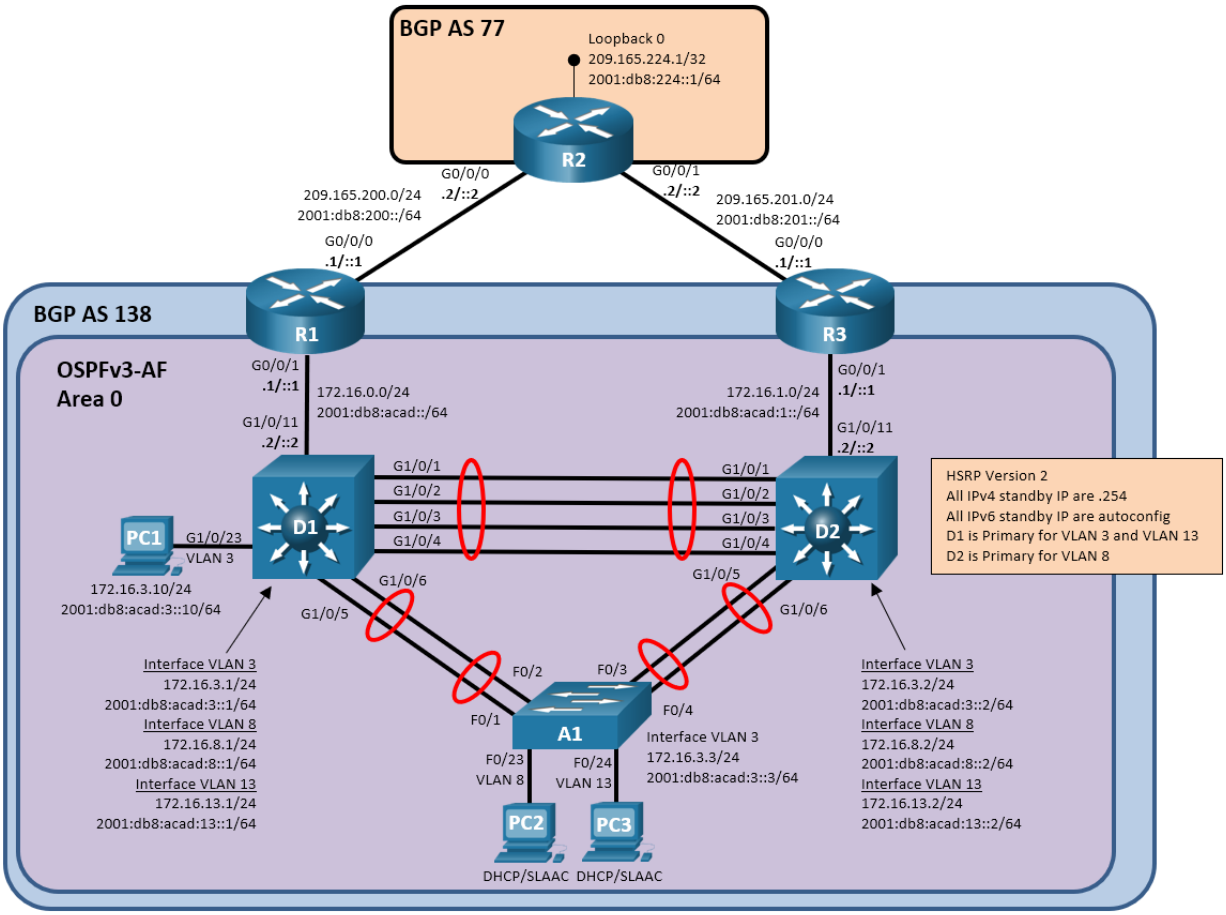
Lab -Troubleshoot IP SLA and Netflow (Instructor Version)

Instructor Note: Red font color or gray highlights indicate text that appears in the instructor copy only.

Topology



Addressing Table

Device	Interface	IPv4 Address/Mask	IPv6 Address/Prefix Length	Link-Local Address
R1	G0/0/0	209.165.200.1/24	2001:db8:200::1/64	fe80::1:1
	G0/0/1	172.16.0.1/24	2001:db8:acad::1/64	fe80::1:2
R2	G0/0/0	209.165.200.2/24	2001:db8:200::2/64	fe80::2:1
	G0/0/1	209.165.201.2/24	2001:db8:201::2/64	fe80::2:3
	Loopback 0	209.165.224.1/32	2001:db8:224::1/64	fe80::2:4
R3	G0/0/0	209.165.201.1/24	2001:db8:201::1/64	fe80::3:1
	G0/0/1	172.16.1.1/24	2001:db8:acad:1::1/64	fe80::3:2

