id

To configure the object identifier, use the **id** command in expression object configuration mode. To disable the configuration, use the **no** form of this command.

id *object-oid*

no id *object-id*

Syntax Description

object-oid	Object identifier of an object. The default is 0.0.

Command Default

By default, the object identifier for an object is not configured.

Command Modes

Expression object configuration mode (config-expression-object)

Command History

Release	Modification
12.4(20)T	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE.
Cisco IOS XE Release 3.1S	This command was integrated into Cisco IOS XE Release 3.1S.

Examples

The following example shows how to set the object identifier to 2.2 in expression object configuration mode:

```
Router(config)# snmp mib expression owner owner1 name expressionA
Router(config-expression)# object 3
Router(config-expression-object)# id 2.2
```

idle-timeout (WSMA)

To set a time for the Web Services Management Agent (WSMA) profile to keep the session alive in the absence of any data traffic, use the **idle-timeout** command in the WSMA listener configuration mode or the WSMA initiator configuration mode. To disable the idle-timeout, use the **no** form of this command.

idle-timeout *minutes*

no idle-timeout

Syntax Description

minutes	The time, in minutes, taken by the WSMA profile to disconnect the session if there is no network traffic. The range is from 1 to 35,000. The default is infinite.

Command Default

The idle-timeout value is set to infinite.

Command Modes

WSMA listener configuration (config-wsma-listen)

WSMA initiator configuration (config-wsma-init)

Command History

Release	Modification
12.4(24)T	This command was introduced.
15.1(1)T	This command was modified. Support was added for WSMA initiator configuration mode.

Usage Guidelines

Use this command from the WSMA listener configuration mode or the WSMA initiator configuration mode. To enter the WSMA listener configuration mode, enter the **wsma profile listener** command in global configuration mode. To enter the WSMA initiator configuration mode, use the **wsma profile initiator** command in global configuration mode.

Examples

The following example shows how to set the idle-timeout value for a WSMA listener profile:

```
Router(config)# wsma profile listener prof1
Router(config-wsma-listen)# idle-timeout 345
```

Related Commands

Command	Description
acl	Enables access control lists for restricting addresses that can connect to a WSMA profile.
encap	Configures an encapsulation for WSMA profiles.
max-message	Sets the maximum size limit for incoming messages.
stealth	Disables WSMA from sending SOAP faults.

Command	Description
transport	Defines a transport configuration for a WSMA profile.
wsma profile listener	Configures and enables a WSMA listener profile.
wsse	Enables the WSSE for a WSMA profile.

if-mgr delete

To delete the unused interface identification numbers (ifIndex) from the system interface, use the **if-mgr delete** command in privileged EXEC mode.

if-mgr delete {**ifindex-pool** *initial-ifindex number-of-ifindexes* | **interfaceType** *interface-name*}

Syntax Description

ifindex-pool	Specifies the ifIndex pool to delete.
initial-ifindex	Initial ifIndex value in the ifIndex pool. The range is from 1 to 3200.
number-of-ifindexes	The number of ifIndexes to be deleted. The range is from 1 to 3200.
interfaceType	Specifies the type of interface to which the ifIndex value is assigned.
interface-name	Name of the interface to which the ifIndex is assigned.

Command Default

The ifIndexes assigned for the specified system interface are deleted.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2 SXH	This command was introduced.

Usage Guidelines

The ifIndex is a unique identification value associated with a physical or logical interface.

While specifying the ifIndex to be deleted, also provide the interface description (ifDescr) and the ifindex value assigned to that interface.

Examples

The following example shows how to delete the pool of unused ifIndexes:

```
Router# if-mgr delete ifindex-pool 2 5
```

Related Commands

Command	Description
show snmp mib ifmib ifindex	Displays all SNMP ifIndex identification numbers for all system interfaces.

instance (MIB)

To configure the MIB object instances to be used in a bulk statistics schema, use the **instance** command in Bulk Statistics Schema configuration mode. To remove a Simple Network Management Protocol (SNMP) bulk statistics object list, use the **no** form of this command.

instance {**exact** | **wild**} {**interface** *interface-id* [**sub-if**] | **oid** *oid*}

no instance

Syntax Description

exact	Indicates that the specified instance (interface, controller, or object identifier [OID]), when appended to the object list, is the complete OID to be used in this schema.
wild	Indicates that all instances that fall within the specified interface, controller, or OID range should be included in this schema.
interface	Specifies a specific interface or group of interfaces for the schema.
interface-id	Interface name and number for a specific interface or group of interfaces.
sub-if	(Optional) Specifies that the object instances should be polled for all subinterfaces of the specified interface or controller in addition to the object instances for the main interface.
oid	Indicates that an OID is specified.
oid	Object ID that, when appended to the object list, specifies the complete (or wildcarded) OID for the objects to be monitored.

Command Default

By default, MIB object instances to be used in bulk statistics schema are not configured.

Command Modes

Bulk Statistics Schema configuration (config-bulk-sc)

Command History

Release	Modification
12.0(24)S	This command was introduced.
12.3(2)T	This command was integrated into Cisco IOS Release 12.3(2)T.
12.2(25)S	This command was integrated into Cisco IOS Release 12.2(25)S.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.2(33)SB	This command was integrated into Cisco IOS Release 12.2(33)SB.
Cisco IOS XE Release 2.1	This command was integrated into Cisco IOS Release XE 2.1.

Usage Guidelines

The **instance** command specifies the instance information for objects in the schema being configured. The specific instances of MIB objects for which data should be collected are determined by appending the value of the **instance** command to the objects specified in the associated object list. In other words, the schema **object-list** when combined with the schema **instance** specifies a complete MIB object identifier.

The **instance exact** command indicates that the specified instance, when appended to the object list, is the complete OID.

The **instance wild** command indicates that all subindices of the specified OID belong to this schema. In other words, the **wild** keyword allows you to specify a partial, wildcarded instance.

Instead of specifying an OID, you can specify a specific interface. The **interface** *interface-id* keyword and argument allow you to specify an interface name and number (for example, FastEthernet 0) instead of specifying the ifIndex OID for the interface.

The optional **sub-if** keyword, when added after specifying an interface or controller, includes the ifIndexes for all subinterfaces of the interface you specified.

Only one **instance** command can be configured per schema.

