Interconnecting Cisco Network Devices, Part 1 (ICND1) v2.0

Global Knowledge European Remote Labs Instructor Guide

Global Knowledge

Interconnecting Cisco Network Devices, Part 1 (ICND1) v2.0

1. Contents

2. Introduction

This guide has been produced to assist in understanding the specific issues relating to delivering the Cisco 'Interconnecting Cisco Network Devices, Part 1 v2.0' training course, using Global Knowledge European Remote Labs equipment.

It is intended to complement the Cisco documentation and should **only** be used in conjunction with the Cisco Course Administration (CAG) and Student Lab Guides.

3. Remote Labs Topology, Connections and Setup
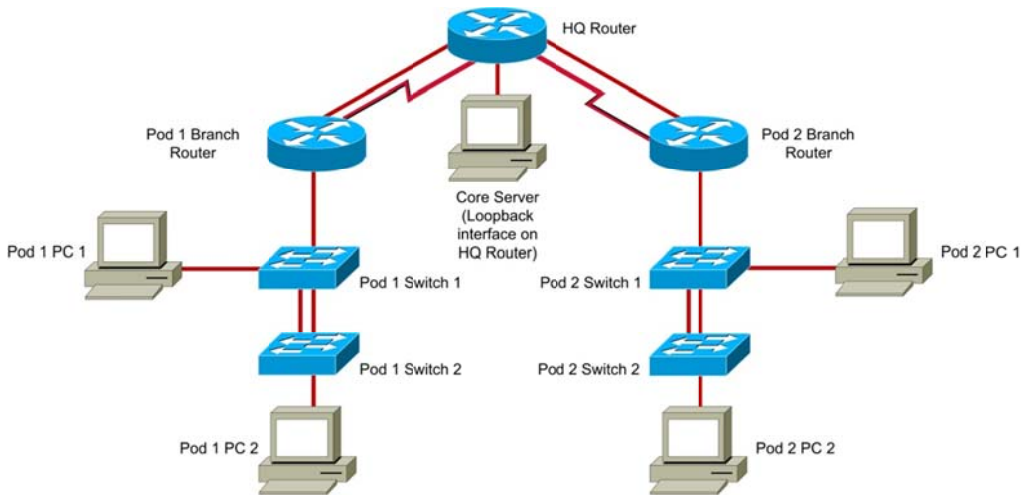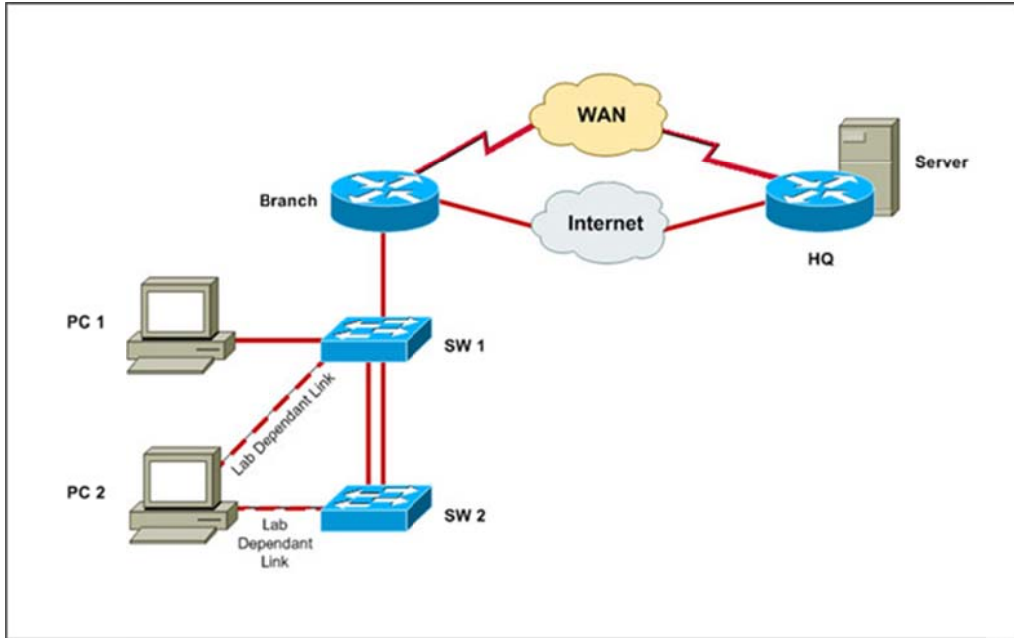
4. Initial Lab Configuration Set-up