Device	Interface	IPv4 Address/Mask	IPv6 Address/Prefix Length	Link-Local Address
D1	G1/0/11	172.16.0.2/24	2001:db8:acad::2/64	fe80::d1:1
	VLAN 3	172.16.3.1/24	2001:db8:acad:3::1/64	fe80::d1:2
	VLAN 8	172.16.8.1/24	2001:db8:acad:8::1/64	fe80::d1:3
	VLAN 13	172.16.13.1/24	2001:db8:acad:13::1/64	fe80::d1:4
D2	G1/0/11	172.16.1.2/24	2001:db8:acad:1::2/64	fe80::d2:1
	VLAN 3	172.16.3.2/24	2001:db8:acad:3::2/64	fe80::d2:2
	VLAN 8	172.16.8.2/24	2001:db8:acad:8::2/64	fe80::d2:3
	VLAN 13	172.16.13.2/24	2001:db8:acad:13::2/64	fe80::d2:4
A1	VLAN 3	172.16.3.3/24	2001:db8:acad:3::3/64	fe80::a1:1
PC1	NIC	172.16.3.10/24	2001:db8:acad:3::10/64	N/A
PC2	NIC	DHCP	SLAAC	
PC3	NIC	DHCP	SLAAC	

Objectives

Troubleshoot network issues related to the configuration and operation of IP SLAs and Netflow.

Background / Scenario

In this topology, R1 and R3 are boundary routers for BGP AS 138. They are both connected to R2. R2 is a boundary router for BGP AS 77. R1 and R3 are adjacent with D1 and D2 via OSPFv3 Address Families for both IPv4 and IPv6. R1 and R3 are both providing default routes to the OSPF network. The default routes are configured to be OSPF External Type 1 routes. Switches D1 and D2 are performing inter-VLAN routing for VLANs 3, 8, and 13. Switches D1 and D2 are providing gateway redundancy using HSRP version 2. The virtual router for each VLAN uses the host address .254. Switches D1 and D2 are also providing DHCP services for IPv4 clients. IPv6 clients use SLAAC. You will be loading configurations with intentional errors onto the network. Your tasks are to FIND the error(s), document your findings and the command(s) or method(s) used to fix them, FIX the issue(s) presented here and then test the network to ensure both of the following conditions are met:

1) the complaint received in the ticket is resolved
2) full reachability is restored

Note: The routers used with CCNP hands-on labs are Cisco 4221 with Cisco IOS XE Release 16.9.4 (universalk9 image). The switches used in the labs are Cisco Catalyst 3650 with Cisco IOS XE Release 16.9.4 (universalk9 image) and Cisco Catalyst 2960 with Cisco IOS Release 15.2(2) (lanbasek9 image). Other routers, switches, and Cisco IOS versions can be used. Depending on the model and Cisco IOS version, the commands available and the output produced might vary from what is shown in the labs. Refer to the Router Interface Summary Table at the end of the lab for the correct interface identifiers.

Note: Make sure that the devices have been erased and have no startup configurations. If you are unsure, contact your instructor.

Note: The default Switch Database Manager (SDM) template on a Catalyst 2960 does not support IPv6. You must change the default SDM template to the dual-ipv4-and-ipv6 default template using the **sdm prefer dual-ipv4-and-ipv6 default** global configuration command. Changing the template will require a reboot.

Instructor Note: Refer to the Instructor Lab Manual for the procedures to initialize and reload devices.

Required Resources

- 3 Routers (Cisco 4221 with Cisco IOS XE Release 16.9.4 universal image or comparable)
- 2 Switches (Cisco 3560 with Cisco IOS XE Release 16.9.4 universal image or comparable)
- 1 Switch (Cisco 2960 with Cisco IOS Release 15.2(2) lanbasek9 image or comparable)
- 3 PCs (Choice of operating system with terminal emulation program and a packet capturing utility installed)
- Console cables to configure the Cisco IOS devices via the console ports
- Ethernet cables as shown in the topology

Instructions

Part 1: Trouble Ticket 23.1.4.1

Scenario:

You tasked the junior network administrators working over the weekend to deploy and test IP SLAs on switches D1 and D2 so that they would relinquish the HSRP Active Role if an upstream interface were to go down. The reports you receive on Monday morning state that the SLAs are in place, but HSRP is not behaving as expected. They need your expertise to figure out what is wrong.

Use the commands listed below to load the configuration files for this trouble ticket:

Instructor Note: Commands for uploading the configuration are provided at the end of this document.