Examples

The following example shows how to configure the router to collect bulk statistics for the ifInOctets object (from the IF-MIB) for Fast Ethernet interface 3/0. In this example, 3 is the ifIndex instance for Fast Ethernet interface 3/0. The instance (3) when combined with the object list (ifIndex; 1.3.6.1.2.1.2.2.1.1) translates to the OID 1.3.6.1.2.1.2.2.1.1.3.

```
Router# configure terminal
Router(config)# snmp mib bulkstat object-list E0InOctets
! The following command specifies the object 1.3.6.1.2.1.2.2.1.1.3 (ifIndex)
Router(config-bulk-objects)# add ifIndex
Router(config-bulk-objects)# exit
Router(config)# snmp mib bulkstat schema E0
Router(config-bulk-sc)# object-list E0InOctets
! The following command is equivalent to "instance exact oid 3".
Router(config-bulk-sc)# instance exact interface FastEthernet 3/0
Router(config-bulk-sc)# exit
Router(config)# snmp mib bulkstat transfer bulkstat1
Router(config-bulk-tr)# schema E0
Router(config-bulk-tr)# url primary ftp://user:password@host/ftp/user/bulkstat1
Router(config-bulk-tr)# url secondary tftp://user@host/tftp/user/bulkstat1
Router(config-bulk-tr)# format schemaASCII
Router(config-bulk-tr)# transfer-interval 30
Router(config-bulk-tr)# retry 5
Router(config-bulk-tr)# enable
Router(config-bulk-tr)# exit
Router(config)# do copy running-config startup-config
```

Related Commands

Command	Description
object-list	Configures the bulk statistics object list to be used in the bulk statistics schema.
snmp mib bulkstat schema	Names an SNMP bulk statistics schema and enters Bulk Statistics Schema configuration mode.

instance (resource group)

To add request/response units (RUs) to a specified resource group, use the **instance** command in resource group configuration mode. To disable this function, use the **no** form of this command.

instance *instance-name*

no instance *instance-name*

Syntax Description

instance-name	Name of the RU you want to add to the resource group (for example, **http**, **snmp**).

Command Default

Disabled

Command Modes

Resource group configuration

Command History

Release	Modification
12.3(14)T	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.

Usage Guidelines

Before adding RUs to a resource group, you must create a resource group using the **user group** *resource-group-name* **type** *resource-user-type* command in ERM configuration mode.

For example, you have a resource group named lowPrioUsers with a type of iosprocess. You have low-priority RUs or tasks such as HTTP and Simple Network Management Protocol (SNMP), and you want to set a threshold for all the low-priority RUs as a group. You must add the RUs to the resource group using the **instance** *instance-name* command and then apply a resource policy.

If the resource policy you applied sets a minor rising threshold value of 10 percent for the resource group, when the accumulated usage of both HTTP and SNMP RUs crosses 10 percent a notification is sent to the RUs in the resource group lowPrioUsers. For example, if HTTP usage is 4 percent and SNMP usage is 7 percent, a notification is sent to the resource group.

Examples

The following example shows how to add an HTTP RU to a resource group named lowPrioUsers:

```
Router(config-erm)# user group lowPrioUsers type iosprocess
Router(config-res-group)# instance http
```

Related Commands

Command	Description
policy (resource group)	Applies a policy to all the RUs in the resource group.
user (ERM)	Creates a resource group.

instance range

To specify the range of instances to collect for a given data group, use the **instance range** command in global configuration mode. To delete a previously configured instance range, use the **no** form of this command.

instance range start *oid* **end** *oid*

no instance range start *oid* **end** *oid*

Syntax Description

start	Indicates the beginning of the range.
oid	The object ID to be monitored for the specific range.
end	Indicates the end of the range.

Command Default

No instance range is configured.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(33)SRC	This command was introduced.
12.2(33)SB	This command was integrated into Cisco IOS Release 12.2(33)SB.
Cisco IOS XE Release 2.1	This command was integrated into Cisco IOS Release XE 2.1.

Usage Guidelines

When used in conjunction with the **snmp mib bulkstat schema** command, the **instance range** command can be used to configure a range of instances on which to collect data.

Examples

The following example shows the collection of data for all instances starting with instance 1 and ending with instance 2:

```
snmp mib bulkstat object-list ifmib
  add ifInOctets
  add ifOutOctets
  exit
!
snmp mib bulkstat schema IFMIB
 object-list ifmib
 poll-interval 1
 instance range start 1 end 2
 exit
!
snmp mib bulkstat transfer bulkstat1
 schema IFMIB
 url primary tftp://202.153.144.25/pcn/bulkstat1
 format schemaASCII
```

```
transfer-interval 5
retry 5
buffer-size 1024
retain 30
enable
end
```

Related Commands

Command	Description
instance	Specifies the instance that, when appended to the object list, gives the OID of the object instance to be monitored in the bulk statistics schema.
snmp mib bulkstat schema	Names a bulk statistics schema and enters Bulk Statistics Schema configuration mode.

instance repetition

To configure data collection to begin at a particular instance of a MIB object and to repeat for a given number of instances, use the **instance repetition** command in global configuration mode. To delete a previously configured repetition of instances, use the **no** form of this command.

instance repetition *oid-instance* **max** *repeat-number*

no instance repetition

Syntax Description

oid-instance	Object ID of the instance to be monitored.
max *repeat-number*	Specifies the number of times the instance should repeat.

Command Default

No instance repetition is configured.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(33)SRC	This command was introduced.
12.2(33)SB	This command was integrated into Cisco IOS Release 12.2(33)SB.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.
Cisco IOS XE Release 2.1	This command was integrated into Cisco IOS Release XE 2.1.

Usage Guidelines

When used in conjunction with the **snmp mib bulkstat schema** command, the **instance repetition** command can be used to configure data collection to repeat for a certain number of instances of a MIB object.

Examples

The following example shows how to start data collection at the first instance and repeat for four instances of the indicated MIB object:

```
snmp mib bulkstat object-list ifmib
 add ifOutOctets
 add ifInOctets
snmp mib bulkstat schema IFMIB
 object-list ifmib
 poll-interval 1
 instance repetition 1 max 4
snmp mib bulkstat transfer bulkstat1
 schema IFMIB
 transfer-interval 5
 retain 30
 retry 5
 buffer-size 1024
 enable
```

Related Commands

Command	Description
instance	Specifies the instance that, when appended to the object list, gives the OID of the object instance to be monitored in the bulk statistics schema.
snmp mib bulkstat schema	Names a bulk statistics schema and enters Bulk Statistics Schema configuration mode.

ip address dynamic

To discover a customer premises equipment (CPE) router's IP address dynamically based on an aggregator router's IP address, use the **ip address dynamic** command in Frame Relay DLCI interface configuration mode. To disable this request, use the **no** form of this command.

ip address dynamic

no ip address dynamic

Syntax Description

This command has no arguments or keywords.

Command Default

No IP address discovery request is made.

Command Modes

Frame Relay DLCI interface configuration

Command History

Release	Modification
12.3(2)XF	This command was introduced.
12.3(8)T	This command was integrated into Cisco IOS Release 12.3(8)T.

Usage Guidelines

When you enter the **ip address dynamic** command, the CPE router sends an Inverse Address Resolution Protocol (ARP) request to the aggregator router asking for the IP address of its interface. The aggregator router replies with its own subinterface's IP address. The CPE router then calculates a valid IP address and a suitable netmask for its subinterface based on the data received from the aggregator router. The aggregator router is polled at regular intervals. If the IP address on the aggregator router's interface changes, the CPE router's IP address will adjust as necessary.

