

Routing  
Switching  
Tigers  
Forum

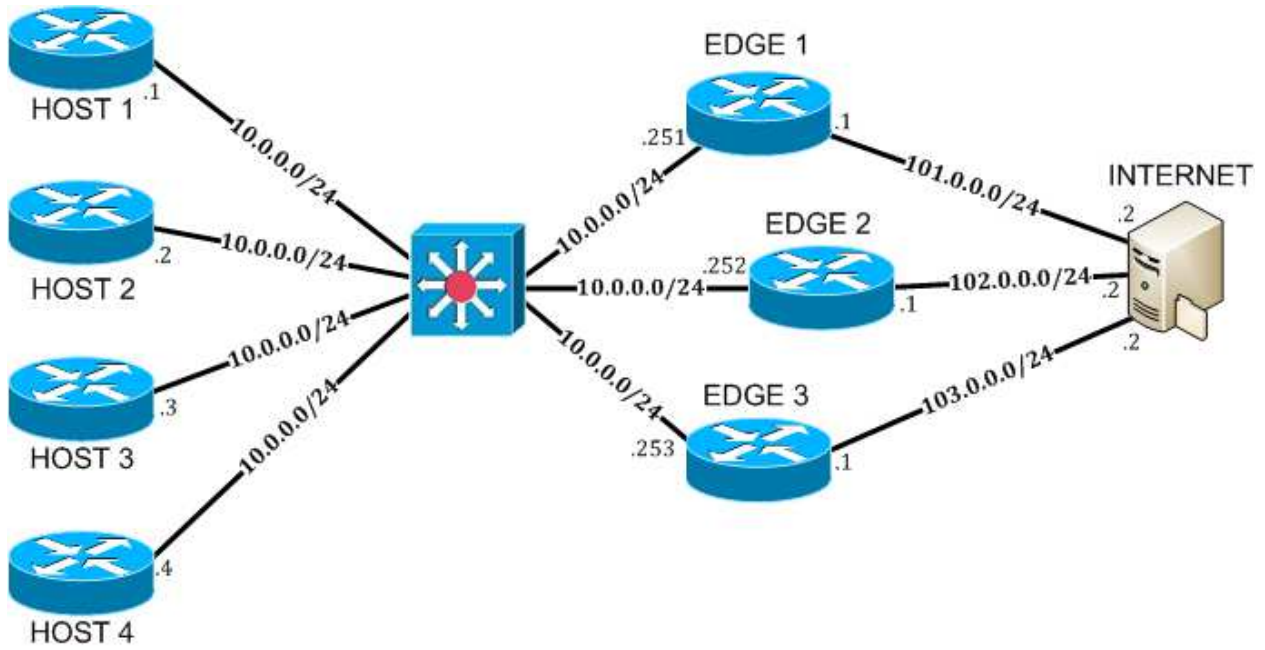


# GLBP



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## GLBP Topology



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## Task 1: Configure GLBP

Step 1 Configure Initial Configuration

**R1:**

```
hostname EDGE_1
ip route 0.0.0.0 0.0.0.0 101.0.0.2
interface ethernet 0/0
ip address 10.0.0.251 255.255.255.0
no shutdown
ip nat inside
interface ethernet 0/1
ip address 101.0.0.1 255.255.255.0
no shutdown
ip nat outside
ip nat inside source list 1 interface ethernet 0/1 overload
access-list 1 permit any
exit
```

**R2:**

```
hostname EDGE_2
ip route 0.0.0.0 0.0.0.0 102.0.0.2
interface ethernet 0/0
ip address 10.0.0.252 255.255.255.0
ip nat inside
no shutdown
interface ethernet 0/1
ip address 102.0.0.1 255.255.255.0
ip nat outside
no shutdown
ip nat inside source list 1 interface ethernet 0/1 overload
access-list 1 permit any
exit
```

R3:

```
hostname EDGE_3
ip route 0.0.0.0 0.0.0.0 103.0.0.2
interface ethernet 0/0
ip address 10.0.0.253 255.255.255.0
ip nat inside
no shutdown
interface ethernet 0/1
ip address 103.0.0.1 255.255.255.0
ip nat outside
no shutdown
ip nat inside source list 1 interface ethernet 0/1 overload
access-list 1 permit any
exit
```