Device	Command
R1	`copy flash:/enarsi/23.1.4.1-r1-config.txt run`
R2	`copy flash:/enarsi/23.1.4.1-r2-config.txt run`
R3	`copy flash:/enarsi/23.1.4.1-r3-config.txt run`
D1	`copy flash:/enarsi/23.1.4.1-d1-config.txt run`
D2	`copy flash:/enarsi/23.1.3.1-d2-config.txt run`
A1	`copy flash:/enarsi/23.1.4.1-a1-config.txt run`

- PC1 must have the addresses shown in the topology diagram statically assigned. PC2 and PC3 will receive their addresses dynamically.
- Passwords on all devices are **cisco12345**. If a username is required, use **admin**.
- When you have fixed the ticket, change the MOTD on EACH DEVICE using the following command:

  banner motd # This is $(hostname) FIXED from ticket <ticket number> #
- Save the configuration by issuing the **wri** command (on each device).
- Inform your instructor that you are ready for the next ticket.
- After the instructor approves your solution for this ticket, issue the **reset.now** privileged EXEC command. This script will clear your configurations and reload the devices.

Instructor Notes:

This trouble ticket contains 1 intentional error repeated for the IPv4 SLA and the IPv6 SLA. This one error is repeated on D1 and D2. The junior administrator concentrated so much on building and assigning the tracking mechanism, he forgot to actually start the SLAs.

The commands used to fix these errors should be:

```
D1(config)# ip sla schedule 14 life forever start-time now
D1(config)# ip sla schedule 16 life forever start-time now

D2(config)# ip sla schedule 14 life forever start-time now
D2(config)# ip sla schedule 16 life forever start-time now
```

Part 2: Trouble Ticket 23.1.4.2

Note: This ticket only works on 4000-series routers. If the routers in use are ISR G2 series (29/39xx series), use trouble ticket 23.1.4.3 instead.

Scenario:

Management is asking for detailed information on traffic flowing in and out of the network. They want this information to help shape updates to the organizational security policy, as well as get an idea about bandwidth utilization. Your intention is to configure Flexible Netflow to gather information on traffic entering and exiting the OSPF interfaces on R1 and R3. After a lot of work sorting out how to configure the technology, you thought you had it configured, but the collector at PC1 is still not receiving any data.

Use the commands listed below to load the configuration files for this trouble ticket:

Instructor Note: Commands for uploading the configuration are provided at the end of this document

Device	Command
R1	`copy flash:/enarsi/23.1.4.2-r1-config.txt run`
R2	`copy flash:/enarsi/23.1.4.2-r2-config.txt run`
R3	`copy flash:/enarsi/23.1.4.2-r3-config.txt run`
D1	`copy flash:/enarsi/23.1.4.2-d1-config.txt run`
D2	`copy flash:/enarsi/23.1.4.2-d2-config.txt run`
A1	`copy flash:/enarsi/23.1.4.2-a1-config.txt run`

- PC1 must have the addresses shown in the topology diagram statically assigned. PC2 and PC3 will receive their addresses dynamically.
- Passwords on all devices are **cisco12345**. If a username is required, use **admin**.
- When you have fixed the ticket, change the MOTD on EACH DEVICE using the following command:

  banner motd # This is $(hostname) FIXED from ticket <ticket number> #
- Save the configuration by issuing the **wri** command (on each device).
- Inform your instructor that you are ready for the next ticket.
- After the instructor approves your solution for this ticket, issue the **reset.now** privileged EXEC command. This script will clear your configurations and reload the devices.

Instructor Notes:

This trouble ticket contains 1 intentional error repeated on R1 and R3. The administrator concentrated so much on crafting the capture information so that it contained useful statistics, he forgot to configure the interface to actually collect the data.

The commands used to fix this error should be:

```
R1(config)# interface g0/0/1
```

```
R1(config-if)# ip flow monitor 2314-INBOUND-MON input
R1(config-if)# ip flow monitor 2314-OUTBOUND-MON output
R1(config-if)# end

R3(config)# interface g0/0/1
R3(config-if)# ip flow monitor 2314-INBOUND-MON input
R3(config-if)# ip flow monitor 2314-OUTBOUND-MON output
R3(config-if)# end
```

To prove the fix, run Wireshark on PC1 and set the filter to udp.dstport == 9999. Packets from 172.16.0.1 and 172.16.1.1 will be displayed.

Part 3: Trouble Ticket 23.1.4.3

Note: This ticket only works on ISR G2 series (29/39xx series) routers. If the routers in use are from the 4000-series, use trouble ticket 23.1.4.2 instead.

