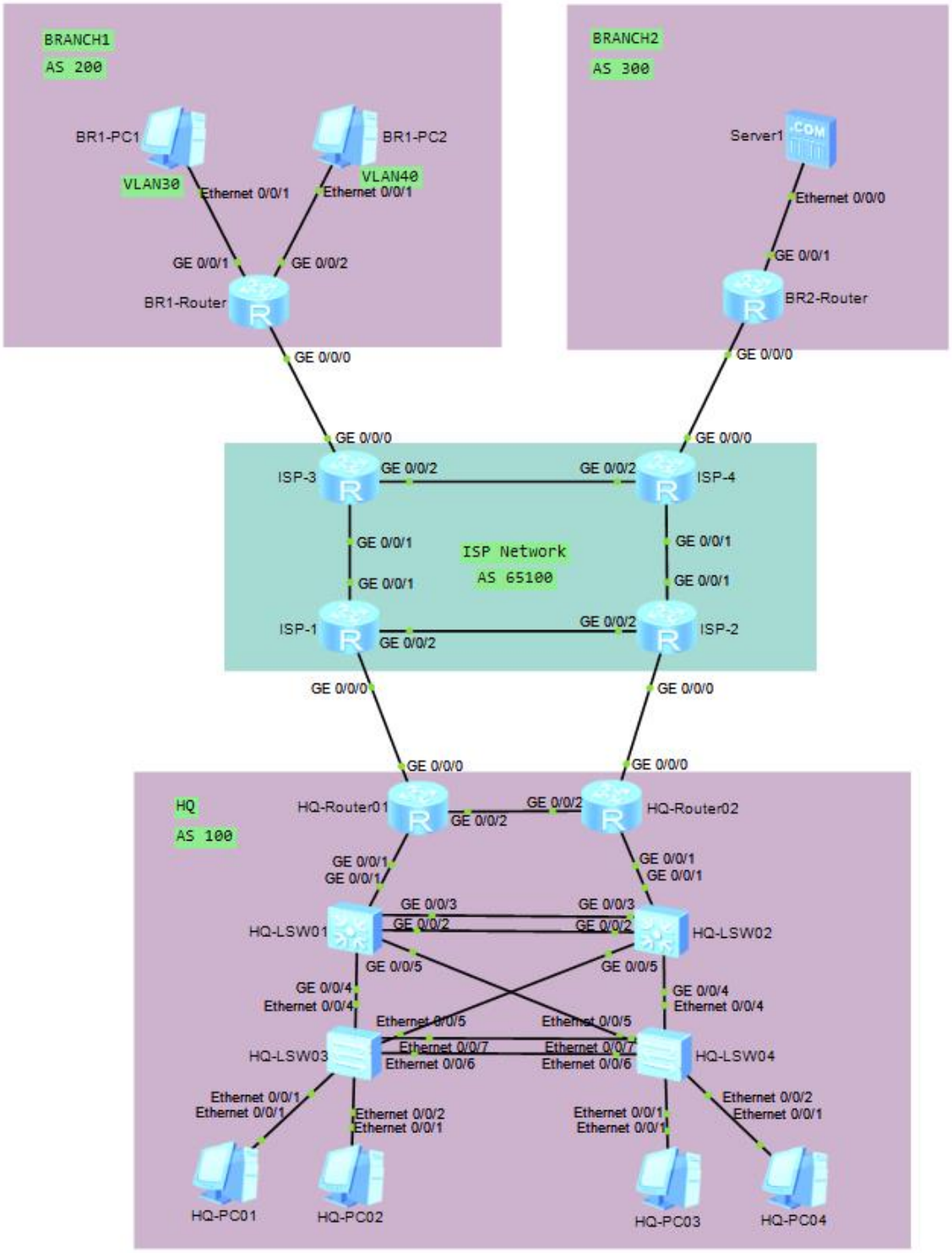
National Final Network Track Lab Exam

Huawei Technologies Co., Ltd.