R4:

```
hostname INTERNET
interface ethernet 0/1
ip address 101.0.0.2 255.255.255.0
no shutdown
interface ethernet 0/2
ip address 102.0.0.2 255.255.255.0
no shutdown
interface ethernet 0/3
ip address 103.0.0.2 255.255.255.0
no shutdown
interface loopback 0
ip address 200.0.0.1 255.255.255.255
exit
```

R5:

```
hostname HOST1
interface ethernet 0/0
ip address 10.0.0.1 255.255.255.0
no shutdown
ip route 0.0.0.0 0.0.0.0 10.0.0.254
exit
```

**R6:**  
hostname HOST2  
interface ethernet 0/0  
ip address 10.0.0.2 255.255.255.0  
no shutdown  
ip route 0.0.0.0 0.0.0.0 10.0.0.254  
exit

**R7:**  
hostname HOST3  
interface ethernet 0/0  
ip address 10.0.0.3 255.255.255.0  
no shutdown  
ip route 0.0.0.0 0.0.0.0 10.0.0.254  
exit

**R8:**  
hostname HOST4  
interface ethernet 0/0  
ip address 10.0.0.4 255.255.255.0  
no shutdown  
ip route 0.0.0.0 0.0.0.0 10.0.0.254  
exit

**SW9:**  
hostname ACCESS\_SWITCH  
interface range ethernet0/0-3,ethernet1/0-3  
switchport mode access  
switchport access vlan 10  
exit

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Step 2 Configure Basic GLBP Configuration

Configure R1, R2, and R3 to perform forwarding via GLBP. R1 should become AVG and R2 should be second preference.

R1:

```
interface Ethernet0/0
glbp 10 ip 10.0.0.254
glbp 10 priority 200
glbp 10 preempt
exit
```

R2:

```
interface Ethernet0/0
glbp 10 ip 10.0.0.254
glbp 10 priority 150
glbp 10 preempt
exit
```

R3:

```
interface Ethernet0/0
glbp 10 ip 10.0.0.254
exit
```

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## Task 2: Verification

Step 1 Verify Gateway State and GLBP Round Robin Load Balancing

```
EDGE_1#show glbp
Ethernet0/0 - Group 10
State is Active
1 state change, last state change 00:50:26
Virtual IP address is 10.0.0.254
Hello time 3 sec, hold time 10 sec
Next hello sent in 1.216 secs
Redirect time 600 sec, forwarder timeout 14400 sec
Preemption enabled, min delay 0 sec
Active is local
Standby is 10.0.0.252, priority 150 (expires in 7.232 sec)
Priority 200 (configured)
Weighting 100 (default 100), thresholds: lower 1, upper 100
Load balancing: round-robin
Group members:
aabb.cc00.0100 (10.0.0.251) local
aabb.cc00.0200 (10.0.0.252)
aabb.cc00.0300 (10.0.0.253)
There are 3 forwarders (1 active)
Forwarder 1
State is Active
1 state change, last state change 00:50:15
MAC address is 0007.b400.0a01 (default)
Owner ID is aabb.cc00.0100
Redirection enabled
Preemption enabled, min delay 30 sec
Active is local, weighting 100
Client selection count: 2
Forwarder 2
State is Listen
MAC address is 0007.b400.0a02 (learnt)
Owner ID is aabb.cc00.0200
Redirection enabled, 597.248 sec remaining (maximum 600 sec)
Time to live: 14397.248 sec (maximum 14400 sec)
Preemption enabled, min delay 30 sec
Active is 10.0.0.252 (primary), weighting 100 (expires in 8.288 sec)
Client selection count: 2
Forwarder 3
State is Listen
MAC address is 0007.b400.0a03 (learnt)
Owner ID is aabb.cc00.0300
```

Redirection enabled, 597.376 sec remaining (maximum 600 sec)  
Time to live: 14397.376 sec (maximum 14400 sec)  
Preemption enabled, min delay 30 sec  
Active is 10.0.0.253 (primary), weighting 100 (expires in 9.088 sec)  
Client selection count: 1

EDGE\_2#show glbp

Ethernet0/0 - Group 10

State is Standby

1 state change, last state change 01:12:02

Virtual IP address is 10.0.0.254

Hello time 3 sec, hold time 10 sec

Next hello sent in 2.496 secs

Redirect time 600 sec, forwarder timeout 14400 sec

Preemption enabled, min delay 0 sec

Active is 10.0.0.251, priority 200 (expires in 10.368 sec)

