



LocalDirector Quick Start Guide and User Reference Manual

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LocalDirector Quick Start Guide and User Reference Manual

LocalDirector balances network loads so that multiple servers appear as a single server. This guide describes how to install and configure LocalDirector.

Introduction

Many World Wide Web servers are straining to keep up with the volume of Internet traffic on the network. Millions of Internet browsers connect each day and all projections point to continued growth. As the Internet increases in commercial importance, sites are realizing that lost connections mean lost revenue.

Before LocalDirector, sites could either buy faster machines or configure "round-robin" access between systems with DNS (Domain Name System). Sites found that buying faster machines became prohibitively expensive and configuring DNS did not provide failover for offline systems or caches containing incorrect pointers.

LocalDirector provides an alternative to increasing system costs and DNS limitations. By configuring one-to-many mappings, you can assign virtual servers to your existing servers (known as "real" servers) and then direct traffic to real servers either selectively or redundantly so that you can balance the load regardless of server speed.

LocalDirector supports up to 1024 virtual servers. Multiple virtual servers can be bound to a single real server to provide additional redundancy. Complex sites can configure a number of virtual servers to a pool of real servers with different usage configurations to draw from. LocalDirector provides a single routing table that it shares with all virtual servers.

You can mark real servers as in or out of service. LocalDirector does not assign connections to servers that are out of service. When you mark a server as out of service while it is handling connections, LocalDirector lets the connections exit before removing the server from service. While out of service, the network administrator can change its configuration or power it off. When it is ready for service, you can mark it as in service and LocalDirector again assigns connections to it.

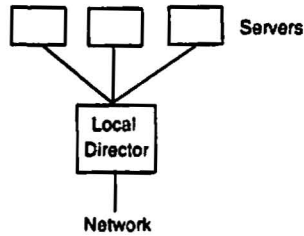
While LocalDirector runs, it measures the time a server takes to service a connection and constructs a load map of the servers so that it directs connections to the server with the least load.

LocalDirector provides a port mapper for binding real and virtual servers so that a single server can provide multiple Web home pages.

Bridge Feature

In addition to its directing capabilities, LocalDirector also serves as a simple bridge to forward data packets between its interfaces. This ensures that LocalDirector does not interfere with network operation while it is in service and it can be brought online immediately after powering up without affecting network connectivity.

Because of its bridge capability, LocalDirector must not be installed on the network parallel to another bridge. Only use LocalDirector to connect to servers with a single way in or out to the network; for example:



Getting Started

The LocalDirector shipping carton contains the following:

- Rack-mountable LocalDirector unit
- Keys for the front panel lock
- Power cord
- DB-9 to DB-25 null modem serial cable
- DB-25 gender adapter
- LocalDirector system diskette
- This guide
- Release notes

Installing LocalDirector

To set up and configure LocalDirector you need an ASCII terminal or a computer with serial communications software installed and running. The computer can be a Windows workstation, Macintosh System, or UNIX system.

Install LocalDirector as follows:

- 1 Unpack LocalDirector and place it in a convenient location.
- 2 Connect the power cord to LocalDirector and plug it in.
- 3 Connect the null modem serial cable to the LocalDirector DB-9 console port.
- 4 Connect the LocalDirector serial console cable DB-25 connector to your ASCII terminal or computer. Use the gender adapter if necessary.
- 5 Configure the serial port in your computer or terminal with these settings: 9600 baud, 9 data bits, no parity, and 1 stop bit; that is, set 9600, 8-N-1. Ensure your communications software is running.
- 6 Use the keys to open the LocalDirector front panel and turn on the power switch. Because LocalDirector ships with its software already in flash RAM, LocalDirector boots without the need for you to insert the system diskette.
- 7 As LocalDirector boots, messages appear on your computer or terminal such as the following:

```
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```

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```

```
Cisco Systems, Inc.  
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San Jose, California 95134-1706
```