Scenario:

Management is asking for detailed information on traffic flowing out of the network. They want this information to help shape updates to the organizational security policy, as well as get an idea about bandwidth utilization. Your job is to configure Netflow to gather information on traffic entering and exiting the OSPF interfaces on R1 and R3. This is a new technology for you, but you think you have worked out how to configure it, unfortunately the collector at PC1 is still not receiving any data.

Use the commands listed below to load the configuration files for this trouble ticket:

Instructor Note: Commands for uploading the configuration are provided at the end of this document.

Device	Command
R1	`copy flash:/enarsi/23.1.5.3-r1-config.txt run`
R2	`copy flash:/enarsi/23.1.5.3-r2-config.txt run`
R3	`copy flash:/enarsi/23.1.4.3-r3-config.txt run`
D1	`copy flash:/enarsi/23.1.4.3-d1-config.txt run`
D2	`copy flash:/enarsi/23.1.4.3-d2-config.txt run`
A1	`copy flash:/enarsi/23.1.3.3-a1-config.txt run`

- PC1 must have the addresses shown in the topology diagram statically assigned. PC2 and PC3 will receive their addresses dynamically.
- Passwords on all devices are **cisco12345**. If a username is required, use **admin**.
- When you have fixed the ticket, change the MOTD on EACH DEVICE using the following command:

  banner motd # This is $(hostname) FIXED from ticket <ticket number> #
- Then save the configuration by issuing the **wri** command (on each device).
- Inform your instructor that you are ready for the next ticket.
- After the instructor approves your solution for this ticket, issue the **reset.now** privileged EXEC command. This script will clear your configurations and reload the devices.

Instructor Notes:

This trouble ticket contains 1 intentional error repeated on R1 and R3. The administrator concentrated so much on crafting the capture information so that it contained useful statistics, he forgot to configure the interface to actually collect the data.

The commands used to fix this error should be:

```
R1(config)# interface g0/1
R1(config-if)# ip flow ingress
R1(config-if)# ip flow egress
R1(config-if)# end

R3(config)# interface g0/1
R3(config-if)# ip flow ingress
R3(config-if)# ip flow egress
R3(config-if)# end
```

To prove the fix, run Wireshark on PC1 and set the filter to udp.dstport == 9999. Packets from 172.16.0.1 and 172.16.1.1 will be displayed.

Router Interface Summary Table

Router Model	Ethernet Interface #1	Ethernet Interface #2	Serial Interface #1	Serial Interface #2
1800	Fast Ethernet 0/0 (F0/0)	Fast Ethernet 0/1 (F0/1)	Serial 0/0/0 (S0/0/0)	Serial 0/0/1 (S0/0/1)
1900	Gigabit Ethernet 0/0 (G0/0)	Gigabit Ethernet 0/1 (G0/1)	Serial 0/0/0 (S0/0/0)	Serial 0/0/1 (S0/0/1)
2801	Fast Ethernet 0/0 (F0/0)	Fast Ethernet 0/1 (F0/1)	Serial 0/1/0 (S0/1/0)	Serial 0/1/1 (S0/1/1)
2811	Fast Ethernet 0/0 (F0/0)	Fast Ethernet 0/1 (F0/1)	Serial 0/0/0 (S0/0/0)	Serial 0/0/1 (S0/0/1)
2900	Gigabit Ethernet 0/0 (G0/0)	Gigabit Ethernet 0/1 (G0/1)	Serial 0/0/0 (S0/0/0)	Serial 0/0/1 (S0/0/1)
4221	Gigabit Ethernet 0/0/0 (G0/0/0)	Gigabit Ethernet 0/0/1 (G0/0/1)	Serial 0/1/0 (S0/1/0)	Serial 0/1/1 (S0/1/1)
4300	Gigabit Ethernet 0/0/0 (G0/0/0)	Gigabit Ethernet 0/0/1 (G0/0/1)	Serial 0/1/0 (S0/1/0)	Serial 0/1/1 (S0/1/1)

Note: To find out how the router is configured, look at the interfaces to identify the type of router and how many interfaces the router has. There is no way to effectively list all the combinations of configurations for each router class. This table includes identifiers for the possible combinations of Ethernet and Serial interfaces in the device. The table does not include any other type of interface, even though a specific router may contain one. An example of this might be an ISDN BRI interface. The string in parenthesis is the legal abbreviation that can be used in Cisco IOS commands to represent the interface.