Standby is local

Priority 150 (configured)

Weighting 100 (default 100), thresholds: lower 1, upper 100

Load balancing: round-robin

Group members:

aabb.cc00.0100 (10.0.0.251)

aabb.cc00.0200 (10.0.0.252) local

aabb.cc00.0300 (10.0.0.253)

There are 3 forwarders (1 active)

Forwarder 1

State is Listen

MAC address is 0007.b400.0a01 (learnt)

Owner ID is aabb.cc00.0100

Time to live: 14399.808 sec (maximum 14400 sec)

Preemption enabled, min delay 30 sec

Active is 10.0.0.251 (primary), weighting 100 (expires in 10.176 sec)

Forwarder 2

State is Active

1 state change, last state change 01:12:06

MAC address is 0007.b400.0a02 (default)

Owner ID is aabb.cc00.0200

Preemption enabled, min delay 30 sec

Active is local, weighting 100

Forwarder 3

State is Listen

MAC address is 0007.b400.0a03 (learnt)

Owner ID is aabb.cc00.0300

Time to live: 14398.400 sec (maximum 14400 sec)



Preemption enabled, min delay 30 sec  
Active is 10.0.0.253 (primary), weighting 100 (expires in 8.608 sec)

EDGE\_3#show glbp

Ethernet0/0 - Group 10

State is Listen

Virtual IP address is 10.0.0.254

Hello time 3 sec, hold time 10 sec

Next hello sent in 0.576 secs

Redirect time 600 sec, forwarder timeout 14400 sec

Preemption disabled

Active is 10.0.0.251, priority 200 (expires in 9.440 sec)

Standby is 10.0.0.252, priority 150 (expires in 9.792 sec)

Priority 100 (default)

Weighting 100 (default 100), thresholds: lower 1, upper 100

Load balancing: round-robin

Group members:

aabb.cc00.0100 (10.0.0.251)

aabb.cc00.0200 (10.0.0.252)

aabb.cc00.0300 (10.0.0.253) local

There are 3 forwarders (1 active)

Forwarder 1

State is Listen

MAC address is 0007.b400.0a01 (learnt)

Owner ID is aabb.cc00.0100

Time to live: 14397.632 sec (maximum 14400 sec)

Preemption enabled, min delay 30 sec

Active is 10.0.0.251 (primary), weighting 100 (expires in 9.568 sec)

Forwarder 2

State is Listen

MAC address is 0007.b400.0a02 (learnt)

Owner ID is aabb.cc00.0200

Time to live: 14399.808 sec (maximum 14400 sec)

Preemption enabled, min delay 30 sec

Active is 10.0.0.252 (primary), weighting 100 (expires in 11.520 sec)

Forwarder 3

State is Active

1 state change, last state change 00:03:30

MAC address is 0007.b400.0a03 (default)

Owner ID is aabb.cc00.0300

Preemption enabled, min delay 30 sec

Active is local, weighting 100

```
EDGE_1#show glbp brief
```

Interface	Grp	Fwd	Pri	State	Address	Active router	Standby router
Et0/0	10	-	200	Active	10.0.0.254	local	10.0.0.252
Et0/0	10	1	-	Active	0007.b400.0a01	local	-
Et0/0	10	2	-	Listen	0007.b400.0a02	10.0.0.252	-
Et0/0	10	3	-	Listen	0007.b400.0a03	10.0.0.253	-

```
EDGE_2#show glbp brief
```

Interface	Grp	Fwd	Pri	State	Address	Active router	Standby router
Et0/0	10	-	150	Standby	10.0.0.254	10.0.0.251	local
Et0/0	10	1	-	Listen	0007.b400.0a01	10.0.0.251	-
Et0/0	10	2	-	Active	0007.b400.0a02	local	-
Et0/0	10	3	-	Listen	0007.b400.0a03	10.0.0.253	-

```
EDGE_3#show glbp brief
```

Interface	Grp	Fwd	Pri	State	Address	Active router	Standby router
Et0/0	10	-	100	Listen	10.0.0.254	10.0.0.251	10.0.0.252
Et0/0	10	1	-	Listen	0007.b400.0a01	10.0.0.251	-
Et0/0	10	2	-	Listen	0007.b400.0a02	10.0.0.252	-
Et0/0	10	3	-	Active	0007.b400.0a03	local	-

```
HOST1#show ip arp
```