You can check the assigned IP address by entering the **show interface** command and specifying the subinterface being configured.

Note The **ip address dynamic** command is only applicable for Frame Relay point-to-point subinterfaces.

Examples

The following example shows how to configure serial interface 1 to run Frame Relay. Its subinterface is then configured to discover the IP address using the **ip address dynamic** command.

```
interface Serial 1
 encapsulation frame
interface serial 1.1 point-to-point
 frame-relay interface-dlci 100
 ip address dynamic
```

Related Commands

Command	Description
frame-relay interface-dlci	Assigns a data link connection identifier (DLCI) to a specified Frame Relay subinterface on the router or access server, and enters Frame Relay DLCI interface configuration mode.

ip director access-group local

Note Effective with Cisco IOS Release 12.4(24)T, the **ip director access-group local** command is not available in Cisco IOS software.

To configure the DistributedDirector to process only Domain Name System (DNS) queries for hostnames that are configured directly through command-line interface (CLI) commands or text (TXT) resource records, use the **ip director access-group local** command in global configuration mode. 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.

Command Default

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.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
12.4(24)T	This command was removed.

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 only the configured hostnames.

Examples

The following example shows how to configure the DistributedDirector to process only DNS queries for hostnames that are configured directly through CLI commands or TXT resource records:

```
Router(config)# ip director access-group local
```

ip director cache refresh

Note Effective with Cisco IOS Release 12.4(24)T, the **ip director cache refresh** command is not available in Cisco IOS software.

To enable the DistributedDirector Cache Auto Refresh function, use the **ip director cache refresh** command in global configuration mode. To disable automatic background refresh, use the **no** form of this command.

ip director cache refresh

no ip director cache refresh

Syntax Description

This command has no keywords or arguments.

Command Default

Automatic background refresh is disabled.

Command Modes

Global configuration

Command History

Release	Modification
12.2(8)T	This command was introduced.
12.4(24)T	This command was removed.

Usage Guidelines

The sorting cache on DistributedDirector must be enabled before you can use the **ip director cache refresh** command. To enable the sorting cache, use the **ip director cache** command.

Once automatic background refresh for the DistributedDirector cache is enabled, the cache will actively and continuously update every expired entry by processing a fake Domain Name System (DNS) request. The cache accumulates and updates answers to all past DNS queries received since cache auto refresh was initiated. Any repeat DNS request is always serviced directly from the cache.

Examples

The following example enables automatic background refresh for the DistributedDirector cache:

```
Router(config)# ip director cache
Router(config)# ip director cache refresh

Router# show running-config

ip host myhost 172.2.2.10 172.2.2.20 172.2.2.30
.
.
.
ip director cache refresh
```

ip director cache size

Note Effective with Cisco IOS Release 12.4(24)T, the **ip director cache size** command is not available in Cisco IOS software.

To configure the variable size of the DistributedDirector cache, use the **ip director cache size** command in global configuration mode. To remove this command from the configuration file and restore the system to its default condition with respect to this command, use the **no** form of this command.

ip director cache size *entries*

no ip director cache size *entries*

Syntax Description

entries	An integer in the range from 1 to 4294967295 that specifies the maximum number of cache entries.

Command Default

Maximum number of cache entries: 2000

Command Modes

Global configuration

Command History

Release	Modification
12.2(8)T	This command was introduced.
12.4(24)T	This command was removed.

Usage Guidelines

Use the **ip director cache size** command to configure the maximum number of cache entries that the DistributedDirector system will retain in its cache. This cache size is the maximum number of cache entries that are displayed when the user enters the **show ip director cache** command.

Examples

The following example configures the maximum number of cache entries:

```
Router(config)# ip director cache size 1500
Cache size shrinked to 1500

Router# show ip director cache
Director cache is on
Cache current size = 0 maximum size = 1500
Cache time for sort cache entries: 60 secs
Director sort cache hits = 0
```

Related Commands

Command	Description
ip director cache	Enables the sorting cache on DistributedDirector.
ip director cache time	Configures how long the DistributedDirector system will retain per-client sorting information.

ip director cache time

Note Effective with Cisco IOS Release 12.4(24)T, the **ip director cache time** command is not available in Cisco IOS software.

To configure how long the DistributedDirector system will retain per-client sorting information, use the **ip director cache time** command in global configuration mode. To remove this command from the configuration file and restore the system to its default condition with respect to this command, use the **no** form of this command.

ip director cache time *seconds*

no ip director cache time *seconds*

Syntax Description

seconds	An integer in the range from 1 to 2147483 that specifies, in seconds, the amount of time the per-client sorting information is retained. The default is 60 seconds.

Command Default

The default is 60 seconds.

Command Modes

Global configuration

Command History

Release	Modification
12.2(8)T	This command was introduced.
12.4(24)T	This command was removed.

Usage Guidelines

Use the **ip director cache time** command to specify how long the DistributedDirector system will retain per-client sorting in its cache. This cache time is the maximum amount of cache time displayed when the user enters the **show ip director cache** command.

Examples

The following example configures how long the DistributedDirector system will retain per-client sorting information:

```
Router(config)# ip director cache time 100

Router# show ip director cache
Director cache is on
Cache current size = 0 maximum size = 2000
Cache time for sort cache entries: 100 secs
Director sort cache hits = 0
```

Related Commands

Command	Description
ip director cache	Enables the sorting cache on DistributedDirector.
ip director cache size	Configures the variable size of the DistributedDirector cache.

ip director default priorities

Note Effective with Cisco IOS Release 12.4(24)T, the **ip director default priorities** command is not available in Cisco IOS software.

To set a default priority for a specific metric on the DistributedDirector, use the **ip director default priorities** command in global configuration mode. To remove a default priority for a metric, use the **no** form of this command.

ip director default priorities [**drp-int** *number*] [**drp-ext** *number*] [**drp-ser** *number*] [**random** *number*] [**admin** *number*] [**drp-rtt** *number*] [**portion** *number*] [**availability** *number*] [**route-map** *number*] [**boomerang** *number*]

no ip director default priorities [**drp-int** *number*] [**drp-ext** *number*] [**drp-ser** *number*] [**random** *number*] [**admin** *number*] [**drp-rtt** *number*] [**portion** *number*] [**availability** *number*] [**route-map** *number*] [**boomerang** *number*]

Syntax Description

drp-int	(Optional) DRP internal metric.
number	(Optional) Numeric value of a priority level for a given metric. Range is from 1 to 100.
drp-ext	(Optional) DRP external metric.
drp-ser	(Optional) DRP server metric.
random	(Optional) Random metric.
admin	(Optional) Administrative metric.
drp-rtt	(Optional) DRP round-trip time metric.
portion	(Optional) Portion metric.
availability	(Optional) Availability metric.
route-map	(Optional) Route-map metric.
boomerang	(Optional) Boomerang metric.