Topology Overview



IP Address Configuraion

Device Name	Interface Name	IP Address
HQ-Router01	Gig0/0/1.10	192.168.10.1/24
	Gig0/0/1.20	192.168.20.1/24
	Gig0/0/1.77	192.168.77.5/24
	Gig0/0/0	2.10.15.2/30
HQ-Router02	Gig0/0/1.10	192.168.10.2/24
	Gig0/0/1.20	192.168.20.2/24
	Gig0/0/1.77	192.168.77.6/24
	Gig0/0/0	3.10.15.2/30
HQ-LSW01	Vlanif77	192.168.77.1/24
HQ-LSW02	Vlanif77	192.168.77.2/24
HQ-LSW03	Vlanif77	192.168.77.3/24
HQ-LSW04	Vlanif77	192.168.77.4/24
HQ-PC01	Ethernet0/0/1	192.168.10.10/24
HQ-PC02	Ethernet0/0/1	192.168.20.10/24
HQ-PC03	Ethernet0/0/1	192.168.10.11/24
HQ-PC04	Ethernet0/0/1	192.168.20.11/24
ISP-1	Gig0/0/0	2.10.15.1/30
	Gig0/0/2	4.10.10.1/30
	Gig0/0/1	4.10.10.5/30
	LoopBack0	1.1.1.1/32
ISP-2	Gig0/0/0	3.10.15.1/30
	Gig0/0/2	4.10.10.2/30
	Gig0/0/1	4.10.10.9/30
	LoopBack0	2.2.2.2/32
ISP-3	Gig0/0/1	4.10.10.6/30
	Gig0/0/2	4.10.10.13/30
	Gig0/0/0	5.10.15.1/30
	LoopBack0	3.3.3.3/32
ISP-4	Gig0/0/1	4.10.10.10/30
	Gig0/0/2	4.10.10.14/30
	Gig0/0/0	6.10.15.1/30
	LoopBack0	4.4.4.4/32
BR1-Router	Gig0/0/0	5.10.15.2/30
	Gig0/0/1	192.168.30.1/24
	Gig0/0/2	192.168.40.1/24
BR1-PC1	Ethernet0/0/1	192.168.30.30/24
BR1-PC2	Ethernet0/0/1	192.168.40.40/24
BR2-Router	Gig0/0/0	6.10.15.2/30
	Gig0/0/1	172.16.10.1/24
Server1	Ethernet0/0/0	172.16.10.10/24

Layer2 Interfaces Configuration

Device Name	Interface Name	Port Type	Allowed VLANs
HQ-LSW01	Gig0/0/1	Trunk	10, 20, 77
	Gig0/0/4	Trunk	10, 20, 77
	Gig0/0/5	Trunk	10, 20, 77
	Gig0/0/2	Bundled to Eth-Trunk1	
	Gig0/0/3	Bundled to Eth-Trunk1	
	Eth-Trunk1	Trunk	10, 20, 77
HQ-LSW02	Gig0/0/1	Trunk	10, 20, 77
	Gig0/0/4	Trunk	10, 20, 77
	Gig0/0/5	Trunk	10, 20, 77
	Gig0/0/2	Bundled to Eth-Trunk1	
	Gig0/0/3	Bundled to Eth-Trunk1	
	Eth-Trunk1	Trunk	10, 20, 77
HQ-LSW03	Ethernet0/0/4	Trunk	10, 20, 77
	Ethernet0/0/5	Trunk	10, 20, 77
	Ethernet0/0/6	Bundled to Eth-Trunk2	
	Ethernet0/0/7	Bundled to Eth-Trunk2	
	Eth-Trunk2	Trunk	10, 20, 77
	Ethernet0/0/1	Access	10
	Ethernet0/0/2	Access	20
HQ-LSW04	Ethernet0/0/4	Trunk	10, 20, 77
	Ethernet0/0/5	Trunk	10, 20, 77
	Ethernet0/0/6	Bundled to Eth-Trunk2	
	Ethernet0/0/7	Bundled to Eth-Trunk2	
	Eth-Trunk2	Trunk	10, 20, 77
	Ethernet0/0/1	Access	10
	Ethernet0/0/2	Access	20

AS-Numbers for BGP Configuration

	AS-Numbers for BGP
ISP	65100
HQ	100
Branch1	200
Branch2	300

Headquarters (HQ)

- Create VLANs 10, 20 and 77 on switches HQ-LSW01, HQ-LSW02, HQ-LSW03, HQ-LSW04.
- Configure interfaces on switches HQ-LSW03, HQ-LSW04 connected to PCs as access ports and configure default VLANs for them.
- Configure interconnection ports between switches as trunk ports and allow to pass VLANs 10, 20, 77. Configure **Eth-Trunks** for interfaces, configure them as trunk ports and allow to pass VLANs 10, 20, 77. Also configure ports on HQ-LSW01, HQ-LSW02 connected to routers as trunk ports.
- Configure **MSTP** for switches with parameters:

  region-name HCIP
  revision-level 1
  instance 1 vlan 10
  instance 2 vlan 20

Configure HQ-LSW01 as the primary root for instance 1 and secondary root for instance 2.
Configure HQ-LSW02 as the primary root for instance 2 and secondary root for instance 1.