Protocol	Address	Age (min)	Hardware Addr	Type	Interface
Internet	10.0.0.1	-	aabb.cc00.0500	ARPA	Ethernet0/0

```
HOST1#debug arp
```

```
ARP packet debugging is on
```

```
HOST1#ping 10.0.0.254
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 10.0.0.254, timeout is 2 seconds:
```

```
*Jun 16 06:54:34.374: IP ARP: creating incomplete entry for IP address: 10.0.0.254  
interface Ethernet0/0
```

```
*Jun 16 06:54:34.382: IP ARP: sent req src 10.0.0.1 aabb.cc00.0500,  
dst 10.0.0.254 0000.0000.0000 Ethernet0/0
```

```
*Jun 16 06:54:34.397: IP ARP: rcvd rep src 10.0.0.254 0007.b400.0a01, dst 10.0.0  
.1 Ethernet0/0!!!!
```

```
Success rate is 80 percent (4/5), round-trip min/avg/max = 1/1/1 ms
```

```
HOST1#show ip arp
```

Protocol	Address	Age (min)	Hardware Addr	Type	Interface
Internet	10.0.0.1	-	aabb.cc00.0500	ARPA	Ethernet0/0
Internet	10.0.0.254	0	0007.b400.0a01	ARPA	Ethernet0/0

In the first ARP Broadcast by HOST1, the Mac address of EDGE\_1 was provided.

HOST2#ping 10.0.0.254

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 10.0.0.254, timeout is 2 seconds:

.!!!!

Success rate is 80 percent (4/5), round-trip min/avg/max = 1/1/2 ms

HOST2#show ip arp

Protocol	Address	Age (min)	Hardware Addr	Type	Interface
Internet	10.0.0.1	-	aabb.cc00.0500	ARPA	Ethernet0/0
Internet	10.0.0.254	0	0007.b400.0a02	ARPA	Ethernet0/0

The second time around ARP Broadcast by HOST2, the Mac address of EDGE\_2 was provided.

HOST3#ping 10.0.0.254

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 10.0.0.254, timeout is 2 seconds:

.!!!!

Success rate is 80 percent (4/5), round-trip min/avg/max = 1/1/2 ms

HOST3#show ip arp

Protocol	Address	Age (min)	Hardware Addr	Type	Interface
Internet	10.0.0.1	-	aabb.cc00.0500	ARPA	Ethernet0/0
Internet	10.0.0.254	0	0007.b400.0a03	ARPA	Ethernet0/0

The third time around ARP Broadcast by HOST3, EDGE\_3 Mac address was provided.

HOST1#ping 10.0.0.254

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 10.0.0.254, timeout is 2 seconds:

.!!!!

Success rate is 80 percent (4/5), round-trip min/avg/max = 1/1/2 ms

HOST1#show ip arp

Protocol	Address	Age (min)	Hardware Addr	Type	Interface
Internet	10.0.0.1	-	aabb.cc00.0500	ARPA	Ethernet0/0
Internet	10.0.0.254	0	0007.b400.0a01	ARPA	Ethernet0/0

So due to the round robin effect, EDGE\_1 is again first in queue. Hence again ARP Broadcast send by HOST1, EDGE\_1 Mac address was provided  
GLBP Load balancing is done by using Round Robin

### Task 3: GLBP Weighted Load balancing

Step 1 Configure GLBP Load balancing based on Weight

EDGE\_1:

```
interface ethernet 0/0
glbp 10 weight 50
glbp 10 load-balancing weighted
exit
```

EDGE\_2:

```
interface ethernet 0/0
glbp 10 weight 30
glbp 10 load-balancing weighted
exit
```

EDGE\_3:

```
interface ethernet 0/0
glbp 10 weight 20
glbp 10 load-balancing weighted
exit
```

