Bank branch and ATM network

★Overview

The network is designed to demonstrate three key features: BGP, OSPF, and HSRP.
A server is connected behind the Server Router, and a PC is connected to two routers via the Device Access Switch. The server and the PC communicate through the network using HSRP on the Branch routers, BGP between the Branch routers and Core Router #1, as well as between the Server Router and Core Router #2, and OSPF among the three Core routers.

Under normal conditions, when no devices or links have failed, traffic from the server to the PC flows along the following path:
Server Router → Core Router #2 → Core Router #1 → Branch Router #1 → Device Access Switch.

The network is also designed to handle multiple failure scenarios.
For example, if **Branch Router #1** goes down, traffic is rerouted through **Branch Router #2**. This is achieved by HSRP detecting the failure and promoting Branch Router #2 to the active router.

Another example is a link failure between **Core Router #1** and **Core Router #2**. In this case, OSPF reroutes the traffic through **Core Router #3**, maintaining connectivity between the server and the PC.

★Physical Structure

Device	Model	OS
Core Router	4331	15.5
Branch Router	4331	15.5
Branch Access Switch	2960	15.0(2)SE4
Server Router	4331	15.5

For the routers, the Cisco 4331 Integrated Services Router (ISR4331) is used due to its high performance. Core Router #1 is equipped with an NIM-ES-2-4 module to provide additional interface ports.

The Branch Access Switch is a Cisco Catalyst 2960 Series switch (C2960), selected for its scalability. With 24 ports, it allows engineers to easily integrate additional PCs in the future.

★Port Design

From_Device	From_Port	To_Device	To_Port
Core Router#1	Gi0/0/0	Core Router#2	Gi0/0/0
	Gi0/0/1	Branch Router#1	Gi0/0/0
	Gi0/0/2	Branch Router#2	Gi0/0/0
	Gi0/1/1	Core Router#3	Gi0/0/1
Core Router#2	Gi0/0/0	Core Router#1	Gi0/0/0
	Gi0/0/1	Server Router	Gi0/0/0

	Gi0/0/2	Core Router#3	Gi0/0/2
Core Router#3	Gi0/0/1	Server Router#1	Gi0/1/0
	Gi0/0/2	Server Router#2	Gi0/1/0
Branch Router#1	Gi0/0/0	Core Router#1	Gi0/0/1
	Gi0/1/1	Branch Access Switch#1	Fa0/1
	Gi0/1/2	Branch Access Switch#2	Fa0/1
	Gi0/1/0	Branch Router#2	Gi0/1/0
Branch Router#2	Gi0/0/0	Core Router#1	Gi0/0/2
	Gi0/1/1	Branch Access Switch#1	Fa0/2
	Gi0/1/2	Branch Access Switch#2	Fa0/2
	Gi0/1/0	Branch Router#1	Gi0/1/0
Branch Access Switch#1	Fa0/1	PC	Fa0
	Gi0/1	Branch Router#1	Gi0/1/1
	Gi0/2	Branch Router#2	Gi0/1/1
Branch Access Switch#2	Gi0/1	Branch Router#1	Gi0/1/2
	Gi0/2	Branch Router#2	Gi0/1/2
Server Router	Gi0/0/0	Core Router#2	Gi0/0/1
	Gi0/0/1	Server X	

★IP address

Vlan 10

Segment	IP address	Subnet
PC	192.168.1.1	255.255.255.0
Branch Access Switch#1	192.168.1.10	255.255.255.0
Branch Router#1	192.168.1.100	255.255.255.0
Branch Router#2	192.168.1.200	255.255.255.0

★Branch Router#1 ~ Branch Router#2

Segment	IP address	Subnet
Core Router#1	192.168.100.9	255.255.255.252
Branch Router#1	192.168.100.10	255.255.255.252

★Core Router#1 ~ Branch Router#1

Segment	IP address	Subnet
Core Router#1	192.168.100.1	255.255.255.252
Branch Router#1	192.168.100.2	255.255.255.252

★Core Router#1 ~ Branch Router#1

Segment	IP address	Subnet
Core Router#1	192.168.100.5	255.255.255.252
Branch Router#2	192.168.100.6	255.255.255.252

★Core Router#1 ~ Core Router#1

Segment	IP address	Subnet
Core Router#1	10.0.0.1	255.255.255.252
Core Router#2	10.0.0.2	255.255.255.252

★Core Router#2 ~ Server Router

Segment	IP address	Subnet
Core Router#1	192.168.200.1	255.255.255.252
Branch Router#2	192.168.200.2	255.255.255.252

★Core Router#1 ~ Core Router#3

Segment	IP address	Subnet
Core Router#1	10.0.1.1	255.255.255.252
Core Router#3	10.0.1.2	255.255.255.252

★Core Router#2 ~ Core Router#3

Segment	IP address	Subnet
Core Router#2	10.0.2.1	255.255.255.252
Core Router#3	10.0.2.2	255.255.255.252

★Server

Segment	IP address	Subnet
Server Router	172.16.0.100	255.255.255.0
Server	172.16.0.1	255.255.255.0

Segment	IP address	Subnet
Server Router	172.16.0.100	255.255.255.0