- Configure Management IP addresses for switches HQ-LSW01, HQ-LSW02, HQ-LSW03, HQ-LSW04.
- Create sub-interfaces on routers HQ-Router01, HQ-Router02 for VLANs 10, 20 and 77 and configure for them IP addresses.
- Configure **VRRP** on routers HQ-Router01 and HQ-Router02 for VLANs 10 and 20. Configure VRRP priorities so that HQ-Router01 in VLAN 10 and HQ-Router02 in VLAN 20 both function as the VRRP master. VRID for VLAN10 is 10, for VLAN20 is 20. Virtual-IP for VLAN10 is 192.168.10.3, for VLAN20 is 192.168.20.3.
- Configure default route on HQ-Router01 to ISP-1.
- Configure default route on HQ-Router02 to ISP-2.
- Establish **EBGP** neighborship between HQ-Router01 and ISP-1.
  On HQ-Router01 advertise into BGP networks:
  - network between HQ-Router01 and ISP-1
  - VLAN10 network
  - VLAN20 network

  Example:

```
[HQ-Router01-bgp]display this
#
bgp 100
 peer 2.10.15.1 as-number 65100
 #
 ipv4-family unicast
  undo synchronization
  network 2.10.15.0 255.255.255.252
  network 192.168.10.0
  network 192.168.20.0
  peer 2.10.15.1 enable
#
```

- Establish **EBGP** neighborship between HQ-Router02 and ISP-2.
  On HQ-Router02 advertise into BGP networks:
  - network between HQ-Router02 and ISP-2
  - VLAN10 network
  - VLAN20 network

Branch1

- Configure IP addresses on BR1-Router, BR1-PC1 and BR1-PC2.
- Configure default route on BR1-Router to ISP-3.
- Establish **EBGP** neighborship between BR1-Router and ISP-3.
  On BR1-Router advertise into BGP networks:
  - network between BR1-Router and ISP-3
  - VLAN30 network
  - VLAN40 network

Branch2

- Configure IP addresses on BR2-Router and Server1.
- Configure default route on BR2-Router to ISP-4.
- Establish **EBGP** neighborship between BR2-Router and ISP-4.
  On BR2-Router advertise into BGP networks:
  - network between BR2-Router and ISP-4
  - network between Server1 and BR2-Router

Example:

```
<BR2-Router>dis cur conf bgp
#
bgp 300
 peer 6.10.15.1 as-number 65100
 #
 ipv4-family unicast
  undo synchronization
  network 6.10.15.0 255.255.255.252
  network 172.16.10.0 255.255.255.0
  peer 6.10.15.1 enable
#
```

ISP

OSPF

- Configure IP addresses on routers ISP1, ISP2, ISP3, ISP4.
- Create Loopback0 interface on routers ISP1, ISP2, ISP3, ISP4 and configure for them IP addresses.

- Configure OSPF between routers ISP1, ISP2, ISP3 and ISP4. Configure the IP address of Loopback0 as router ID on each ISP1, ISP2, ISP3 and ISP4. Enable OSPF on interfaces between routers.

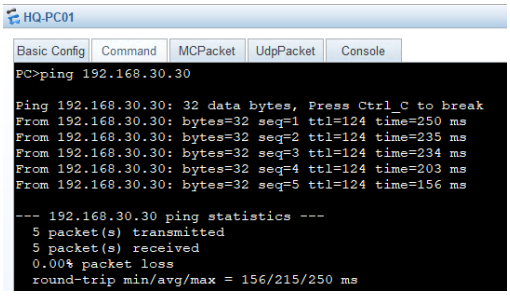
BGP

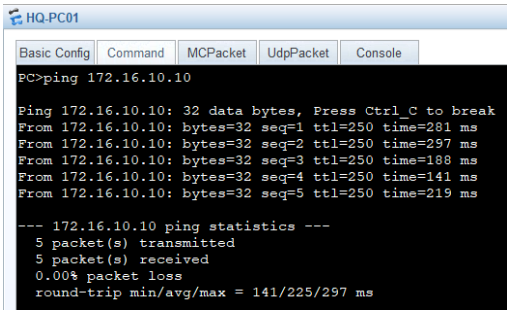
- Establish full-mesh IBGP peer relationships between Loopback0 interfaces of ISP1, ISP2, ISP3 and ISP4.
- Establish EBGP peer between HQ-Router01 and ISP-1.
- Establish EBGP peer between HQ-Router02 and ISP-2.
- Establish EBGP peer between BR1-Router and ISP-3.
- Establish EBGP peer between BR2-Router and ISP-4.

Example:

```
<ISP-1>dis cur conf bgp
#
bgp 65100
 peer 2.2.2.2 as-number 65100
 peer 2.2.2.2 connect-interface LoopBack0
 peer 2.10.15.2 as-number 100
 peer 3.3.3.3 as-number 65100
 peer 3.3.3.3 connect-interface LoopBack0
 peer 4.4.4.4 as-number 65100
 peer 4.4.4.4 connect-interface LoopBack0
 #
 ipv4-family unicast
  undo synchronization
  peer 2.2.2.2 enable
  peer 2.2.2.2 next-hop-local
  peer 2.10.15.2 enable
  peer 3.3.3.3 enable
  peer 3.3.3.3 next-hop-local
  peer 4.4.4.4 enable
  peer 4.4.4.4 next-hop-local
#
```

PCs in HQ should ping PCs in Branch1 and Server1 in Branch2.





Access to WEB Server

- Configure Server1 as a web server.
- Configure ACL on BR2-Router so that only PCs from HQ can access Server1.
- PCs from Branch1 shouldn’t have access to web server in Server1.