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Step 2 Verify GLBP Weighted Load balancing

```
EDGE_1#show glbp | inc Weight
```

```
Load balancing: weighted
```

```
Active is local, weighting 50
```

```
Active is 10.0.0.252 (primary), weighting 30 (expires in 9.696 sec)
```

```
Active is 10.0.0.253 (primary), weighting 20 (expires in 9.184 sec)
```

```
EDGE_2#show glbp | inc Weight
```

```
Load balancing: weighted
```

```
Active is 10.0.0.251 (primary), weighting 50 (expires in 9.632 sec)
```

```
Active is local, weighting 30
```

```
Active is 10.0.0.253 (primary), weighting 20 (expires in 9.792 sec)
```

```
EDGE_3#show glbp | inc Weight
```

```
Load balancing: weighted
```

```
Active is 10.0.0.251 (primary), weighting 50 (expires in 8.832 sec)
```

```
Active is 10.0.0.252 (primary), weighting 30 (expires in 7.872 sec)
```

```
Active is local, weighting 20
```

```
HOST1#show ip arp
```

Protocol	Address	Age (min)	Hardware Addr	Type	Interface
Internet	10.0.0.1	-	aabb.cc00.0500	ARPA	Ethernet0/0

```
HOST1#ping 10.0.0.254
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 10.0.0.254, timeout is 2 seconds:
```

```
.!!!!
```

```
Success rate is 60 percent (3/5), round-trip min/avg/max = 1/1/1 ms
```

```
HOST1#show ip arp
```

Protocol	Address	Age (min)	Hardware Addr	Type	Interface
Internet	10.0.0.1	-	aabb.cc00.0500	ARPA	Ethernet0/0
Internet	10.0.0.254	49	0007.b400.0a01	ARPA	Ethernet0/0

```
HOST1 Arp Reveals Gateway as Edge_1
```

HOST2#show ip arp

Protocol	Address	Age (min)	Hardware Addr	Type	Interface
Internet	10.0.0.2	-	aabb.cc00.0500	ARPA	Ethernet0/0

HOST2#ping 10.0.0.254

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 10.0.0.254, timeout is 2 seconds:

.!!!!

Success rate is 60 percent (3/5), round-trip min/avg/max = 1/1/1 ms

HOST2#show ip arp

Protocol	Address	Age (min)	Hardware Addr	Type	Interface
Internet	10.0.0.2	-	aabb.cc00.0500	ARPA	Ethernet0/0
Internet	10.0.0.254	0	0007.b400.0a02	ARPA	Ethernet0/0

HOST2 Arp Reveals Gateway as Edge\_2

HOST3#show ip arp

Protocol	Address	Age (min)	Hardware Addr	Type	Interface
Internet	10.0.0.3	-	aabb.cc00.0500	ARPA	Ethernet0/0

HOST3#ping 10.0.0.254

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 10.0.0.254, timeout is 2 seconds:

.!!!!

Success rate is 80 percent (4/5), round-trip min/avg/max = 1/1/1 ms

HOST3#show ip arp

Protocol	Address	Age (min)	Hardware Addr	Type	Interface
Internet	10.0.0.3	-	aabb.cc00.0500	ARPA	Ethernet0/0
Internet	10.0.0.254	0	0007.b400.0a03	ARPA	Ethernet0/0

HOST3 Arp Reveals Gateway as Edge\_3

HOST1#show ip arp

Protocol	Address	Age (min)	Hardware Addr	Type	Interface
Internet	10.0.0.1	-	aabb.cc00.0500	ARPA	Ethernet0/0

```
HOST1#ping 10.0.0.254
```

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 10.0.0.254, timeout is 2 seconds:

.!!!!

Success rate is 80 percent (4/5), round-trip min/avg/max = 1/1/1 ms

```
HOST1#show ip arp
```

Protocol	Address	Age (min)	Hardware Addr	Type	Interface
Internet	10.0.0.1	-	aabb.cc00.0500	ARPA	Ethernet0/0
Internet	10.0.0.254	0	0007.b400.0a01	ARPA	Ethernet0/0

HOST1 Arp Reveals Gateway as Edge\_1

Load Balancing is done based on weight of gateway

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### Task 3: GLBP Tracking

Configure R1, R2 & R3 such that they would move to listen state if their WAN interfaces were to go down.