```
Reloading Configuration From Memory
```

```
rotor>
```

- 8 Connect the network cable from the hub containing the physical servers to LocalDirector.
- 9 Connect the network cable from the remainder of your network to LocalDirector.
- 10 Ping from a host on your network to a host on the hub. If this test succeeds, continue to the next step. If this test fails, test each side of the connection by pinging hosts on each network segment. If these fail, find the problem and fix it in your network and then test LocalDirector again. If these tests succeed, check all the connections and ensure that all connections are secure. After testing a single host on each LocalDirector interface, ping multiple hosts. Some Ethernet switches may only permit access to a single host served by LocalDirector and therefore cannot be used with LocalDirector.

You are now ready to configure LocalDirector. Until you configure LocalDirector, it acts as a bridge that does not affect your network.

Configuring LocalDirector

You can configure LocalDirector by entering commands on your console computer or terminal that are similar in context to those you use with Cisco routers.

Access Modes

The command interpreter provides three administrator access modes: privileged, unprivileged, and configuration.

Unprivileged mode displays the ">" prompt and lets you view current running settings.

Privileged mode displays the "#" prompt and lets you change current settings and write to flash memory. Any unprivileged command also works in privileged mode.

Configuration mode displays the "(config)#" prompt and lets you change system configurations. Only configuration mode commands work in this mode.

By default, the console is in unprivileged mode. You can access privileged mode by entering the **enable** command. LocalDirector then prompts you for a password. When you first configure LocalDirector, a password is not required. Press the Enter key at the prompt. When you are done configuring LocalDirector, assign a password to privileged mode with the **enable password** command. Exit privileged mode by entering the **disable** command.

You can access configuration mode by entering the **config** command. You can then write your settings to flash memory, diskette, or to your console computer. Exit configuration mode by entering **^Z** or the **exit** command.

The commands in each access mode follow:

- Unprivileged mode: **enable**, **show bind**, **show bridge**, **show connections**, **show ip address**, **show ip route**, **show map**, **show processes**, **show real**, **show syslog**, and **show virtual**.
- Privileged mode: **clear arp-cache**, **clear bridge**, **configure floppy**, **configure memory**, **configure terminal**, **debug**, **disable**, **reload**, **show config**, **show memory**, **show syslog**, **write erase**, **write floppy**, **write memory**, and **write terminal**.
- Configuration mode: **arp**, **bind**, **enable password**, **exit**, **hostname**, **in-service**, **interface ethernet**, **ip address**, **ip route**, **map**, **out-of-service**, **real**, **rip**, **sticky**, **syslog console**, **syslog host**, **syslog output**, **threshold**, and **virtual**.

Configuration Tasks

Configuring LocalDirector consists of two steps, configuring it for first use and then configuring it each time you add a server.

Configuring LocalDirector for First Use

Configure LocalDirector for first use as follows:

- Step 1** Assign the LocalDirector IP address and subnet mask with the **ip address** command.
- Step 2** Set the speed of the Ethernet interface with the **interface ethernet** command.
- Step 3** Change the privileged mode password with the **enable password** command.
- Step 4** If preferred, change the host name for the LocalDirector prompt with the **hostname** command.
- Step 5** Specify the failure threshold limit with the **threshold** command.

- Step 6** If RIP is not on your network, use the **no rip** command so that LocalDirector does not listen for RIP broadcasts.
- Step 7** Designate the SYSLOG host with the **syslog host** command and specify the type of SYSLOG messages to accept with the **syslog output** command. Use **show syslog** to list the SYSLOG hosts and output level.
- Step 8** Exit configuration mode with the **exit** command or by pressing **^Z**.
- Step 9** Store the configuration in flash memory with the **write memory** command.
- Step 10** Exit privileged mode with the **disable** command.

Configuring Servers

Configure LocalDirector when you add a server as follows:

- Step 1** Configure LocalDirector access to the real servers with the **real** command. Examine the information with the **show real** command.
- Step 2** Configure virtual servers with the **virtual** command and, if required, assign the sticky duration with the **sticky** command. Use **show virtual** to examine virtual server information.
- Step 3** Associate the real server to a virtual server with the **bind** command.
- Step 4** If required, specify an entry to the ARP table with the **arp** command.
- Step 5** If RIP is not available on the network, assign a route with the **ip route** command.
- Step 6** Optionally assign port mappings with the **map** command.
- Step 7** When ready, designate servers as in service with the **in-service** command.
- Step 8** When done, exit configuration mode with the **exit** command or by pressing **^Z**.
- Step 9** Store the configuration in flash memory with the **write memory** command.
- Step 10** Exit privileged mode with the **disable** command.

The following table lists configuration tasks by LocalDirector features:

Item	Command	Access Mode
ARP cache:		
• Adjust	arp	Configuration
• Flush	clear arp-cache	Privileged
Flash memory access:		
• Clear	write erase	Privileged
• Display configuration	show configuration	Privileged
• Reload from	reload	Privileged
• Write to	write memory	Privileged
Floppy disk access:		
• Read from	configure floppy	Privileged
• Save configuration to	write floppy	Privileged
IP address, set	ip address	Configuration

Item	Command	Access Mode
Load balancing:		
• Bindings, associate or disassociate	bind	Configuration
• Bindings, show	show bind	Unprivileged
• Connection usage, show	show conn	Unprivileged
• In-service marking	in-service	Configuration
• Out-of-service marking	out-service	Configuration
• Port mappings, add or remove	map	Configuration
• Port mappings, show	show map	Unprivileged
Load balancing (continued):		
• Real server entries, add or remove	real	Configuration
• Real server entries, show	show real	Unprivileged
• Sticky timers	sticky	Configuration
• Threshold counts, adjust	threshold	Configuration
• Virtual server entries, add or remove	virtual	Configuration
• Virtual server entries, show	show virtual	Unprivileged
MAC addresses:		
• Display associated with ports	show bridge	Unprivileged
• Flush associated with a bridge	clear bridge	Privileged
Processes, show thread information	show processes	Unprivileged
Prompt hostname, change	hostname	Configuration
RIP listening, enable or disable	rip	Configuration
Routing table:		
• Adjust	ip route	Configuration
• Show	show ip route	Unprivileged
Syslog:		
• Address, view	show ip address	Unprivileged
• Dump buffer to console	syslog console	Configuration
• Hosts, view current	show syslog	Unprivileged
• Messages, change facility and level	syslog output	Configuration
• Server, assign	syslog host	Configuration

Sample Configuration

An example configuration follows:

```

rotor> enable
Password:
rotor# config terminal
rotor(config)# ip address 192.168.13.40 255.255.255.0
rotor(config)# interface ethernet 0 10baseT
rotor(config)# interface ethernet 1 10baseT
rotor(config)# exit
rotor# write memory
rotor# disable
rotor>

```

In this example, **enable** starts privileged mode. Then **config terminal** starts configuration model. The user then specifies that the IP address for LocalDirector is 192.168.13.40 and that the subnet mask is 255.255.255.0. Then the user enables the Ethernet cards for 10baseT connections. Finally, the user exits configuration mode by entering **exit**, saves the new settings, and exits privileged mode by entering **disable**.

Configuration Guidelines

Observe the following guidelines during configuration:

- Configure all virtual servers on the same network.
- LocalDirector enables RIP listening by default.
- Ensure any IP address you specify exists. Virtual server IP addresses have to be unique on network. Real server IP addresses have to have the IP addresses of the actual workstations.
- The maximum number of configuration statements is 3000 lines.
- When you enter commands, you can erase characters with the Backspace and Del keys. You can erase the previous word with ^W, erase the previous line with ^U, and redisplay the line with ^R.

Command Reference

Configure LocalDirector using the commands that follow. You can enter commands from your console computer or terminal.

This section lists the commands in the following format:

command (syntax *variable variable[-variable]* [keyword]) mode

variable Required variable information

[*variable*] Optional variable information

variable[-variable] You can supply additional parameters separated by spaces or you can supply a range of values by using a dash as the separator. For example, you can specify three IP addresses with the **out-of-service** command as:

10.0.0.1 10.0.0.2 10.0.0.3

or as:

10.0.0.1-10.0.0.3

[keyword] Optional keyword

Command description.

example

Help Information

Help information is available by entering a question mark by itself for a listing of all commands, or with a command for command syntax. For example:

```
rotor> show map ?
show map (ip)
```

Commands

(: comment) All modes. Comment character. Must be the first command in a line. Use to improve configuration file readability or to make configuration file commands not executable.

arp **([no] arp ip en [alias])** Configuration mode.

ip IP address for the ARP table entry

en Ethernet MAC address for the ARP table entry

[alias] Causes LocalDirector to respond to ARP requests for this IP address

Adds an entry to the LocalDirector ARP table. Use **no arp** to delete an entry from the LocalDirector ARP table.