Command Default

No default priorities are specified.

Command Modes

Global configuration

Command History

Release	Modification
12.2(4)T	This command was introduced.
12.2(8)T	The boomerang metric was added.
12.4(24)T	This command was removed.

Usage Guidelines

Not all of the metrics need to be specified, but at least one must be specified. If the boomerang metric is specified for a given host name, then all metrics of lower priority (that is, having a higher priority number) than boomerang are always ignored.

The default priorities specified will take effect if no priorities are specified in the **ip director host priority** command or in the corresponding Domain Name System (DNS) text record for the host.

To set the default priority for several metrics, enter the metric keywords and values to be configured on the same line as the **ip director default priorities** command.

Examples

In the following example, the boomerang metric is selected as the default priority:

```
Router(config)# ip director default priorities boomerang 1

Router# show running-config

ip host boom1 172.2.2.10 172.2.2.20 172.2.2.30
ip director server 172.2.2.20 drp-association 172.4.4.2
ip director server 172.2.2.30 drp-association 172.4.4.3
ip director server 172.2.2.10 drp-association 172.4.4.1
ip director host boom1
no ip director cache
ip dns primary boom1 soa boom1 boom1@com
ip director host boom1 priority boomerang 1
no ip director drp synchronized
```

Related Commands

Command	Description
ip director access-list	Defines an access list for DistributedDirector that specifies which subdomain names and host names should be sorted.
ip director cache	Enables the sorting cache on DistributedDirector.
ip director default priorities	Sets a default priority for a specific metric on DistributedDirector.
ip director default weights	Configures default weight metrics for DistributedDirector.
ip director host priority	Configures the order in which DistributedDirector considers metrics when picking a server.
ip director host weights	Sets host-specific weights for the metrics that 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 priority	Verifies the default configurations of DistributedDirector metrics.
show ip director default weights	Shows DistributedDirector default weights.
show ip director servers	Displays DistributedDirector server preference information.

ip director default weights

Note Effective with Cisco IOS Release 12.4(24)T, the **ip director default weights** command is not available in Cisco IOS software.

To configure default weight metrics for DistributedDirector, use the **ip director default weights** command in global configuration mode. To set the defaults to zero, use the **no** form of this command.

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

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

Syntax Description

drp-int	(Optional) Sends a Director Response Protocol (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.
drp-ext	(Optional) Sends a DRP request to all DRP server agents, asking them for the BGP distance between them and the client originating the DNS query.
drp-ser	(Optional) 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.
drp-rtt	(Optional) 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	(Optional) Selects a random number for each distributed server and defines the "best" server as the one with the smallest random number assignment.
admin	(Optional) Specifies a simple preference of one server over another. If this administrative metric has been explicitly set to zero, the Director will not consider the server, so the server is taken out of service.
portion	(Optional) 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	(Optional) Specifies the load information for the DistributedDirector. The default value is 65535.
avail-number	(Optional) Integer in the range of 1 to 65535, inclusive.
route-map	(Optional) Specifies whether a server should be offered to a client.
number	(Optional) Integer in the range of 1 to 100, inclusive.

Command Default

No default weights are specified.

The availability default value is 65535.

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.
12.2(4)T	The command name was changed slightly: **default weights** replaced **default-weights**.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
12.4(24)T	This command was removed.

Usage Guidelines Not all 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 total 100.

The distance specified with the **drp-int** keyword can be used 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.

The distance learned through the **drp-ext** keyword 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 for this metric to be useful.

The distance learned through the **drp-ser** keyword 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.

Using the **random** keyword 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.

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 shows how to configure default weights for the internal and external metrics:

```
Router(config)# 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 default priorities	Sets default priorities for a specific metric on the DistributedDirector.
ip director drp rttprobe	Sets the protocol used by DRP agents for RTT probing in DistributedDirector.
ip director host priority	Configures the order in which the DistributedDirector considers metrics when selecting 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 priority	Verifies the default configurations of DistributedDirector metrics.
show ip director default weights	Shows the DistributedDirector default weights.
show ip director servers	Displays the DistributedDirector server preference information.

ip director dfp

Note Effective with Cisco IOS Release 12.4(24)T, the **ip director dfp** command is not available in Cisco IOS software.

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

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

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

Syntax Description

ip-address	IP address.
port	(Optional) Port number to which the distributed servers are configured. The default value is 8080.
retry *number*	(Optional) Specifies the number of times a connection will be attempted. The default value is 5.
attempts *seconds*	(Optional) Specifies the delay, in seconds, between each connection attempt. The default value is 10000.
timeout *seconds*	(Optional) Specifies the maximum amount of time, in seconds, for which DFP information is assumed valid. The default value is 10000.

Command Default

The port default value is 8080.

The retry default value is 5.

The attempts default value is 10000.

The timeout default value is 10000.

Command Modes

Global configuration

Command History

Release	Modification
12.1(5)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
12.4(24)T	This command was removed.

Usage Guidelines

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

Examples

The following example shows how to configure 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

Note Effective with Cisco IOS Release 12.4(24)T, the **ip director dfp security** command is not available in Cisco IOS software.

To configure a security key for use when connecting to the Dynamic Feedback Protocol (DFP) client named, use the **ip director dfp security** command in global configuration mode. 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

ip-address	IP address for the service.
md5	Message Digest 5 (MD5) security data authentication.
string	Security key.
timeout	(Optional) Amount of time, in seconds, during which DistributedDirector will continue to accept a previously defined security key. The default value is 0 seconds.

Command Default

The default timeout value is 0 seconds.

Command Modes

Global configuration

Command History

Release	Modification
12.1(5)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
12.4(24)T	This command was removed.

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 an 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 shows how to configure 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 drp retries

Note Effective with Cisco IOS Release 12.4(24)T, the **ip director drp retries** command is not available in Cisco IOS software.

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

ip director drp retries *attempts*

no ip director drp retries *attempts*

Syntax Description

attempts	Integer in the range of 0 to 1000 that specifies the number of retry attempts. The default is 2.

Command Default

No retries are attempted.

Command Modes

Global configuration

Command History

Release	Modification
12.1(5)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
12.4(24)T	This command was removed.

Usage Guidelines

When a DistributedDirector is slow in 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 faster to clients.

Examples

The following example shows how to configure one DRP query retry for a DistributedDirector:

```
Router(config)# ip director drp retries 1
```

ip director drp rttprobe

Note Effective with Cisco IOS Release 12.4(24)T, the **ip director drp rttprobe** command is not available in Cisco IOS software.

To set the protocol used by Director Response Protocol (DRP) agents for round-trip time (RTT) probing in DistributedDirector, use the **ip director drp rttprobe** command in global configuration mode. To disable the use of a protocol, use the **no** form of the command.

ip director drp rttprobe [**tcp** | **icmp**]

no ip director drp rttprobe [**tcp** | **icmp**]

Syntax Description

tcp	(Optional) Transmission Control Protocol. This is the default.
icmp	(Optional) Internet Control Message Protocol.

Command Default

TCP is the default protocol.

Command Modes

Global configuration

Command History

Release	Modification
12.2(4)T	This command was introduced.
12.4(24)T	This command was removed.

Usage Guidelines

Both protocols can be activated, in which case DistributedDirector will instruct DRP agents to return the RTT collected from either the TCP or Internet Control Message Protocol (ICMP) protocol, whichever becomes available first. At any time, at least one of the protocols must be active.

To use only one protocol, enable the protocol you want to use, and then disable the protocol that was already configured.