Uploading Configuration Files

Use the commands below to create the configuration files on the lab devices for each trouble ticket in this lab. The TCL script commands help create and copy the configurations. However, the configuration commands could also be copied and pasted directly into global config mode on each device. Simply remove the TCL

script commands, enter the **enable** and **configure t** commands on the device, and copy and paste the configuration commands.

Important: The device requires a folder in flash named **enarsi**. Use the **dir** command to verify. If the folder is missing, then create it using the **mkdir flash:/enarsi** privileged EXEC command. For all switches, make sure the vlan.dat file is set to the default. Use the **delete vlan.dat** privileged EXEC command, if necessary.

Reset scripts

These TCL scripts will completely clear and reload the device in preparation for the next ticket. Copy and paste the appropriate script to the appropriate device.

Router Reset Script

```
tclsh
puts [ open "flash:/enarsi/reset.tcl" w+ ] {
typeahead "\n"
copy running-config startup-config
typeahead "\n"
erase startup-config
puts "Reloading the router"
typeahead "\n"
reload
}
tclquit
```

D1/D2 (Cisco 3650) Reset Script - The default 3650 SDM template supports IPv6, so it is not set by this script.

```
tclsh
puts [ open "flash:/enarsi/reset.tcl" w+ ] {
typeahead "\n"
copy running-config startup-config
typeahead "\n"
erase startup-config
delete /force vlan.dat
puts "Reloading the switch"
typeahead "\n"
reload
}
tclquit
```

A1 (Cisco 2960 Script) - The default 2960 SDM template does not support IPv6, so this script includes that setting.

```
tclsh
puts [ open "flash:/enarsi/reset.tcl" w+ ] {
typeahead "\n"
copy running-config startup-config
typeahead "\n"
erase startup-config
delete /force vlan.dat
delete /force multiple-fs
```

```
ios_config "sdm prefer lanbase-routing"
typeahead "\n"
puts "Reloading the switch in 1 minute, type reload cancel to halt"
typeahead "\n"
reload
}
tclquit
```

R1 Configuration File Scripts

! R1 - Trouble Ticket # 1

```
tclsh
puts [ open "flash:/enarsi/23.1.4.1-r1-config.txt" w+ ] {
hostname R1
no ip domain lookup
ipv6 unicast-routing
banner motd # This is R1, Trouble Ticket 23.1.4.1 #
ip domain name ENCOR.23
enable algorithm-type scrypt secret cisco12345
username admin privilege 15 algorithm-type scrypt secret cisco12345
ip access-list standard VTY-CONTROL
 permit 172.16.0.0 0.0.255.255
 deny any log
 exit
interface g0/0/0
 ip address 209.165.200.1 255.255.255.0
 ipv6 address fe80::1:1 link-local
 ipv6 address 2001:db8:200::1/64
 no shutdown
interface g0/0/1
 ip address 172.16.0.1 255.255.255.0
 ipv6 address fe80::1:2 link-local
 ipv6 address 2001:db8:acad::1/64
 no shutdown
 exit
ip route 172.16.0.0 255.255.0.0 null0
ipv6 route 2001:db8:acad::/48 null0
ip route 0.0.0.0 0.0.0.0 209.165.200.2
ipv6 route ::/0 2001:db8:200::2
router ospfv3 1
 router-id 0.0.138.1
 address-family ipv4 unicast
  default-information originate metric-type 1
  exit
 address-family ipv6 unicast
  default-information originate metric-type 1
```

```
 exit
interface g0/0/1
 ospfv3 1 ipv4 area 0
 ospfv3 1 ipv6 area 0
 exit
router bgp 138
 bgp router-id 4.6.138.1
 no bgp default ipv4-unicast
 neighbor 209.165.200.2 remote-as 77
 neighbor 2001:db8:200::2 remote-as 77
 address-family ipv4 unicast
  network 172.16.0.0 mask 255.255.0.0
  neighbor 209.165.200.2 activate
  exit
 address-family ipv6 unicast
  network 2001:db8:acad::/48
  neighbor 2001:db8:200::2 activate
  exit
 exit
line con 0
 login local
 logging synchronous
 exec-timeout 0 0
 exit
line vty 0 4
 login local
 transport input telnet
 access-class VTY-CONTROL in
 exec-timeout 0 0
 exit
alias exec reset.now tclsh flash:/enarsi/reset.tcl
end
}
tclquit
```

