

# Chapter 3: IP Connectivity

# CCNA 200-301 Lab | Chapter 3 IP Connectivity | Lab 037 Configure & Verify VRRP Redundancy Protocol

## 

## Lab Topology – Lab 037 Configure & Verify VRRP Redundancy Protocol:



## Equipment Required:

* 2 Cisco Router (e.g. Cisco CISCO2901/K9)
* 4 L3 Cisco Switches (e.g. Catalyst 3750)
* 3 L2 Cisco Switches (e.g. WS-C2960-24TT-L)
* 3 laptops with Ethernet interface
* Console cables for network devices
* Ethernet cables for connections between devices
* Computer with Terminal emulation software e.g. PuTTY

## Final Configuration for each Device:

## PC1:

## ip 10.1.1.1/24 10.1.1.254

## ip dns 8.8.8.8

## set pcname PC1

## save PC1

## wr

## PC2:

## ip 10.2.2.2/24 10.2.2.254

## ip dns 8.8.8.8

## set pcname PC2

## save PC2

## wr

## Server-A:

## ip 10.3.3.3/24 10.3.3.254

## ip dns 8.8.8.8

## set pcname Server-A

## save Server-A

## wr

## ACC-SW1:

## Building configuration...

## Current configuration : 3308 bytes

## !

## ! Last configuration change at 14:41:11 UTC Mon Oct 14 2024

## !

## version 15.2

## service timestamps debug datetime msec

## service timestamps log datetime msec

## no service password-encryption

## service compress-config

## !

## hostname ACC-SW1

## !

## boot-start-marker

## boot-end-marker

## !

## !

## !

## no aaa new-model

## !

## !

## !

## !

## !

## !

## !

## !

## no ip domain-lookup

## ip cef

## no ipv6 cef

## !

## !

## !

## spanning-tree mode pvst

## spanning-tree extend system-id

## !

## vlan internal allocation policy ascending

## !

## interface GigabitEthernet0/0

## description "Link to DIS-Switches"

## switchport trunk encapsulation dot1q

## switchport mode trunk

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet0/1

## description "Link to DIS-Switches"

## switchport trunk encapsulation dot1q

## switchport mode trunk

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet0/2

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet0/3

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet1/0

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet1/1

## description "Link to PC1"

## switchport access vlan 10

## switchport mode access

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet1/2

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet1/3

## media-type rj45

## negotiation auto

## !

## ip forward-protocol nd

## !

## no ip http server

## no ip http secure-server

## !

## !

## !

## !

## !

## !

## control-plane

## !

## line con 0

## exec-timeout 300 0

## logging synchronous

## line aux 0

## line vty 0 4

## !

## !

## end

## ACC-SW1#

## ACC-SW2:

## ACC-SW2#show running-config

## Building configuration...

## Current configuration : 3308 bytes

## !

## ! Last configuration change at 14:42:20 UTC Mon Oct 14 2024

## !

## version 15.2

## service timestamps debug datetime msec

## service timestamps log datetime msec

## no service password-encryption

## service compress-config

## !

## hostname ACC-SW2

## !

## boot-start-marker

## boot-end-marker

## !

## no aaa new-model

## !

## no ip domain-lookup

## ip cef

## no ipv6 cef

## !

## !

## !

## spanning-tree mode pvst

## spanning-tree extend system-id

## !

## vlan internal allocation policy ascending

## !

## interface GigabitEthernet0/0

## description "Link to DIS-Switches"

## switchport trunk encapsulation dot1q

## switchport mode trunk

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet0/1

## description "Link to DIS-Switches"

## switchport trunk encapsulation dot1q

## switchport mode trunk

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet0/2

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet0/3

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet1/0

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet1/1

## description "Link to PC2"

## switchport access vlan 20

## switchport mode access

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet1/2

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet1/3