Step 1 Configure GLBP Track to track WAN interface

EDGE\_1:

```
track 1 interface Ethernet0/1 line-protocol
interface Ethernet0/0
glbp 10 weighting 50 lower 1
glbp 10 weighting track 1 decrement 50
exit
```

EDGE\_2:

```
track 1 interface Ethernet0/1 line-protocol
interface Ethernet0/0
glbp 10 weighting 30 lower 1
glbp 10 weighting track 1 decrement 30
exit
```

EDGE\_3:

```
track 1 interface Ethernet0/1 line-protocol
interface Ethernet0/0
glbp 10 weighting 30 lower 1
glbp 10 weighting track 1 decrement 30
exit
```

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## Step 2 Verify GLBP Tracking

```
EDGE_1#show glbp
Ethernet0/0 - Group 10
State is Active
1 state change, last state change 01:58:31
Virtual IP address is 10.0.0.254
Hello time 3 sec, hold time 10 sec
Next hello sent in 1.152 secs
Redirect time 600 sec, forwarder timeout 14400 sec
Preemption enabled, min delay 0 sec
Active is local
Standby is 10.0.0.252, priority 150 (expires in 8.608 sec)
Priority 200 (configured)
Weighting 50 (configured 50), thresholds: lower 1, upper 50
Track object 1 state Up decrement 50
```

```
EDGE_1#show track 1
Track 1
Interface Ethernet0/1 line-protocol
Line protocol is Up
1 change, last change 00:05:33
Tracked by:
GLBP Ethernet0/0 10
```

```
EDGE_2#show glbp
Ethernet0/0 - Group 10
State is Standby
1 state change, last state change 01:59:28
Virtual IP address is 10.0.0.254
Hello time 3 sec, hold time 10 sec
Next hello sent in 2.304 secs
Redirect time 600 sec, forwarder timeout 14400 sec
Preemption enabled, min delay 0 sec
Active is 10.0.0.251, priority 200 (expires in 10.176 sec)
Standby is local
Priority 150 (configured)
Weighting 30 (configured 30), thresholds: lower 1, upper 30
Track object 1 state Up decrement 30
```

```
EDGE_2#show track 1
Track 1
Interface Ethernet0/1 line-protocol
Line protocol is Up
1 change, last change 00:02:38
Tracked by:
GLBP Ethernet0/0 10
```

```
EDGE_3#show glbp
Ethernet0/0 - Group 10
State is Listen
Virtual IP address is 10.0.0.254
Hello time 3 sec, hold time 10 sec
Next hello sent in 0.800 secs
Redirect time 600 sec, forwarder timeout 14400 sec
Preemption disabled
Active is 10.0.0.251, priority 200 (expires in 10.176 sec)
Standby is 10.0.0.252, priority 150 (expires in 7.040 sec)
Priority 100 (default)
Weighting 30 (configured 30), thresholds: lower 1, upper 30
Track object 1 state Up decrement 30
```

```
EDGE_3#show track 1
Track 1
Interface Ethernet0/1 line-protocol
Line protocol is Up
1 change, last change 00:03:29
Tracked by:
GLBP Ethernet0/0 10
```

Step 3 Shutdown WAN interface of EDGE\_1 for verification for Track Decrement

R1:

```
EDGE_1#debug glbp events
```

```
interface ethernet 0/1
```

```
shutdown
```

```
*Oct 2 11:18:34.533: %TRACKING-5-STATE: 1 interface Et0/1 line-protocol Up->Down
```

```
*Oct 2 11:18:34.533: GLBP: Et0/0 10 Track 1 object changed, state Up -> Down
```

```
*Oct 2 11:18:34.533: GLBP: Et0/0 10 Weighting 50 -> 0
```

```
*Oct 2 11:18:37.540: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet0/1,  
changed state to down
```

```
*Oct 2 11:19:05.475: GLBP: Et0/0 10.1 Active: i/Hello rcvd from higher pri Active router  
(135/10.0.0.252)
```

```
*Oct 2 11:19:05.475: GLBP: Et0/0 10.1 Active -> Listen
```

```
EDGE_1(config)#int ethernet 0/1
```

```
*Oct 2 11:19:05.475: %GLBP-6-FWDSTATECHANGE: Ethernet0/0 Grp 10 Fwd 1 state  
Active -> Listen
```

```
EDGE_1#show glbp | inc Forwarder|State|MAC
```

```
State is Active
```

```
Forwarder 1
```

```
State is Listen
```

```
MAC address is 0007.b400.0a01 (default)
```

```
Forwarder 2
```

```
State is Listen
```

```
MAC address is 0007.b400.0a02 (learnt)
```

```
Forwarder 3
```

```
State is Listen
```

```
MAC address is 0007.b400.0a03 (learnt)
```

```
EDGE_2#show glbp | inc Forwarder|State|MAC
```

```
State is Standby
```

```
Forwarder 1
```

```
State is Listen
```

```
MAC address is 0007.b400.0a01 (learnt)
```

```
Forwarder 2
```

```
State is Active
```

```
MAC address is 0007.b400.0a02 (default)
```

```
Forwarder 3
```

```
State is Listen
```

```
MAC address is 0007.b400.0a03 (learnt)
```

```
EDGE_3#show glbp | inc Forwarder|State|MAC
```