! R1 - Trouble Ticket # 2 - ONLY FOR ISR 4000 SERIES ROUTERS (4xxx)

```
tclsh
puts [ open "flash:/enarsi/23.1.4.2-r1-config.txt" w+ ] {
hostname R1
no ip domain lookup
ipv6 unicast-routing
banner motd # This is R1, Trouble Ticket 23.1.4.2 #
ip domain name ENCOR.23
enable algorithm-type scrypt secret cisco12345
username admin privilege 15 algorithm-type scrypt secret cisco12345
ip access-list standard VTY-CONTROL
```

```
 permit 172.16.0.0 0.0.255.255
 deny any log
 exit
interface g0/0/0
 ip address 209.165.200.1 255.255.255.0
 ipv6 address fe80::1:1 link-local
 ipv6 address 2001:db8:200::1/64
 no shutdown
interface g0/0/1
 ip address 172.16.0.1 255.255.255.0
 ipv6 address fe80::1:2 link-local
 ipv6 address 2001:db8:acad::1/64
 no shutdown
 exit
ip route 172.16.0.0 255.255.0.0 null0
ipv6 route 2001:db8:acad::/48 null0
ip route 0.0.0.0 0.0.0.0 209.165.200.2
ipv6 route ::/0 2001:db8:200::2
router ospfv3 1
 router-id 0.0.138.1
 address-family ipv4 unicast
  default-information originate metric-type 1
  exit
 address-family ipv6 unicast
  default-information originate metric-type 1
  exit
interface g0/0/1
 ospfv3 1 ipv4 area 0
 ospfv3 1 ipv6 area 0
 exit
router bgp 138
 bgp router-id 4.6.138.1
 no bgp default ipv4-unicast
 neighbor 209.165.200.2 remote-as 77
 neighbor 2001:db8:200::2 remote-as 77
 address-family ipv4 unicast
  network 172.16.0.0 mask 255.255.0.0
  neighbor 209.165.200.2 activate
  exit
 address-family ipv6 unicast
  network 2001:db8:acad::/48
  neighbor 2001:db8:200::2 activate
  exit
 exit
flow record 2314-OUT
```

```
 description Custom Flow Record for outbound traffic
 match ipv4 destination address
 match transport destination
 collect counter bytes
 collect counter packets
 exit
flow exporter 2314-COLLECTOR
 destination 172.16.3.10
 export-protocol netflow-v9
 transport UDP 9999
 exit
flow monitor 2314-INBOUND-MON
 record netflow ipv4 original-input
 cache timeout active 30
 exporter 2314-COLLECTOR
 exit
flow monitor 2314-OUTBOUND-MON
 record 2314-OUT
 cache timeout active 30
 exporter 2314-COLLECTOR
 exit
line con 0
 login local
 logging synchronous
 exec-timeout 0 0
 exit
line vty 0 4
 login local
 transport input telnet
 access-class VTY-CONTROL in
 exec-timeout 0 0
 exit
alias exec reset.now tclsh flash:/enarsi/reset.tcl
end
}
tclquit
```

! R1 - Trouble Ticket # 3 - ONLY FOR ISR G2 SERIES ROUTERS (29/39xx)

```
tclsh
puts [ open "flash:/enarsi/23.1.4.3-r1-config.txt" w+ ] {
hostname R1
no ip domain lookup
ipv6 unicast-routing
banner motd # This is R1, Trouble Ticket 23.1.4.3 #
ip domain name ENCOR.23
enable algorithm-type scrypt secret cisco12345
```

```
username admin privilege 15 algorithm-type scrypt secret cisco12345
ip access-list standard VTY-CONTROL
 permit 172.16.0.0 0.0.255.255
 deny any log
 exit
interface g0/0
 ip address 209.165.200.1 255.255.255.0
 ipv6 address fe80::1:1 link-local
 ipv6 address 2001:db8:200::1/64
 no shutdown
interface g0/1
 ip address 172.16.0.1 255.255.255.0
 ipv6 address fe80::1:2 link-local
 ipv6 address 2001:db8:acad::1/64
 no shutdown
 exit
ip route 172.16.0.0 255.255.0.0 null0
ipv6 route 2001:db8:acad::/48 null0
ip route 0.0.0.0 0.0.0.0 209.165.200.2
ipv6 route ::/0 2001:db8:200::2
router ospfv3 1
 router-id 0.0.138.1
 address-family ipv4 unicast
  default-information originate metric-type 1
  exit
 address-family ipv6 unicast
  default-information originate metric-type 1
  exit
interface g0/0
 ospfv3 1 ipv4 area 0
 ospfv3 1 ipv6 area 0
 exit
router bgp 138
 bgp router-id 4.6.138.1
 no bgp default ipv4-unicast
 neighbor 209.165.200.2 remote-as 77
 neighbor 2001:db8:200::2 remote-as 77
 address-family ipv4 unicast
  network 172.16.0.0 mask 255.255.0.0
  neighbor 209.165.200.2 activate
  exit
 address-family ipv6 unicast
  network 2001:db8:acad::/48
  neighbor 2001:db8:200::2 activate
  exit
```

```
 exit
ip flow-export version 9
ip flow-export destination 172.16.3.10 9999
interface g0/1
 ip flow ingress
 ip flow egress
 exit
line con 0
 login local
 logging synchronous
 exec-timeout 0 0
 exit
line vty 0 4
 login local
 transport input telnet
 access-class VTY-CONTROL in
 exec-timeout 0 0
 exit
alias exec reset.now tclsh flash:/enarsi/reset.tcl
end
}
tclquit
```