## media-type rj45

## negotiation auto

## !

## ip forward-protocol nd

## !

## no ip http server

## no ip http secure-server

## !

## !

## control-plane

## !

## line con 0

## exec-timeout 300 0

## logging synchronous

## line aux 0

## line vty 0 4

## !

## !

## end

## ACC-SW2#

## ACC-SW3:

## ACC-SW3#show running-config

## Building configuration...

## Current configuration : 3381 bytes

## !

## ! Last configuration change at 14:59:41 UTC Mon Oct 14 2024

## !

## version 15.2

## service timestamps debug datetime msec

## service timestamps log datetime msec

## no service password-encryption

## service compress-config

## !

## hostname ACC-SW3

## !

## boot-start-marker

## boot-end-marker

## !

## !

## !

## no aaa new-model

## !

## no ip domain-lookup

## ip cef

## no ipv6 cef

## !

## !

## !

## spanning-tree mode pvst

## spanning-tree extend system-id

## !

## vlan internal allocation policy ascending

## !

## interface GigabitEthernet0/0

## description "Link to DIS-Switches"

## switchport trunk allowed vlan 30

## switchport trunk encapsulation dot1q

## switchport mode trunk

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet0/1

## description "Link to DIS-Switches"

## switchport trunk allowed vlan 30

## switchport trunk encapsulation dot1q

## switchport mode trunk

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet0/2

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet0/3

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet1/0

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet1/1

## description "Link to Server-A"

## switchport access vlan 30

## switchport mode access

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet1/2

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet1/3

## media-type rj45

## negotiation auto

## !

## ip forward-protocol nd

## !

## no ip http server

## no ip http secure-server

## !

## control-plane

## !

## line con 0

## exec-timeout 300 0

## logging synchronous

## line aux 0

## line vty 0 4

## !

## !

## end

## ACC-SW3#

## DIS-SW1:

## Building configuration...

## Current configuration : 3943 bytes

## !

## ! Last configuration change at 08:45:44 UTC Tue Oct 15 2024

## !

## version 15.2

## service timestamps debug datetime msec

## service timestamps log datetime msec

## no service password-encryption

## service compress-config

## !

## hostname DIS-SW1

## !

## boot-start-marker

## boot-end-marker

## !

## !

## !

## no aaa new-model

## !

## no ip domain-lookup

## ip cef

## no ipv6 cef

## !

## !

## !

## spanning-tree mode pvst

## spanning-tree extend system-id

## !

## vlan internal allocation policy ascending

## !

## track 100 interface GigabitEthernet0/2 line-protocol

## !

## interface GigabitEthernet0/0

## description "Linkt to ACC-Switches"

## switchport trunk allowed vlan 10,20

## switchport trunk encapsulation dot1q

## switchport mode trunk

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet0/1

## description "Linkt to ACC-Switches"

## switchport trunk allowed vlan 10,20

## switchport trunk encapsulation dot1q

## switchport mode trunk

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet0/2

## description "Link to C-Router1"

## no switchport

## ip address 10.0.1.2 255.255.255.252

## negotiation auto

## !

## interface GigabitEthernet0/3

## description "Link to DIS-SW2"

## switchport trunk allowed vlan 10,20

## switchport trunk encapsulation dot1q

## switchport mode trunk

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet1/0

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet1/1

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet1/2

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet1/3

## media-type rj45

## negotiation auto

## !

## interface Vlan10

## ip address 10.1.1.100 255.255.255.0

## ip ospf 1 area 0

## vrrp 10 ip 10.1.1.254

## vrrp 10 priority 200

## vrrp 10 track 100 decrement 100

## vrrp 20 track 100 decrement 100

## !

## interface Vlan20

## ip address 10.2.2.100 255.255.255.0

## ip ospf 1 area 0

## vrrp 20 ip 10.2.2.254

## vrrp 20 priority 200

## vrrp 20 track 20 decrement 100

## !

## router ospf 1

## network 10.0.1.0 0.0.0.3 area 0

## !

## ip forward-protocol nd

## !

## no ip http server

## no ip http secure-server

## !

## control-plane

## !

## line con 0

## exec-timeout 300 0

## logging synchronous

## line aux 0

## line vty 0 4

## !

## !

## end

## DIS-SW1#

## DIS-SW2:

## Building configuration...

## Current configuration : 3788 bytes

## !

## ! Last configuration change at 22:05:56 UTC Mon Oct 14 2024

## !

## version 15.2

## service timestamps debug datetime msec

## service timestamps log datetime msec

## no service password-encryption

## service compress-config

## !

## hostname DIS-SW2

## !

## boot-start-marker

## boot-end-marker

## !

## !

## !

## no aaa new-model

## !

## !

## no ip domain-lookup

## ip cef

## no ipv6 cef

## !

## !

## !

## spanning-tree mode pvst

## spanning-tree extend system-id

## !

## vlan internal allocation policy ascending

## !

## interface GigabitEthernet0/0

## description "Link to ACC-SWitches"

## switchport trunk allowed vlan 10,20

## switchport trunk encapsulation dot1q

## switchport mode trunk

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet0/1