State is Listen

Forwarder 1

State is Active

MAC address is 0007.b400.0a01 (learnt)

Forwarder 2

State is Listen

MAC address is 0007.b400.0a02 (learnt)

Forwarder 3

State is Active

MAC address is 0007.b400.0a03 (default)

Now EDGE\_3 is active forwarder for both 0007.b400.0a01 (EDGE\_1 mac) as well as 0007.b400.0a03 (its own mac)

Step 4 Shutdown WAN interface of EDGE\_3 for verification for Track Decrement

R3:

```
interface ethernet 0/1
```

```
shutdown
```

```
*Oct 7 14:52:55.096: %TRACKING-5-STATE: 1 interface Et0/1 line-protocol Up->Down
```

```
EDGE_2#
```

```
*Oct 7 15:50:01.554: %GLBP-6-FWDSTATECHANGE: Ethernet0/0 Grp 10 Fwd 1 state Listen -> Active
```

```
*Oct 7 15:50:01.555: %GLBP-6-FWDSTATECHANGE: Ethernet0/0 Grp 10 Fwd 3 state Listen -> Active
```

```
EDGE_2#show glbp | inc Forward|State|MAC
```

State is Standby

Forwarder 1

State is Active

MAC address is 0007.b400.0a01 (learnt)

Forwarder 2

State is Active

MAC address is 0007.b400.0a02 (default)

Forwarder 3

State is Active

MAC address is 0007.b400.0a03 (learnt)

Now EDGE\_2 is active forwarder for EDGE\_1 0007.b400.0a01 and EDGE\_3 0007.b400.0a03 as well as 0007.b400.0a02 (its own mac)

## Task 3: GLBP MD5 Authentication

### Step 1 Configure GLBP MD5 Authentication

**R1:**  
interface ethernet 0/0  
glbp 10 authentication md5 key-string cisco  
exit

**R2:**  
interface ethernet 0/0  
glbp 10 authentication md5 key-string cisco  
exit

**R3:**  
interface ethernet 0/0  
glbp 10 authentication md5 key-string cisco  
exit

### Step 2 GLBP MD5 Authentication Verification

EDGE\_1#show glbp  
Ethernet0/0 - Group 10  
State is Active  
1 state change, last state change 01:55:51  
Virtual IP address is 10.0.0.254  
Hello time 3 sec, hold time 10 sec  
Next hello sent in 1.824 secs  
Redirect time 600 sec, forwarder timeout 14400 sec  
**Authentication MD5, key-string**  
Preemption enabled, min delay 0 sec  
Active is local  
Standby is 10.0.0.252, priority 150 (expires in 9.152 sec)  
Priority 200 (configured)  
Weighting 50 (configured 50), thresholds: lower 1, upper 50  
Track object 1 state Up decrement 50  
Load balancing: weighted  
Group members:  
aabb.cc00.0100 (10.0.0.251) local  
aabb.cc00.0200 (10.0.0.252) authenticated  
aabb.cc00.0300 (10.0.0.253) authenticated  
There are 3 forwarders (1 active)  
**Forwarder 1**

**State is Active**

5 state changes, last state change 00:10:12  
MAC address is 0007.b400.0a01 (default)  
Owner ID is aabb.cc00.0100  
Redirection enabled  
Preemption enabled, min delay 30 sec  
Active is local, weighting 50  
Client selection count: 1

**Forwarder 2**

**State is Listen**

2 state changes, last state change 00:01:00  
MAC address is 0007.b400.0a02 (learnt)  
Owner ID is aabb.cc00.0200  
Redirection enabled, 599.168 sec remaining (maximum 600 sec)  
Time to live: 14399.168 sec (maximum 14400 sec)  
Preemption enabled, min delay 30 sec  
Active is 10.0.0.252 (primary), weighting 30 (expires in 9.984 sec)