```
Router(config)# ip director drp rttprobe icmp
Router(config)# no ip director drp rttprobe tcp
```

Examples

The following example shows that ICMP is configured for use by DRP agents for RTT probing:

```
Router(config)# ip director drp rttprobe icmp
```

Related Commands

Command	Description
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 default priorities	Sets default priorities for a specific metric on the DistributedDirector.
ip director default weights	Configures default weight metrics for the DistributedDirector.
ip director host priority	Configures the order in which the DistributedDirector considers metrics when selecting 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 priority	Verifies the default configurations of DistributedDirector metrics.
show ip director default weights	Shows the DistributedDirector default weights.
show ip director servers	Displays the DistributedDirector server preference information.

ip director drp synchronized

Note Effective with Cisco IOS Release 12.4(24)T, the **ip director drp synchronized** command is not available in Cisco IOS software.

To activate clock synchronization between DistributedDirector and Director Response Protocol (DRP), use the **ip director drp synchronized** command in global configuration mode. To deactivate synchronization between the clocks in DistributedDirector and the DRPs, use the **no** form of this command.

ip director drp synchronized

no ip director drp synchronized

Syntax Description

This command has no arguments or keywords.

Command Default

Clock synchronization is deactivated.

Command Modes

Global configuration

Command History

Release	Modification
12.2(8)T	This command was introduced.
12.4(24)T	This command was removed.

Usage Guidelines

This command is used in conjunction with boomerang racing.

When the **ip dir drp synchronized** command is configured, DistributedDirector specifies an absolute time at which the DRP agent should respond to the DNS client.

When **no ip director drp synchronized** is configured (which is the default), DistributedDirector specifies a relative time (based on the delay measured between DistributedDirector and the DRP agent) at which the DRP agent should respond to the Domain Name Service (DNS) client.

Examples

In the following example, DistributedDirector and DRP clock synchronization are activated:

```
Router(config)# ip director drp synchronized

Router(config)# show running-config

ip host boom1 172.2.2.10 172.2.2.20 172.2.2.30
ip director server 172.2.2.20 drp-association 172.4.4.2
ip director server 172.2.2.30 drp-association 172.4.4.3
ip director server 172.2.2.10 drp-association 172.4.4.1
ip director host boom1
ip director drp synchronized
```

ip director drp timeout

Note Effective with Cisco IOS Release 12.4(24)T, the **ip director drp timeout** command is not available in Cisco IOS software.

To configure a DistributedDirector with a Director Response Protocol (DRP) query timeout period, use the **ip director drp timeout** command in global configuration mode. To reset each DRP query timeout to the default value, use the **no** form of this command.

ip director drp timeout *seconds*

no ip director drp timeout *seconds*

Syntax Description

seconds	Integer in the range of 1 to 3600 that specifies the time, in seconds, of the DRP query timeout.

Command Default

When this command is not issued, the lookup query timeout default is 1 second and the measure query timeout default is 4 seconds.

Command Modes

Global configuration

Command History

Release	Modification
12.1(5)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
12.4(24)T	This command was removed.

Usage Guidelines

When a DistributedDirector is not detecting that a DRP agent is unresponsive, the **ip director drp timeout** command can be used to shorten the timeout period so that the DistributedDirector can respond to its clients faster.

Note If the time interval for a DRP query is too short, there is a risk that the DistributedDirector can miss a response from a DRP agent. The time set for a measure query timeout period should be longer than for a lookup query timeout period.

Examples

The following example shows how to configure a disconnection time interval of 3 seconds for all DFP queries:

```
Router(config)# ip director drp timeout 3
```

Related Commands

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

ip director drp timeout lookup

Note Effective with Cisco IOS Release 12.4(24)T, the **ip director drp timeout lookup** command is not available in Cisco IOS software.

To configure the maximum amount of time that a DistributedDirector waits to resend a Director Response Protocol (DRP) lookup query, use the **ip director drp timeout lookup** command in global configuration mode. 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

seconds	Integer in the range of 1 to 3600 that specifies the number of seconds a DistributedDirector waits before resending a DRP lookup query. The default is 1.

Command Default

DRP lookup queries are resent every 1 second.

Command Modes

Global configuration

Command History

Release	Modification
12.1(5)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
12.4(24)T	This command was removed.

Usage Guidelines

A DRP agent looks in existing internal tables and immediately answers the lookup query.

Examples

The following example shows how to configure a DistributedDirector to wait 3 seconds before resending a DRP lookup query:

```
Router(config)# ip director drp timeout lookup 3
```

Related Commands

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

ip director drp timeout measure

Note Effective with Cisco IOS Release 12.4(24)T, the **ip director drp timeout measure** command is not available in Cisco IOS software.

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

ip director drp timeout measure *seconds*

no ip director drp timeout measure *seconds*

Syntax Description

seconds	Integer in the range of 1 to 3600 that specifies the number of seconds a DistributedDirector waits before resending a DRP measure query. The default is 4.

Command Default

DRP measure queries are resent every 4 seconds

Command Modes

Global configuration

Command History

Release	Modification
12.1(5)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
12.4(24)T	This command was removed.

Usage Guidelines

A timeout measure query allows a DRP agent to return extended external information. When extended external information is returned, delays can result.

Note The measure query timeout period should be longer than the lookup query timeout period. If the time interval for the measure query timeout is too short, the DistributedDirector can miss responses from the DRP agent.

Examples

The following example shows how to configure a DistributedDirector to wait 2 seconds before resending a DRP measure query:

```
Router(config)# ip director drp timeout measure 2
```

Related Commands

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

ip director host active-close

Note Effective with Cisco IOS Release 12.4(24)T, the **ip director host active-close** command is not available in Cisco IOS software.

To direct a DistributedDirector to close a 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 [*hostname*] [*query-type*] **active-close**

no ip director host [*hostname*] [*query-type*] **active-close**

Syntax Description

hostname	(Optional) Name of the host that maps to one or more IP addresses. Do not use an IP address.
query-type	(Optional) Type of query. Two values are valid: • **a** indicates that the configuration is used for processing Domain Name System (DNS) address queries for the specified hostname. This is the default • **mx** indicates that the configuration is used for processing Mail eXchange (MX) queries for the specified hostname.

Command Default

TCP connections are reset.

Command Modes

Global configuration

Command History

Release	Modification
12.1(5)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
12.4(24)T	This command was removed.

Usage Guidelines

DistributedDirector resets TCP connections when it performs connection 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 shows how to set the connection test interval to 5 minutes for the distributed servers on port 80, for host www.xyz.com. The TCP connection is specified as closed using the standard TCP close procedure.