```
rotor(config)# 192.168.0.42 0000.0101.0202
rotor(config)# 192.168.0.43 0000.0101.0203 alias
rotor(config)# no arp 192.168.0.52
```

bind **([no] bind v_ip r_ip[-r_ip])** Configuration mode.

v_ip IP address for the virtual server

r_ip[-r_ip] One or more real server IP addresses

Associates a virtual server with one or more real servers. Use **virtual** or **real** to define the virtual and real server addresses before using **bind**. Use **no bind** to release an association between a real and virtual server.

```
rotor(config)# virtual 192.168.0.42
rotor(config)# real 192.168.0.3
rotor(config)# real 192.168.0.4
rotor(config)# bind 192.168.0.42 192.168.0.3
rotor(config)# no bind 192.168.0.42 192.168.0.4
```

clear arp-cache **(clear arp-cache)** Privileged mode. Clears the LocalDirector ARP table.

```
rotor# clear arp-cache
```

clear bridge **(clear bridge)** Privileged mode. Clears the LocalDirector bridge table.

```
rotor# clear bridge
```

configure floppy (*configure floppy*) Privileged mode. Replaces the current running configuration with the configuration stored on floppy disk. This command assumes that the floppy disk is in IBM format and was previously created by the **write floppy** command.

```
rotor# configure floppy
```

configure memory (*configure memory*) Privileged mode. Replaces the current running configuration with the configuration stored in flash memory.

```
rotor# configure memory
```

configure terminal (*configure terminal*) Privileged mode. Starts configuration mode. Exit configuration mode by entering **exit** or pressing ^Z. After exiting configuration mode, use **write memory** to store your changes in flash memory.

debug ([*no*] *debug*) Privileged mode. Debugs LocalDirector internals. Only use this command if instructed by Customer Support. Use **no debug** to exit debug mode.

disable (*disable*) Privileged mode. Exits privileged mode and returns to unprivileged mode.

```
rotor# disable
rotor>
```

enable (*enable*) Unprivileged mode. Starts privileged mode. LocalDirector prompts you for your privileged mode password. Use **disable** to exit privileged mode. Use **enable password** to change the password.

```
rotor> enable
Password: #####
rotor# disable
rotor>
```

enable password (*enable password newpassword*) Configuration mode.

newpassword New password

Changes the privileged mode password, which appears after you enter the **enable** command.

exit (*exit*) Configuration mode. Exits configuration mode. If you changed the configuration, use **write memory** to store your changes in flash memory.

hostname (*hostname newname*) Configuration mode.

newname New host name for the LocalDirector prompt

Changes the host name label on prompts. The default host name is "rotor."

```
rotor(config)# hostname spinner
spinner(config)# hostname rotor
rotor(config)#
```

in-service (*in-service* [*virtual* | *real*] *ip[-ip]*) Configuration mode.

virtual Mark one or more virtual servers as in service.

real Mark one or more real servers as in service.

ip[-ip] One or more server IP addresses; if you specify more than one IP address, only IP addresses previously configured in LocalDirector are marked as in service.

Marks one or more real or virtual servers as being in service (IS). When servers are in service, they can handle client requests received by LocalDirector.

```
rotor(config)# in-service real 192.168.0.2
rotor(config)# virtual 192.168.0.80
rotor(config)# virtual 192.168.0.81
rotor(config)# virtual 192.168.0.85
rotor(config)# in-service virtual 192.168.0.80-192.168.0.85
rotor(config)# virtual 192.168.0.84
rotor(config)# show virtual
virtual machines:
      IP           State   Sticky
192.168.0.84      OOS     0
192.168.0.85      IS      0
192.168.0.81      IS      0
192.168.0.80      IS      0
```

interface ethernet (*interface ethernet unit* [*10baseT* | *100baseTX* | *auto*]) Configuration mode.

unit Interface number starting from 0.

10baseT 10Mbit Ethernet

100baseTX 100Mbit Ethernet

auto Automatically determine speed

Identifies the port bandwidth about a given Ethernet interface.

```
rotor(config)# interface ethernet 0 100baseTX
rotor(config)# interface ethernet 1 10baseT
```

ip address (*ip address ip* [*mask*]) Configuration mode.

ip IP address

[mask] Subnet mask

Assigns an IP address to the LocalDirector.