**Forwarder 3**

**State is Listen**

2 state changes, last state change 00:00:54  
MAC address is 0007.b400.0a03 (learnt)  
Owner ID is aabb.cc00.0300  
Redirection enabled, 598.592 sec remaining (maximum 600 sec)  
Time to live: 14398.592 sec (maximum 14400 sec)  
Preemption enabled, min delay 30 sec  
Active is 10.0.0.253 (primary), weighting 30 (expires in 9.184 sec)

**R2:**

EDGE\_2#show glbp

Ethernet0/0 - Group 10

State is Standby

4 state changes, last state change 00:06:59

Virtual IP address is 10.0.0.254

Hello time 3 sec, hold time 10 sec

Next hello sent in 1.760 secs

Redirect time 600 sec, forwarder timeout 14400 sec

**Authentication MD5, key-string**

Preemption enabled, min delay 0 sec

Active is 10.0.0.251, priority 200 (expires in 9.216 sec)

Standby is local

Priority 150 (configured)

Weighting 30 (configured 30), thresholds: lower 1, upper 30

Track object 1 state Up decrement 30

Load balancing: weighted

Group members:  
aabb.cc00.0100 (10.0.0.251) authenticated  
aabb.cc00.0200 (10.0.0.252) local  
aabb.cc00.0300 (10.0.0.253) authenticated  
There are 3 forwarders (1 active)

**Forwarder 1**

**State is Listen**

6 state changes, last state change 00:08:15  
MAC address is 0007.b400.0a01 (learnt)  
Owner ID is aabb.cc00.0100  
Time to live: 14397.408 sec (maximum 14400 sec)  
Preemption enabled, min delay 30 sec  
Active is 10.0.0.251 (primary), weighting 50 (expires in 8.256 sec)

**Forwarder 2**

**State is Active**

1 state change, last state change 02:01:40  
MAC address is 0007.b400.0a02 (default)  
Owner ID is aabb.cc00.0200  
Preemption enabled, min delay 30 sec  
Active is local, weighting 30

**Forwarder 3**

**State is Listen**

2 state changes, last state change 00:15:48  
MAC address is 0007.b400.0a03 (learnt)  
Owner ID is aabb.cc00.0300  
Time to live: 14397.984 sec (maximum 14400 sec)  
Preemption enabled, min delay 30 sec  
Active is 10.0.0.253 (primary), weighting 30 (expires in 8.544 sec)

R3:

EDGE\_3#show glbp

Ethernet0/0 - Group 10

State is Listen

2 state changes, last state change 00:09:37

Virtual IP address is 10.0.0.254

Hello time 3 sec, hold time 10 sec

Next hello sent in 0.032 secs

Redirect time 600 sec, forwarder timeout 14400 sec

**Authentication MD5, key-string**

Preemption disabled

Active is 10.0.0.251, priority 200 (expires in 9.216 sec)

Standby is 10.0.0.252, priority 150 (expires in 9.664 sec)

Priority 100 (default)

Weighting 30 (configured 30), thresholds: lower 1, upper 30

Track object 1 state Up decrement 30

Load balancing: weighted

Group members:

aabb.cc00.0100 (10.0.0.251) authenticated

aabb.cc00.0200 (10.0.0.252) authenticated

aabb.cc00.0300 (10.0.0.253) local

There are 3 forwarders (1 active)

**Forwarder 1**

**State is Listen**

4 state changes, last state change 00:09:35

MAC address is 0007.b400.0a01 (learnt)

Owner ID is aabb.cc00.0100

Time to live: 14399.104 sec (maximum 14400 sec)

Preemption enabled, min delay 30 sec

Active is 10.0.0.251 (primary), weighting 50 (expires in 9.376 sec)

**Forwarder 2**

**State is Listen**

MAC address is 0007.b400.0a02 (learnt)

Owner ID is aabb.cc00.0200

Time to live: 14399.680 sec (maximum 14400 sec)

Preemption enabled, min delay 30 sec

Active is 10.0.0.252 (primary), weighting 30 (expires in 11.456 sec)

**Forwarder 3**

**State is Active**

3 state changes, last state change 00:18:25

MAC address is 0007.b400.0a03 (default)

Owner ID is aabb.cc00.0300

Preemption enabled, min delay 30 sec

Active is local, weighting 30