```
Router(config)# ip director host www.xyz.com connect 80 5
Router(config)# 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

Note Effective with Cisco IOS Release 12.4(24)T, the **ip director host connect** command is not available in Cisco IOS software.

To enable a DistributedDirector to verify that a server is available, use the **ip director host connect** command in global configuration mode. To turn off connection parameters, use the **no** form of this command.

ip director host *hostname* [*query-type*] **connect** *port* [*minutes* | **interval** *seconds*]

no ip director host *hostname* [*query-type*] **connect**

Syntax Description

hostname	Name of the host that maps to one or more IP addresses. Do not use an IP address.
query-type	(Optional) Type of query. Two values are valid: • **a** indicates that the configuration is used for processing Domain Name System (DNS) address queries for the specified hostname. This is the default. • **mx** indicates that the configuration is used for processing Mail eXchange (MX) queries for the specified hostname.
port	Integer in the range of 1 to 65535 that specifies the port to which the distributed servers are connected.
minutes	(Optional) Integer in the range of 10 to 65535 that specifies the time, in minutes, between availability checks.
interval	(Optional) Configures a connection-time interval in seconds instead of minutes.
seconds	(Optional) Integer in the range of 10 to 65535 that specifies the time, in seconds, between availability checks.

Command Default

No connection parameter is set.

Command Modes

Global configuration

Command History

Release	Modification
11.1(1)IA	This command was introduced.
11.1(25)IA	The *query-type* argument with **a** and **mx** keywords was added to Cisco IOS Release 11.2(25)IA.
11.1(28)IA	The Enhanced Server Verification with Multiple Port Connect Tests functionality was added to Cisco IOS Release 11.1(28)IA.

Release	Modification
12.0(5)T	The *query-type* argument with **a** and **mx** keywords was integrated into Cisco IOS Release 12.0(5)T.
12.1(5)T	The Enhanced Server Verification with Multiple Port Connect Tests functionality was integrated into Cisco IOS Release 12.1(5)T.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
12.4(24)T	This command was removed.

Usage Guidelines

The DistributedDirector redirects clients only to servers that are responsive.

When you enter several **ip director host connect** commands for the same hostname but with different port numbers, the DistributedDirector verifies that all the ports are accessible. The DistributedDirector considers the server accessible only if all the ports are accessible.

Examples

The following example shows how to set the time to 5 minutes for the distributed servers on port 80 and on port 90. The distributed servers are considered accessible only if both port 80 and port 90 are accessible.

```
Router(config)# ip director host www.xyz.com connect 80 5
Router(config)# ip director host www.xyz.com connect 90 5
```

ip director host logging

Note Effective with Cisco IOS Release 12.4(24)T, the **ip director host logging** command is not available in Cisco IOS software.

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

ip director host *hostname* [*query-type*] **logging**

no ip director host *hostname* [*query-type*] **logging**

Syntax Description

hostname	Name of the host that maps to one or more IP addresses. Do not use an IP address.
query-type	(Optional) Type of query. Two values are valid: • **a** indicates that the configuration is used for processing Domain Name System (DNS) address queries for the specified hostname. This is the default. • **mx** indicates that the configuration is used for processing Mail eXchange (MX) queries for the specified hostname.

Command Default

Logging is disabled.

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 Cisco IOS Release 12.1(5)T.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
12.4(24)T	This command was removed.

Usage Guidelines

The Event Recording with Syslog feature provides the capability to examine DNS traffic and the way in which servers are chosen. The server state is logged by default, providing a useful log of when servers are 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 generated when a server selection is logged. This feature should not be used when a heavy request load is expected.

Examples

Before a DistributedDirector is configured to log events about DNS address queries on a specific resource record, the following command must be typed on the command line:

```
Router(config)# logging 172.21.34.2
Router(config)# logging trap informational
```

Note The IP address specified in this section is the IP address of the log server in which the syslog messages are recorded.

The following examples show how to configure a DistributedDirector to log events about DNS address queries on a resource record for hostname www.xyz.com, DNS address queries on a resource record for hostname alias.xyz.com, and DNS requests on MX hostname mail.xyz.com:

```
Router(config)# ip director host www.xyz.com logging
Router(config)# ip director host alias.xyz.com a logging
Router(config)# ip director host mail.xyz.com mx logging
```

Related Commands

Command	Description
logging	Logs messages to a syslog server host,

ip director host multiple

Note Effective with Cisco IOS Release 12.4(24)T, the **ip director host multiple** command is not available in Cisco IOS software.

To configure the number of resource records that a DistributedDirector returns for each Domain Name System (DNS) response, use the **ip director host multiple** command in global configuration mode. To configure a DistributedDirector to return only the best resource record for each DNS response, use the **no** form of this command.

ip director host *hostname* [*query-type*] **multiple** *integer*

no ip director host *hostname* [*query-type*] **multiple**

Syntax Description

hostname	Name of the host that maps to one or more IP addresses. Do not use an IP address.
query-type	(Optional) Type of query. Two values are valid: • **a** indicates that the configuration is used for processing DNS address queries for the specified hostname. This is the default. • **mx** indicates that the configuration is used for processing Mail eXchange (MX) queries for the specified hostname.
integer	Integer in the range of 1 to 65535 that indicates the number of servers returned.

Command Default

Only the best resource record for each DNS response is returned.

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 Cisco IOS Release 12.1(5)T.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
12.4(24)T	This command was removed.

Usage Guidelines

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

Examples

The following examples show how to configure a DistributedDirector to return the three best servers for a DNS resource record on hostname www.xyz.com, the two best servers for a DNS resource record on hostname alias.xyz.com, and the two best servers for MX resource mail.xyz.com:

```
Router(config)# ip director host www.xyz.com multiple 3
Router(config)# ip director host alias.xyz.com a multiple 2
Router(config)# ip director host mail.xyz.com mx multiple 2
```

ip director host priority

Note Effective with Cisco IOS Release 12.4(24)T, the **ip director host priority** command is not available in Cisco IOS software.

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

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

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

host-name	Name of the host that maps to one or more IP addresses. The *host-name* argument is not an IP address.
drp-int	(Optional) Sends a Director Response Protocol (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.
drp-ext	(Optional) Sends a DRP request to all DRP server agents, asking them for the BGP distance between them and the client originating the DNS query.
drp-ser	(Optional) 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.
drp-rtt	(Optional) 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	(Optional) Selects a random number for each distributed server and defines the "best" server as the one with the smallest random number assignment.
admin	(Optional) Specifies a simple preference of one server over another. If this administrative metric has been explicitly set to zero, the Director will not consider the server, so the server is taken out of service.
portion	(Optional) 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	(Optional) Specifies the load information for the DistributedDirector. The default value is 65535.
avail-number	(Optional) Integer in the range of 1 to 65535, inclusive.
route-map	(Optional) Specifies whether a server should be offered to a client.
number	(Optional) Integer in the range of 1 to 100, inclusive.