R2 Configuration File Scripts

! R2 - Trouble Ticket # 1

```
tclsh
puts [ open "flash:/enarsi/23.1.4.1-r2-config.txt" w+ ] {
hostname R2
no ip domain lookup
ipv6 unicast-routing
banner motd # This is R2, Trouble Ticket 23.1.4.1 #
ip domain name ENCOR.23
enable algorithm-type scrypt secret cisco12345
username admin privilege 15 algorithm-type scrypt secret cisco12345
interface g0/0/0
 ip address 209.165.200.2 255.255.255.0
 ipv6 address fe80::2:1 link-local
 ipv6 address 2001:db8:200::2/64
 no shutdown
 exit
interface g0/0/1
 ip address 209.165.201.2 255.255.255.0
 ipv6 address fe80::2:1 link-local
 ipv6 address 2001:db8:201::2/64
 no shutdown
```

```
 exit
interface loopback 0
 ip address 209.165.224.1 255.255.255.255
 ipv6 address fe80::2:3 link-local
 ipv6 address 2001:db8:224::1/64
 no shutdown
 exit
router bgp 77
 bgp router-id 4.6.77.2
 no bgp default ipv4-unicast
 neighbor 209.165.200.1 remote-as 138
 neighbor 209.165.201.1 remote-as 138
 neighbor 2001:db8:200::1 remote-as 138
 neighbor 2001:db8:201::1 remote-as 138
 address-family ipv4 unicast
  network 209.165.224.1 mask 255.255.255.255
  neighbor 209.165.200.1 activate
  neighbor 209.165.201.1 activate
  exit
 address-family ipv6 unicast
  network 2001:db8:224::/64
  neighbor 2001:db8:200::1 activate
  neighbor 2001:db8:201::1 activate
  exit
 exit
line con 0
 login local
 logging synchronous
 exec-timeout 0 0
 exit
line vty 0 4
 login local
 transport input telnet
 exec-timeout 0 0
 exit
alias exec reset.now tclsh flash:/enarsi/reset.tcl
end
}
tclquit
```

! R2 - Trouble Ticket # 2 - ONLY FOR ISR 4000 SERIES ROUTERS (4xxx)

```
tclsh
puts [ open "flash:/enarsi/23.1.4.2-r2-config.txt" w+ ] {
hostname R2
no ip domain lookup
ipv6 unicast-routing
```

```
banner motd # This is R2, Trouble Ticket 23.1.4.2 #
ip domain name ENCOR.23
enable algorithm-type scrypt secret cisco12345
username admin privilege 15 algorithm-type scrypt secret cisco12345
interface g0/0/0
 ip address 209.165.200.2 255.255.255.0
 ipv6 address fe80::2:1 link-local
 ipv6 address 2001:db8:200::2/64
 no shutdown
 exit
interface g0/0/1
 ip address 209.165.201.2 255.255.255.0
 ipv6 address fe80::2:1 link-local
 ipv6 address 2001:db8:201::2/64
 no shutdown
 exit
interface loopback 0
 ip address 209.165.224.1 255.255.255.255
 ipv6 address fe80::2:3 link-local
 ipv6 address 2001:db8:224::1/64
 no shutdown
 exit
router bgp 77
 bgp router-id 4.6.77.2
 no bgp default ipv4-unicast
 neighbor 209.165.200.1 remote-as 138
 neighbor 209.165.201.1 remote-as 138
 neighbor 2001:db8:200::1 remote-as 138
 neighbor 2001:db8:201::1 remote-as 138
 address-family ipv4 unicast
  network 209.165.224.1 mask 255.255.255.255
  neighbor 209.165.200.1 activate
  neighbor 209.165.201.1 activate
  exit
 address-family ipv6 unicast
  network 2001:db8:224::/64
  neighbor 2001:db8:200::1 activate
  neighbor 2001:db8:201::1 activate
  exit
 exit
line con 0
 login local
 logging synchronous
 exec-timeout 0 0
 exit
```

```
line vty 0 4
 login local
 transport input telnet
 exec-timeout 0 0
 exit
alias exec reset.now tclsh flash:/enarsi/reset.tcl
end
}
tclquit
```

