availability, respectively:

```
ip director server 10.0.0.1 availability dfp 1
ip director server 10.0.0.1 availability 65534
```

To make the availability clear and to allow for specifying numbers in both schemes easily, there are two methods of specifying availability information. If the servers are running multiple serves, it may be necessary to configure the default availability value on a per-port basis by using the **ip director server port availability** command.

```
ip director server 10.0.0.1 port availability dfp 65535
ip director server 10.0.0.20 port availability dfp 65535
```

Related Commands	Command	Description
	ip director server port availability	Configures a default availability value for a specific port on a server.

ip director server port availability

To configure a default availability value for a specific port on a server, use the **ip director server port availability** global configuration command. To restore the default, use the **no** form of this command.

```
ip director server ip-address port availability {availability-value | dfp [availability-value]}
```

```
no ip director server ip-address port availability {availability-value | dfp [availability-value]}
```

Syntax Description

<i>ip-address</i>	IP address.
<i>availability-value</i>	Availability value as it would be represented on the DistributedDirector system. The range is 0 to 65,535.
dfp [<i>availability-value</i>]	Availability value as it would be represented on the LocalDirector system. The range for value is 0 to 65,535.

Defaults

The availability default value is 65,535.

Command Modes

Global configuration

Command History

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

Usage Guidelines

There are two methods for specifying a default availability value. These two methods exist because the LocalDirector and the DistributedDirector deal with values in two different ways. All metrics for the DistributedDirector are arranged such that lower is better; however the LocalDirector load information is calculated such that higher is better. Thus, the DistributedDirector translates the metric value upon receipt from the LocalDirector by subtracting the availability from the maximum possible value of 65,535.

Examples

To make the availability clear and to allow for specifying numbers in both schemes easily, there are two methods of specifying availability information. If the servers are running multiple serves, it may be necessary to configure the default availability value on a per-port basis by using the **ip director server port availability** command.

```
ip director server 10.0.0.1 port availability dfp 65535
ip director server 10.0.0.20 port availability dfp 65535
```

To configure a default availability to be used if there is no other valid availability information, the following configuration would suffice. The following example shows how to specify the LocalDirector load and DistributedDirector availability, respectively:

```
ip director server 10.0.0.1 availability dfp 1
ip director server 10.0.0.1 availability 65534
```

Related Commands	Command	Description
	ip director server availability	Configures a default availability value for all ports on a server.

show ip director dfp

To display information about the current status of the DistributedDirector connections with a particular Dynamic Feedback Protocol (DFP) agent, use the **show ip director dfp** EXEC command.

```
show ip director dfp [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.

Examples

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

```
Router# show ip director dfp

172.24.9.9:
Max retries: 5
Timeout between connect attempts: 60
Timeout between updates: 90
Last update received: 00:00:12 ago
Server      Port  BindID  Address  Mask
172.28.9.9   80    0       0.0.0.0  0.0.0.0
192.168.25.25
Max retries: 5
Timeout between connect attempts: 60
Timeout between updates: 90
Last update received: 00:00:44 ago
Server      Port  BindID  Address  Mask
192.168.30.30 80    0       0.0.0.0  0.0.0.0
```