Command Default The availability default value is 65535.

Command Modes Global configuration

Command History

Release	Modification
11.1(18)IA	This command was introduced.
12.1(5)T	This command was integrated into Cisco IOS Release 12.1 T. The **availability** and **route-map** metrics were added.
12.2(8)T	The **boomerang** metric was added.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
12.4(24)T	This command was removed.

Usage Guidelines Not all of the metrics need to be specified, but at least one must be specified. If the boomerang metric is specified at a given priority level, then all other metrics of lower priority (that is, having a higher priority number) for that host name are ignored. If the boomerang metric is being considered, then it is the final step in determining the best server.

The distance specified with the **drp-int** keyword can be used 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.

The distance learned through the **drp-ext** keyword 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 for this metric to be useful.

The distance learned through the **drp-ser** keyword 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.

Using the **random** keyword 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.

The **availability** keyword 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** *number*] [**drp-ext** *number*] [**drp-ser** *number*] [**drp-rtt** *number*] [**random** *number*] [**admin** *number*] [**portion** *number*] [**availability** *number*] [**route-map** *number*] command.

Examples

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

```
Router(config)# ip director host www.xyz.com priority drp-ext 1 admin 2
```

The following example specifies the per-host priority of the metric, with a host named boom1, where the DRP internal metric is specified with a priority number of 1 and boomerang is specified with a priority number of 2:

```
Router(config)# ip director host BOOM1 priority drp-int 1 boomerang 2

Router(config)# do show running-config

ip host BOOM1 172.2.2.10 172.2.2.20 172.2.2.30
.
.
.
ip director host BOOM1
no ip director cache
ip dns primary boom1 soa boom1 boom1@com
ip director host boom1 priority drp-int 1 boomerang 2
```

Related Commands

Command	Description
ip director default priorities	Sets a default priority for a specific metric on DistributedDirector.
ip director default weights	Configures default weight metrics for DistributedDirector.
ip director host connect	Enables the DistributedDirector to verify that a server is available.
ip director host weights	Sets host-specific weights for the metrics that DistributedDirector uses to determine the best server within a specific host name.
show ip director default priority	Verifies the default configurations of DistributedDirector metrics.
show ip director default weights	Shows DistributedDirector default weights.
show ip director hosts	Displays DistributedDirector host information.

ip director host tolerance

Note Effective with Cisco IOS Release 12.4(24)T, the **ip director host tolerance** command is not available in Cisco IOS software.

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

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

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

Syntax Description

hostname	Domain Name Server (DNS) name.
priority-level	Integer in the range of 0 to 65535 that sets the order of importance that a DistributedDirector uses when it selects the best server for a hostname.
percentage	Percentage of tolerance. The range is 1 to 100.

Command Default

No tolerance level is specified.

Command Modes

Global configuration

Command History

Release	Modification
12.1(5)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
12.4(24)T	This command was removed.

Usage Guidelines

If two or more remote servers have metrics at the same priority level and the levels are within a specified load range of each other, consider them to be at the same level. In this case, a DistributedDirector uses the next highest priority level to select the best server.

Examples

The following example shows how to configure a DistributedDirector to be directed to the closest server farm (measured using the round-trip time metric) if the loads on the server farms are within 20 percent of each other.

```
Router(config)# ip director host www.xyz.com priority availability 1 drp-rtt 2
Router(config)# ip director host www.xyz.com port 80
Router(config)# ip director host www.xyz.com tolerance 1 20
```

ip director host verify-url

Note Effective with Cisco IOS Release 12.4(24)T, the **ip director host verify-url** command is not available in Cisco IOS software.

To configure a DistributedDirector to search for a URL string at a specific time interval, use the **ip director host verify-url** command in global configuration mode. To turn off this URL search, use the **no** form of this command.

ip director host *hostname* **verify-url** *url* **connection-interval** *seconds*

no ip director host *hostname* **verify-url** *url* **connection-interval** *seconds*

Syntax Description

hostname	Domain Name Server (DNS) name.
url	URL for verification.
connection-interval	Specifies that a search is performed at a specific time interval.
seconds	Integer in the range of 10 to 32767 that specifies the time, in seconds, between searches.

Command Default

No URL search is specified.

Command Modes

Global configuration

Command History

Release	Modification
12.1(5)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
12.4(24)T	This command was removed.

Usage Guidelines

If a URL is found and an HTTP reply code is received, the DistributedDirector marks all servers associated with the hostname as being up. If an error code is received, the DistributedDirector marks all servers associated with the hostname as being down. Servers that are in a down state cannot be selected.

If verification URLs have been configured for both a hostname and a specific server, the status returned from the connection on behalf of the specific server overrides the configuration because the status is considered more specific than a single hostname. 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.

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

Examples

The following example shows how to configure a DistributedDirector to search for the URL string http://www.xyz.com/index.html every 120 seconds:

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

Related Commands

Command	Description
ip director host connect	Enables a DistributedDirector to verify that a server is available.

ip director host weights

Note Effective with Cisco IOS Release 12.4(24)T, the **ip director host weights** command is not available in Cisco IOS software.

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** command in global configuration mode. To turn off weights for a host, use the **no** form of this command.

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

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

Syntax Description

host-name	Name of the host that maps to one or more IP addresses. The *host-name* argument is not an IP address.
drp-int	(Optional) Sends a Director Response Protocol (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.
drp-ext	(Optional) Sends a DRP request to all DRP server agents, asking them for the BGP distance between them and the client originating the DNS query.
drp-ser	(Optional) 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.
drp-rtt	(Optional) 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	(Optional) Selects a random number for each distributed server and defines the “best” server as the one with the smallest random number assignment.
admin	(Optional) Specifies a simple preference of one server over another. If this administrative metric has been explicitly set to zero, the Director will not consider the server, so the server is taken out of service.
portion	(Optional) 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	(Optional) Specifies the load information for the DistributedDirector. The default value is 65535.
avail-number	(Optional) Integer in the range of 1 to 65535, inclusive.
route-map	(Optional) Specifies whether a server should be offered to a client.
number	(Optional) Integer in the range of 1 to 100, inclusive.

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

Command Default

The availability default value is 65535.

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 Cisco IOS Release 12.0(3)T.
12.1(5)T	The **availability** and **route-map** metrics were added.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
12.4(24)T	This command was removed.

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 distance specified with the **drp-int** keyword can be used 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.

The distance learned through the **drp-ext** keyword 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 for this metric to be useful.

The distance learned through the **drp-ser** keyword 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.

Using the **random** keyword 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.