## description "Link to ACC-SWitches"

## switchport trunk allowed vlan 10,20

## switchport trunk encapsulation dot1q

## switchport mode trunk

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet0/2

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet0/3

## description "Link to DIS-SW3"

## switchport trunk allowed vlan 10,20

## switchport trunk encapsulation dot1q

## switchport mode trunk

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet1/0

## description "Link to C-Router1"

## no switchport

## ip address 10.0.2.2 255.255.255.252

## negotiation auto

## !

## interface GigabitEthernet1/1

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet1/2

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet1/3

## media-type rj45

## negotiation auto

## !

## interface Vlan10

## ip address 10.1.1.101 255.255.255.0

## ip ospf 1 area 0

## vrrp 10 ip 10.1.1.254

## vrrp 10 priority 110

## !

## interface Vlan20

## ip address 10.2.2.101 255.255.255.0

## ip ospf 1 area 0

## vrrp 20 ip 10.2.2.254

## vrrp 20 priority 110

## !

## router ospf 1

## network 10.0.2.0 0.0.0.3 area 0

## !

## ip forward-protocol nd

## !

## no ip http server

## no ip http secure-server

## !

## control-plane

## !

## line con 0

## exec-timeout 300 0

## logging synchronous

## line aux 0

## line vty 0 4

## !

## !

## end

## DIS-SW2#

## DIS-SW3:

## Building configuration...

## Current configuration : 3530 bytes

## !

## ! Last configuration change at 15:43:04 UTC Mon Oct 14 2024

## !

## version 15.2

## service timestamps debug datetime msec

## service timestamps log datetime msec

## no service password-encryption

## service compress-config

## !

## hostname DIS-SW3

## !

## boot-start-marker

## boot-end-marker

## !

## !

## !

## no aaa new-model

## !

## !

## no ip domain-lookup

## ip cef

## no ipv6 cef

## !

## !

## !

## spanning-tree mode pvst

## spanning-tree extend system-id

## !

## vlan internal allocation policy ascending

## !

## interface GigabitEthernet0/0

## description "Link to Acc-Switch3"

## switchport trunk allowed vlan 30

## switchport trunk encapsulation dot1q

## switchport mode trunk

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet0/1

## description "Link to C-Router2"

## no switchport

## ip address 10.11.1.2 255.255.255.252

## negotiation auto

## !

## interface GigabitEthernet0/2

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet0/3

## description "Link to Dis-SW4"

## switchport trunk allowed vlan 30

## switchport trunk encapsulation dot1q

## switchport mode trunk

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet1/0

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet1/1

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet1/2

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet1/3

## media-type rj45

## negotiation auto

## !

## interface Vlan30

## ip address 10.3.3.100 255.255.255.0

## ip ospf 2 area 0

## vrrp 30 ip 10.3.3.254

## vrrp 30 priority 200

## !

## router ospf 2

## network 10.11.1.0 0.0.0.3 area 0

## !

## ip forward-protocol nd

## !

## no ip http server

## no ip http secure-server

## !

## control-plane

## !

## line con 0

## exec-timeout 300 0

## logging synchronous

## line aux 0

## line vty 0 4

## !

## !

## end

## DIS-SW3#

## DIS-SW4:

## Building configuration...

## Current configuration : 3512 bytes

## !

## ! Last configuration change at 15:25:18 UTC Mon Oct 14 2024

## !

## version 15.2

## service timestamps debug datetime msec

## service timestamps log datetime msec

## no service password-encryption

## service compress-config

## !

## hostname DIS-SW4

## !

## boot-start-marker

## boot-end-marker

## !

## !

## !

## no aaa new-model

## !

## no ip domain-lookup

## ip cef

## no ipv6 cef

## !

## !

## !

## spanning-tree mode pvst

## spanning-tree extend system-id

## !

## vlan internal allocation policy ascending

## !

## interface GigabitEthernet0/0

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet0/1

## description "Link to Acc-SWitch3"

## switchport trunk allowed vlan 30

## switchport trunk encapsulation dot1q

## switchport mode trunk

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet0/2