Device Configuration

Load the 'Base' configurations for **all** devices from the 'Device Management' tool on the Instructor Web Access page.

Core Device Logins

HQ Router:

Student level 2 enable password: <none> (privilege level 2 set on vty lines)
Instructor level 15 enable password: globalk

Student PC Logins

administrator / admin

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5. Lab Clear Down Procedure

Load the Base configurations for all devices, from the 'Device Management' tool on the Instructor Web Access page.

Notify Remote Lab Support that you have finished using the equipment by replying to the '**End of Course Confirmation**' e-mail, which will have been sent to you during the week.

Please do **NOT** reply to the 'End of Course Confirmation' e-mail for **ANY** other purpose (e.g. a support request) – this may cause confusion and your rack may be disconnected or cleared before your class has finished as a result..!!

Should you have not received the above e-mail by the time that your class has finished, please send an e-mail to the Support e-mail address (Section 2 above), confirming the Course and Rack used, that you have completed the class and finished using the equipment, along with any comments or follow-up required.

6. Lab Exercises

Lab 1-1: Performing Switch Startup and Initial Configuration

Setup – Nothing further required. Base configurations for all devices were loaded as part of the 'Initial Lab Setup' (Section 4).

Task 1 – All OK

Task 2 – Step 4: Configure a Default Gateway on the PC of 10.1.1.1

Task 3 – All OK

Task 4 – All OK

Lab 1-2: Troubleshooting Switch Media Issues

Setup – Students to load the Pod Branch and SW1 Lab 1-2 configs from the 'Device Management' tool on the Student Pod Web Access page.

Task 1 – Not required – trouble ticket configuration file is loaded as above.

Task 2 – All OK

Task 3 – All OK

Lab 2-1: Performing Initial Router Setup and Configuration

Setup – No additional setup required.

Instructor to load the 'SW1' Lab 2-1 configuration(s), if student(s) have not completed Lab 1-2 successfully.

Task 1 – All OK

Task 2 – Step 3: Enable interface FastEthernet0/0

Step 4: Set the interface speed to 100 and duplex to full to match the switch SW1 Fa0/13 interface settings configured as part of Lab 1-2.

Step 5: Return to the privileged EXEC command and verify FastEthernet0/0 interface status,

Note: For all references the 'GigabitEthernet' interfaces in the Lab Guide, please substitute 'FastEthernet' instead.

Task 3 – All OK

Task 4 – All OK

Lab 2-2: Connecting to the Internet

Setup – No additional setup required.

Instructor to load the 'Branch' Lab 2-2 configuration(s), if student(s) have not completed Lab 2-1 successfully.

Task 1 – Reminder: Replace instances of 'GigabitEthernet' with 'FastEthernet'

Task 2 – Step 9: If the ping from the PC to 209.165.201.1 does not work, check that the Default Gateway on PC1 has been set to 10.1.1.1

Task 3 – Step 2: You may see several user connections with the same IP addresses – these are other pods connecting to the same shared HQ Router. Your active session is marked with an asterisk(*).

Instructor Note: VRF-Lite has been implemented on the HQ router to allow for identical ipv4 addressing in each pod. The 'show users' command is not vrf-aware so will show all sessions, possibly confusingly for students, as each pod session set will have identical IP addressing. You may need to provide a simple explanation of vrf-lite, as being capable of creating several 'virtual routers' on a single hardware router chassis, thus allowing 'duplicate' IP addressing.