```
rotor(config)# ip address 130.10.2.1 255.255.255.0
```

ip route ([no] *ip route network mask next-hop [metric]*) Configuration mode.

network Destination IP network address; if default route, specify as all zeros (0.0.0.0)

mask Subnet mask for the network; if default route, specify as all zeros (0.0.0.0)

next-hop The adjacent gateway to reach *network*

[*metric*] Optional distance metric (defaults to one)

Adds a static route to the IP routing table. Use **no ip route** to remove a static route from the IP routing table.

```
rotor(config)# ip route 0.0.0.0 0.0.0.0 192.168.0.1.1
rotor(config)# no ip route 192.168.88.0
```

map ([no] *map v_ip, vport, r_ip, rport*) Configuration mode.

v_ip Virtual server IP address

vport Virtual server target port number

r_ip Real server IP address bound to *v_ip* by previous use of the **bind** command

rport Real server port number to map *vport* into. Connections bound for the virtual server that you assign to this real server also have the destination port number changed to *rport*.

Maps a virtual server IP address and port to a real server IP address and port. If you have multiple virtual servers pointing to a single real server, you need background programs (daemons) on the server with a unique address and port number to listen to. For example, if you have a number of home pages that all need to be invoked from daemons and each daemon requires a unique IP address and port on which to listen, you use **map** to point the virtual server IP address and port number to the real IP address and port.

When a real server is unbound from the virtual server, LocalDirector deletes all port mappings. Use **no map** to remove mappings. A virtual server IP address and port can be mapped to one or more real server IP addresses and ports. Use **show map** to display the current mappings.

```
rotor(config)# map 192.168.42.30 80 10.0.0.1 8001
rotor(config)# no map 192.168.42.99 20 10.42.42.0 8100
```


out-of-service (*out-of-service* [*virtual* | *real*] *ip*[-*ip*]) Configuration mode.

virtual Mark one or more virtual servers as out of service.

real Mark one or more real servers as out of service.

ip[-*ip*] One or more server IP addresses

Marks one or more virtual or real servers as being out of service (OOS). When you mark a real server as being out of service, LocalDirector does not assign new connections to it, but lets old connections continue to run until their translations complete. Any connection attempt or traffic on exiting connections causes LocalDirector to return a reset (RST) packet to the client. An out-of-service real server can still be accessed by clients specifying its actual IP address. Use **show real** to watch the status of open connections; when all connections appear as OOS, you can power-off the server or reconfigure it as required.

```
rotor(config)# out-of-service real 192.168.0.42
rotor(config)# out-of-service virtual 192.168.0.80-192.168.0.85
```

real ([*no*] *real ip* [*is* | *oos*]) Configuration mode.

ip IP address of an underling server.

is Mark server as being in service.

oos Mark server as being out of service (the default)

Informs LocalDirector of a real server. *ip* is the actual IP address of an underling server. Use **no real** to remove a real server from LocalDirector. Underling servers can always be accessed using their actual IP address.

```
rotor(config)# real 192.168.0.42
rotor(config)# real 192.168.0.7 is
```

reload (*reload*) Privileged mode. Reboots and reloads the system from flash memory. LocalDirector prompts for confirmation before starting.

```
rotor# reload
Proceed with reload? (confirm) y

Rebooting...
```

rip ([*no*] *rip*) Configuration mode. Enables IP routing table updates from received RIP broadcasts. Use **no rip** to disable LocalDirector IP routing table updates. The default is to enable IP routing table updates.

```
rotor(config)# rip
rotor(config)# no rip
```

show bind (show bind) Unprivileged mode. Displays how virtual servers are bound to real servers. The left column displays the virtual server's IP address and its service state in parentheses. The right column displays the real servers that underlie the virtual server and its service state.

```
rotor> show bind
Virtual          Real
10.1.1.101 (OOS)
                  192.168.200.3 (OOS)
                  192.168.200.1 (OOS)
10.1.1.100 (OOS)
                  192.168.200.3 (OOS)
                  192.168.200.2 (OOS)
                  192.168.200.1 (OOS)
```

show bridge (show bridge) Unprivileged mode. Displays the table that the LocalDirector bridge uses to determine how data packets are forwarded. The table consists of MAC addresses, actions to take when the MAC address is seen, the interface the MAC address is associated with, the time in seconds since the last time the MAC address was observed, the number of times a MAC address has been sent on an interface, and the number of times a packet from the MAC address has been forwarded.