## description "Link to C-Router2"

## no switchport

## ip address 10.11.2.2 255.255.255.252

## negotiation auto

## !

## interface GigabitEthernet0/3

## description "Link to DIS-SW3"

## switchport trunk allowed vlan 30

## switchport trunk encapsulation dot1q

## switchport mode trunk

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet1/0

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet1/1

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet1/2

## media-type rj45

## negotiation auto

## !

## interface GigabitEthernet1/3

## media-type rj45

## negotiation auto

## !

## interface Vlan30

## ip address 10.3.3.101 255.255.255.0

## vrrp 30 ip 10.3.3.254

## vrrp 30 priority 110

## !

## router ospf 2

## network 10.11.2.0 0.0.0.3 area 0

## !

## ip forward-protocol nd

## !

## no ip http server

## no ip http secure-server

## !

## control-plane

## !

## line con 0

## exec-timeout 300 0

## logging synchronous

## line aux 0

## line vty 0 4

## !

## !

## end

## DIS-SW4#

## C-Router1:

## Building configuration...

## Current configuration : 3256 bytes

## !

## ! Last configuration change at 22:17:55 UTC Mon Oct 14 2024

## !

## version 15.6

## service timestamps debug datetime msec

## service timestamps log datetime msec

## no service password-encryption

## !

## hostname C-Router1

## !

## boot-start-marker

## boot-end-marker

## !

## !

## !

## no aaa new-model

## ethernet lmi ce

## !

## !

## !

## mmi polling-interval 60

## no mmi auto-configure

## no mmi pvc

## mmi snmp-timeout 180

## !

## no ip domain lookup

## ip cef

## no ipv6 cef

## !

## multilink bundle-name authenticated

## !

## !

## !

## !

## !

## redundancy

## !

## interface GigabitEthernet0/0

## description "Link to C-Router2"

## ip address 10.10.10.1 255.255.255.252

## duplex auto

## speed auto

## media-type rj45

## !

## interface GigabitEthernet0/1

## description "Link to DiS-SW2"

## ip address 10.0.2.1 255.255.255.252

## duplex auto

## speed auto

## media-type rj45

## !

## interface GigabitEthernet0/2

## description "link to DIS-SW1"

## ip address 10.0.1.1 255.255.255.252

## duplex auto

## speed auto

## media-type rj45

## !

## interface GigabitEthernet0/3

## no ip address

## shutdown

## duplex auto

## speed auto

## media-type rj45

## !

## router ospf 1

## network 0.0.0.0 255.255.255.255 area 0

## default-information originate

## !

## ip forward-protocol nd

## !

## !

## no ip http server

## no ip http secure-server

## ip route 0.0.0.0 0.0.0.0 GigabitEthernet0/0

## !

## !

## !

## !

## control-plane

## !

## line con 0

## exec-timeout 300 0

## logging synchronous

## line aux 0

## line vty 0 4

## login

## transport input none

## !

## no scheduler allocate

## !

## end

## C-Router1#

## C-Router2:

## 

## Building configuration...

## Current configuration : 3193 bytes

## !

## ! Last configuration change at 15:38:32 UTC Mon Oct 14 2024

## !

## version 15.6

## service timestamps debug datetime msec

## service timestamps log datetime msec

## no service password-encryption

## !

## hostname C-Router2

## !

## boot-start-marker

## boot-end-marker

## !

## !

## !

## no aaa new-model

## ethernet lmi ce

## !

## !

## !

## mmi polling-interval 60

## no mmi auto-configure

## no mmi pvc

## mmi snmp-timeout 180

## !

## no ip domain lookup

## ip cef

## no ipv6 cef

## !

## multilink bundle-name authenticated

## !

## redundancy

## !

## interface GigabitEthernet0/0

## description "Link to C-Router1"

## ip address 10.10.10.2 255.255.255.252

## duplex auto

## speed auto

## media-type rj45

## !

## interface GigabitEthernet0/1

## description "Link to DIS-SW3"

## ip address 10.11.1.1 255.255.255.252

## duplex auto

## speed auto

## !

## interface GigabitEthernet0/2

## ip address 10.11.2.1 255.255.255.252

## duplex auto

## speed auto

## !

## interface GigabitEthernet0/3

## no ip address

## shutdown

## duplex auto

## speed auto

## media-type rj45

## !

## router ospf 2

## network 0.0.0.0 255.255.255.255 area 0

## default-information originate

## !

## ip forward-protocol nd

## !

## !

## no ip http server

## no ip http secure-server

## ip route 0.0.0.0 0.0.0.0 GigabitEthernet0/0

## !

## control-plane

## !

## line con 0

## exec-timeout 300 0

## logging synchronous

## line aux 0

## line vty 0 4

## login

## transport input none

## !

## no scheduler allocate

## !

## end

## C-Router2#