Task 4 – All OK

Lab 3-1: Enhancing the Security of the Initial Configuration

Setup – No additional setup required.

Instructor to load the 'Branch' Lab 3-1 configuration(s), if student(s) have not completed Lab 2-2 successfully.

Task 1 – All OK

Task 2 – All OK

Task 3 – All OK

Task 4 – All OK

Lab 3-2: Device Hardening

Setup – No additional setup required.

Instructor to load the 'Branch' and 'SW1' Lab 3-2 configurations, if student(s) have not completed Lab 3-1 successfully.

Task 1 – All OK

Task 2 – All OK

Task 3 – All OK

Task 4 – All OK

Lab 3-3: Filtering Traffic with ACLs

Setup – No additional setup required.

Instructor to load the 'Branch' and 'SW1' Lab 3-3 configurations, if student(s) have not completed Lab 3-2 successfully.

Task 1 – All OK

Task 2 – Students to load the Lab 3-3 TSHOOT ACL Trouble Ticket config via the 'Device Management' tool on the Student Pod Web Access page.

Task 3 – All OK

Note: To avoid potential issues with students using the Cisco Configuration Professional (CCP) to login and change the shared HQ router config, the default Web page has been replaced with a 'generic' page. Login credentials are still required, as per the lab step instructions.

Lab 4-1: Configuring Expanded Switched Networks

Setup – Instructor to load the 'Core Switch' Lab 4-1 configuration, from the 'Device Management' tool on the Instructor Web Access page.

Instructor to load the 'Branch' Lab 4-1 configuration(s), if student(s) have not completed Lab 3-3 successfully.

Task 1 – All OK

Task 2 – All OK

Task 3 – All OK

Lab 4-2: Configuring DHCP Server

Setup - No additional setup required.

Instructor to load the 'Branch', 'SW1' and 'SW2' Lab 4-2 configurations, if student(s) have not completed Lab 4-1 successfully.

Task 1 – All OK

Task 2 – Step 1: As the PC's will typically request the IP address that they had previously (e.g .100), it is suggested that the range be amended to x.x.x.120 to x.x.x.150. This will ensure a change of IP which can then be viewed to confirm the effect.

Task 3 – All OK

Task 4 – All OK

Lab 4-3: Implementing OSPF

Setup – Instructor to load the 'HQ Router' Lab 4-3 configuration, from the 'Device Management' tool on the Instructor Web Access page.

Instructor to load the 'Branch' Lab 4-3 configuration(s), if student(s) have not completed Lab 4-2 successfully.

Task 1 – Step 2: Remove DHCP and NAT configuration from the FastEthernet0/1 interface.

Step 3: Configure IP address 192.168.1.1 with network mask 255.255.255.0 on the FastEthernet0/1 interface.

Task 2 – Activity Verification Step 1: The Headquarters router is configured with the router ID of 1.1.**P**.1 (where **P** is your pod number).

Lab 5-1: Configure and Verify Basic IPv6

Setup - No additional setup required.

Job Aids: Topology and IP Addressing

Device	Interface	IP Address & Subnet Mask
Branch	Serial0/0/0	2001:DB8:C0A8:10**P**::1/64
HQ	Serial1/X	2001:DB8:C0A8:10**P**::2/64
HQ	Loopback0	2001:DB8:AC10:100::64/64

In the above table, **P** is your Pod number and **X** is a pod-specific interface on the HQ router (Pod 1 is S1/0, Pod 2 is S**1**/1 etc.).

For all of the following IPv6 labs, use the IPv6 addressing scheme as detailed in the Job Aids table above.

Additionally, for all of the following IPv6 labs, substitute the Branch router Serial0/0/0 interface in place of the GigabitEthernet0/1 interface described in the Cisco Lab Guide.

Task 1 – All OK

Lab 5-2: Configure and Verify Stateless Autoconfiguration

Setup - No additional setup required.