```
rotor> show bridge
Address          Action Interface  Age  RXcnt  TXcnt
0000.243d.53f1  forward Ethernet1  85   197    0
0000.243d.53ef  forward Ethernet1  114  202    2
0000.243d.53f2  forward Ethernet0  166  169    1
```

show configuration (show configuration) Privileged mode. Displays the configuration saved in flash memory.

```
rotor# show config
: Saved
... config commands ...
: End
```

show connections (show connections) Unprivileged mode. Displays a summary of the current and maximum number of operating system connection objects utilized. This information represents the current and maximum number of simultaneous TCP connections made to virtual servers.

```
rotor> show conn
conns = 1 max = 2
```

show ip address (show ip address) Unprivileged mode. Displays the IP address of the LocalDirector. You can ping this address to display the address of the syslog output.

```
rotor> show ip address
System IP 10.1.1.1, system subnet 255.255.255.0
```

show ip route (*show ip route*) Unprivileged mode. Displays the IP routing table. All virtual servers on the LocalDirector share this single IP routing table. The routing table display contains the destination network number and mask, along with the next hop IP address, the distance metric, and, if the route was manually entered, a static keyword.

```
rotor> show ip route
network=0.0.0.0 Address=192.168.0.1 Distance=1 static
```

show map (*show map v_ip*) Unprivileged mode.

v_ip Virtual server IP address

Displays the LocalDirector TCP port mappings for one or all of the virtual servers.

```
rotor> show map 192.168.0.42
Port mappings for 192.168.0.42
192.168.0.42 80 maps to 192.168.0.2 8002
rotor> show map
Port mappings for all machines
192.168.0.42 80 maps to 192.168.0.2 8002
192.168.0.77 80 maps to 192.168.0.2 8001
```

show memory (*show memory*) Privileged mode. Displays a summary of the maximum physical memory and current free memory available to the current free memory available to LocalDirector operating system. Everything in LocalDirector is preallocated and the number of free memory should never change.

```
rotor> show memory
32505856 bytes total, 402860 bytes free
```

show processes (*show processes*) Unprivileged mode. Displays a summary listing of running processes. Processes are lightweight threads requiring only few instructions to switch. In the listing, PC is the program counter, SP is the stack pointer, STATE is the address of a thread queue, Runtime is the number of milliseconds that the thread has been running, SBASE is the stack base address, Stack is the current number of bytes used and the total size of the stack, and Process lists the thread's function.

```
rotor> show processes
PC      SP      STATE  Runtime  SBASE   Stack Process
8000139e 8024ad00 80005354 940     80249d1c 36/4096 arp_timer
...
```

show real (*show real [ip]*) Unprivileged mode.

[ip] Real server IP address

Lists real server information. If you specify an IP address, LocalDirector displays a summary for all virtual servers using the real server. The listing contains the service state of each real server, its failure threshold value, and a reassigned count of the current number of failures (timeouts) that occurred while trying to reach the real server.

```
rotor> show real
real machines:
      IP Connect  Ratio  Load  State  Thresh  re-assigned
192.168.0.42    0   5120  2213   IS     8         0
rotor> show real 192.168.0.42
real 192.168.0.42 referenced by:
      IP  State  Sticky
192.168.0.42   IS     0
192.168.0.77   IS     0
```

show syslog (*show syslog*) Unprivileged mode. Displays information about the current SYSLOG hosts.

show virtual (*show virtual [ip]*) Unprivileged mode.

[ip] Virtual server IP address

Lists virtual server information. The listing includes the service state of each virtual server and its sticky value. You can specify the IP address for a server to view more information.