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 number] [drp-ext number] [drp-ser number]
[random number] [admin number]}"
```

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** *number*] [**drp-ext** *number*] [**drp-ser** *number*] [**drp-rtt** *number*] [**random** *number*] [**admin** *number*] [**portion** *number*] [**availability** *number*] [**route-map** *number*] command.

Examples

The following example shows how to set the DRP internal metric to 4:

```
Router(config)# 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 dfp	Displays information about the current status of the DistributedDirector connections with a particular DFP agent.

ip director server availability

Note Effective with Cisco IOS Release 12.4(24)T, the **ip director server availability** command is not available in Cisco IOS software.

To configure a default availability value for all ports on a server, use the **ip director server availability** command in global configuration mode. 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

ip-address	IP address of the IP director server.
availability-value	Integer in the range from 0 to 65535 that specifies the availability value as it would be represented on the DistributedDirector system. (Optional) When used with the **dfp** keyword, the availability value is for the LocalDirector system.
dfp	Specifies that Dynamic Feedback Protocol is configured.

Command Default

The availability default value is 65535.

Command Modes

Global configuration

Command History

Release	Modification
12.1(5)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
12.4(24)T	This command was removed.

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 65535.

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:

```
Router(config)# ip director server 10.0.0.1 availability dfp 1
Router(config)# 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.

```
Router(config)# ip director server 10.0.0.1 port availability dfp 65535
Router(config)# 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

Note Effective with Cisco IOS Release 12.4(24)T, the **ip director server port availability** command is not available in Cisco IOS software.

To configure a default availability value for a specific port on a server, use the **ip director server port availability** command in global configuration mode. 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

ip-address	IP address of the IP director server.
availability-value	Integer in the range from 0 to 65535 that specifies the availability value as it would be represented on the DistributedDirector system. (Optional) When used with the **dfp** keyword, the availability value is for the LocalDirector system.
dfp	Specifies that Dynamic Feedback Protocol is configured.

Command Default

The availability default value is 65535.

Command Modes

Global configuration

Command History

Release	Modification
12.1(5)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
12.4(24)T	This command was removed.

Usage Guidelines

Two methods are available for specifying a default availability value because the LocalDirector and the DistributedDirector process these values differently. All metrics for the DistributedDirector are arranged such that a lower value is better. The LocalDirector load information is calculated such that a higher value is better. As a result, the DistributedDirector translates the metric value upon receipt from the LocalDirector by subtracting the availability from the maximum possible value of availability value.

Examples

The following examples show how to make the availability clear and how to specify numbers in both methods.

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.

```
Router(config)# ip director server 10.0.0.1 port availability dfp 65535
Router(config)# ip director server 10.0.0.20 port availability dfp 65535
```

The following example shows how to configure the LocalDirector load and DistributedDirector availability, respectively, when there is no other valid availability information.

```
Router(config)# ip director server 10.0.0.1 availability dfp 1
Router(config)# 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.

ip director server reinstatement

Note Effective with Cisco IOS Release 12.4(24)T, the **ip director server reinstatement** command is not available in Cisco IOS software.

To configure a DistributedDirector to automatically detect when a server is running and mark it as available, use the **ip director server reinstatement** command in global configuration mode. 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

ip-address	IP address of the server.

Command Default

Automatic server reinstatement is enabled.

Command Modes

Global configuration

Command History

Release	Modification
12.1(5)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
12.4(24)T	This command was removed.

Usage Guidelines

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

When a DistributedDirector detects that a server is unavailable, it stops attempting to create a TCP connection to that server. The exception is when the DistributedDirector was configured by a user to continue connection attempts.

Examples

The following example shows how to configure a DistributedDirector to automatically detect if server 10.0.0.1 is running. If server 10.0.0.1 is not running, traffic is redirected to server 10.0.0.2.

```
Router(config)# ip director server 10.0.0.1 reinstatement
Router(config)# ip director server 10.0.0.2 reinstatement
```

ip director server route-map

Note Effective with Cisco IOS Release 12.4(24)T, the **ip director server route-map** command is not available in Cisco IOS software.

To configure a DistributedDirector to use the source autonomous systems identifier as a server-selection criterion, use the **ip director server route-map** command in global configuration mode. 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

ip-address	IP address of the server.
map-name	Name of the route map.

Command Default

Use of the autonomous systems identifier as a selection criterion is disabled.

Command Modes

Global configuration

Command History

Release	Modification
12.1(5)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
12.4(24)T	This command was removed.

Usage Guidelines

Each autonomous system that makes up the Internet has a numeric identifier that routing protocols use. The **ip director server route-map** command provides a way for a 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.

For the route-map mechanism to run correctly, the **ip host**, **ip dns primary**, and **ip director host** commands must be configured before issuing the **ip director server route-map** command.

Examples

The following example shows how to configure a DistributedDirector to have all clients using autonomous system 200 use server 10.0.0.2 and all other clients use server 10.0.0.1:

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

Related Commands

Command	Description
ip director host	Defines the virtual hostname to be used for the distributed servers.
ip dns primary	Identifies the DistributedDirector as the primary DNS name server for a domain and as the statement-of-authority record source.
ip host	Defines a static hostname-to-address mapping in the host cache.

ip director server verify-url

Note Effective with Cisco IOS Release 12.4(24)T, the **ip director server verify-url** command is not available in Cisco IOS software.

To configure a DistributedDirector to search for a URL string with a specified server and at a specific time interval, use the **ip director server verify-url** command in global configuration mode. 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

ip-address	IP address of the server.
port	Port number to be associated with the host.
string	Full URL or pathname.
connection-interval	Specifies a time between availability checks.
seconds	Time, in seconds, between availability checks.

Command Default

No URL search is specified.

Command Modes

Global configuration

Command History

Release	Modification
12.1(5)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
12.4(24)T	This command was removed.

Usage Guidelines

If a URL is found and an HTTP reply code is received, the DistributedDirector marks all servers associated with the hostname as being up. If an error code is received, the DistributedDirector marks all servers associated with the hostname as being down. Servers that are in a down state cannot be selected.

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

Examples

The following example shows how to configure a DistributedDirector to search the server with IP address 10.0.0.1, port 80, for the URL string http://www.xyz.com/index.html every 120 seconds:

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

ip director server weights

Note Effective with Cisco IOS Release 12.4(24)T, the **ip director server weights** command is not available in Cisco IOS software.

To configure a "per-service per-metric" weight, use the **ip director server weights** command in global configuration mode. To turn off a metric weight configuration, 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

ip-address	IP address of the server.
port	Port number to be associated with the host.
metric-name	Name of the metric used.
metric-weight	Weight of the metric used.

Command Default

No per-service-per-metric weight is configured.

Command Modes

Global configuration

Command History

Release	Modification
12.1(5)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
12.4(24)T	This command was removed.

Usage Guidelines

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

Examples

The following example shows how to configure a DistributedDirector to check port 80 for an availability metric of 3.

```
Router(config)# ip director server 10.0.0.1 80 weights availability 3
```