Task 1 – All OK

Lab 5-3: Configure and Verify IPv6 Routing

Setup - No additional setup required.

Task 1 – All OK

Task 2 – Step 2: On the Branch router, enable OSPFv3 with process ID 1 and router ID 0.0.**P**.2   (where **P** is your pod number).

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Lab S-1: ICND1 Super Lab

Setup - No additional setup required. Core configs should be as for the previous lab. However, if running this lab as a 'stand-alone' lab, load the 'HQ Router' Lab 4-3 and 'Core Switch' Lab 4-1 configurations, from the 'Device Management' tool on the Instructor Web Access page.

Task 1 – All OK

Task 2 – All OK

Task 3 – Step 2: Use 192.168.1.1/24 for the IP address. Enable the interface.

Step 3: The HQ router next hop will be 192.168.1.2

Step 8: On the HQ router, to initiate the telnet sessions, use the following command format:

> telnet 192.168.1.1 /vrf Pod**P**   (where **P** is your pod number

Task 4 – Steps 2 & 3: Not required. IP address already set to 192.168.1.2 on HQ router.

Step 5: Not required, IP address already set to 192.168.1.1 on Branch router.

Activity Verification Step 6: On the HQ router, verify the routing table with the command:

> show ip route vrf Pod**P**   (where **P** is your pod number)

You should see LAN networks accessible over the FastEthernet0/1.9**P** interface with the Branch router as the next hop.

Task 5 – Step 3: Configure subinterfaces on the FastEthernet0/0 interface with the following IPv6 addresses:

Subinterface Identifier	VLAN Identifier	IPv6 Address/Mask
FastEthernet0/0.1	1	2001:DB8:0A01:10**P**::1/64
FastEthernet0/0.10	10	2001:DB8:0A01:A0**P**::1/64
FastEthernet0/0.20	20	2001:DB8:0A01:140**P**::1/64

In the above table, **P** is your Pod number.

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Activity Verification Steps 2, 3, 4, 6, 7 & 8: On the Remote Labs Windows XP PC's the percentage identifier is required to correctly identify the IPv6 address. Use the address 'as displayed' for the ping commands.

e.g. ping fe80::218:baff:fec7:7ae8%6

Task 6 – Steps 2 & 3: Not required. The HQ router has been pre-configured to use a Serial interface for this Task.

Step 4: On the Branch router, configure the Serial0/0/0 interface with an IPv6 address of 2001:DB8:C0A8:10**P**::1/64   (where **P** is your pod number). Enable the Serial interface.

Step 5: From the Branch router, ping the HQ router at 2001:DB8:C0A8:10**P**::2

Step 7: Verify the existing OSPFv3 configuration on the HQ router with:

　　　　show ipv6 ospf interface

You should see that the OSPFv3 process is configured and that the Loopback0 and Serial1/**X** interfaces are enabled for OSPFv3

Where **X** is a pod-specific Serial interface number, as indicated in the table below:

Job Aids: Serial Interface Table

Pod	HQ Router Serial Interface
1	Serial 1/0
2	Serial 1/1
3	Serial 1/2
4	Serial 1/3
5	Serial 1/4
6	Serial 1/5

Step 10: Enable the following interfaces for OSPFv3 in Area 0:

- Serial0/0/0
- FastEthernet0/0.1
- FastEthernet0/0.10
- FastEthernet0/0.20

Activity Verification Step 6: You will also see routes to the LANs in other pods. Verify your routes with the correct next-hop Serial interface (see table above).

7. Support Information

E-Mail

E-Mail is our preferred primary method of contact.

The Support Team E-Mail address is: **rls@globalknowledge.net**

Telephone

Support Direct Telephone Line: **+44 (0)118 989 7735**

Other Contact Methods

We do not normally encourage contact methods (e.g. Skype, Lync, MSN etc.), other than the above, as these other methods often do not easily provide a means to record and track support information. Such information is important to us, as it allows us to continually monitor and improve our support service to you.