```
rotor> show virtual
virtual machines:
      IP Connect  Ratio  Load  State  Thresh  re-assigned
192.168.0.40    0   3840    0   IS     8         0
rotor> show virtual 192.168.0.40
virtual 192.168.0.40 consists of:
      IP  State  Sticky
192.168.0.40   IS     0
192.168.0.77   IS     0
```

sticky (*sticky ip minutes*) Configuration mode.

ip Virtual server IP address

minutes The time after which a connection from the same client can be reassigned to a different real server. The default is 0 minutes.

Sets the number of minutes during which a repeat request from a client should be passed to the same real server as the first request. Use this command if the real servers are caching information about their clients or their requests. Use **show virtual** to display the sticky value.

```
rotor(config)# sticky 192.168.0.42 5
```

syslog console ([no] **syslog console**) Configuration mode. Displays syslog messages on the console port. Use **no syslog console** to stop the display.

```
rotor(config)# syslog host 192.168.0.42  
rotor(config)# no syslog host 192.168.0.42
```

syslog host ([no] **syslog host**) Configuration mode. Configures one or more host systems to receive syslog messages. Use **no syslog host** to remove a host from the receiving list. Use **show syslog** to view the current hosts.

```
rotor(config)# syslog host 192.168.0.99  
rotor(config)# no syslog host 192.168.0.99
```

syslog output ([no] **syslog output** *facility.level*) Configuration mode.

facility Eight facilities LOCAL0(16) through LOCAL7(23); the default is LOCAL4(20). Hosts file the messages based on the *facility* number in the message.

level Message type; sets the level above which LocalDirector suppresses messages to the SYSLOG hosts. Setting the level to 3, for example, allows messages with levels 0, 1, 2, and 3 to display. Default is 6, which displays all but debug messages.

The levels are as follows:

LOG_EMERG	0	System unusable
LOG_ALERT	1	Take immediate action
LOG_CRIT	2	Critical condition
LOG_ERR	3	Error message
LOG_WARNING	4	Warning message
LOG_NOTICE	5	Normal but significant condition
LOG_INFO	6	Informational message
LOG_DEBUG	7	Debug-level messages

Configures the facility and level of SYSLOG messages. Because network devices share the eight facilities, **syslog output** lets you set the facility marked on all messages.

```
rotor(config)# syslog output 23.4
```

threshold (*threshold ip reassigns*) Configuration mode.

ip Real server IP address

reassigns The number of consecutive connection reassignments to tolerate; the default is 8. Zero is the same as one and the maximum number of reassigns is limited only by the size of an integer in memory.

Configures the number of consecutive TCP connection reassignments that a real server can exhibit before LocalDirector marks the real server as failed. Use **show real** to display real threshold values and to see which real servers have failed. Failed real servers are not utilized by virtual servers while in the failed state; however, LocalDirector retests each failed server periodically with a single TCP connection attempt to see if the server has returned to normal behavior. If so, LocalDirector marks the server in service which makes it available to handle virtual server requests.

```
rotor(config)# threshold 192.168.0.60 4
```

virtual (*[no] virtual ip [is|oos]*) Configuration mode.

ip IP address of a virtual server; the address must be unique to the network.

is Mark server as being in service.

oos Mark server as being out of service (the default)

Creates a virtual server to accept a connection from the network. LocalDirector assigns connections arriving at a virtual address to a real server. The network component of a virtual server's IP address must match the network component of the IP address assigned to LocalDirector using the **ip address** command. Specify **ip address** before specifying the **virtual** command. If no real servers are bound to the virtual server, use **no virtual** to remove the virtual server from LocalDirector.

```
rotor(config)# virtual 192.168.0.42
rotor(config)# no virtual 192.168.0.42
```

write erase (*write erase*) Privileged mode. Clears the flash memory configuration. To clear the current running configuration, use **write erase** and then **reload**.

```
rotor# write erase
rotor# reload
```

write floppy (*write floppy*) Privileged mode. Saves the current running configuration to floppy disk. Use **configure floppy** to merge the configuration into the currently running box. The **write floppy** command assumes that the floppy disk is formatted for an IBM computer.

```
rotor# write floppy
```

write memory (*write memory*) Privileged mode. Saves the current running configuration to flash memory. Use **configure memory** to merge the configuration into the currently running box.

```
rotor# write memory
```

write terminal (`write terminal`) Privileged mode. Saves the current running configuration to the console computer. Use **configure terminal** to merge the configuration into the currently running box and then to paste the configuration back into the terminal. You can also use **configure terminal** to display the current configuration.

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rotor# write terminal
```

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