! R2 - Trouble Ticket # 3 - ONLY FOR ISR G2 SERIES ROUTERS (29/39xx)

```
tclsh
puts [ open "flash:/enarsi/23.1.4.3-r2-config.txt" w+ ] {
hostname R2
no ip domain lookup
ipv6 unicast-routing
banner motd # This is R2, Trouble Ticket 23.1.4.3 #
ip domain name ENCOR.23
enable algorithm-type scrypt secret cisco12345
username admin privilege 15 algorithm-type scrypt secret cisco12345
interface g0/0
 ip address 209.165.200.2 255.255.255.0
 ipv6 address fe80::2:1 link-local
 ipv6 address 2001:db8:200::2/64
 no shutdown
 exit
interface g0/1
 ip address 209.165.201.2 255.255.255.0
 ipv6 address fe80::2:1 link-local
 ipv6 address 2001:db8:201::2/64
 no shutdown
 exit
interface loopback 0
 ip address 209.165.224.1 255.255.255.255
 ipv6 address fe80::2:3 link-local
 ipv6 address 2001:db8:224::1/64
 no shutdown
 exit
router bgp 77
 bgp router-id 4.6.77.2
 no bgp default ipv4-unicast
 neighbor 209.165.200.1 remote-as 138
 neighbor 209.165.201.1 remote-as 138
 neighbor 2001:db8:200::1 remote-as 138
 neighbor 2001:db8:201::1 remote-as 138
 address-family ipv4 unicast
```

```
  network 209.165.224.1 mask 255.255.255.255
  neighbor 209.165.200.1 activate
  neighbor 209.165.201.1 activate
  exit
 address-family ipv6 unicast
  network 2001:db8:224::/64
  neighbor 2001:db8:200::1 activate
  neighbor 2001:db8:201::1 activate
  exit
 exit
line con 0
 login local
 logging synchronous
 exec-timeout 0 0
 exit
line vty 0 4
 login local
 transport input telnet
 exec-timeout 0 0
 exit
alias exec reset.now tclsh flash:/enarsi/reset.tcl
end
}
tclquit
```

R3 Configuration File Scripts

! R3 - Trouble Ticket # 1

```
tclsh
puts [ open "flash:/enarsi/23.1.4.1-r3-config.txt" w+ ] {
hostname R3
no ip domain lookup
ipv6 unicast-routing
banner motd # This is R3, Trouble Ticket 23.1.4.1 #
ip domain name ENCOR.23
enable algorithm-type scrypt secret cisco12345
username admin privilege 15 algorithm-type scrypt secret cisco12345
ip access-list standard VTY-CONTROL
 permit 172.16.0.0 0.0.255.255
 deny any log
 exit
interface g0/0/0
 ip address 209.165.201.1 255.255.255.0
 ipv6 address fe80::3:1 link-local
 ipv6 address 2001:db8:201::1/64
 no shutdown
```

```
interface g0/0/1
 ip address 172.16.1.1 255.255.255.0
 ipv6 address fe80::3:2 link-local
 ipv6 address 2001:db8:acad:1::1/64
 no shutdown
 exit
ip route 172.16.0.0 255.255.0.0 null0
ipv6 route 2001:db8:acad::/48 null0
ip route 0.0.0.0 0.0.0.0 209.165.201.2
ipv6 route ::/0 2001:db8:201::2
router ospfv3 1
 router-id 0.0.138.3
 address-family ipv4 unicast
  default-information originate metric-type 1
  exit
 address-family ipv6 unicast
  default-information originate metric-type 1
  exit
interface g0/0/1
 ospfv3 1 ipv4 area 0
 ospfv3 1 ipv6 area 0
 exit
router bgp 138
 bgp router-id 4.6.138.3
 no bgp default ipv4-unicast
 neighbor 209.165.201.2 remote-as 77
 neighbor 2001:db8:201::2 remote-as 77
 address-family ipv4 unicast
  network 172.16.0.0 mask 255.255.0.0
  neighbor 209.165.201.2 activate
  exit
 address-family ipv6 unicast
  network 2001:db8:acad::/48
  neighbor 2001:db8:201::2 activate
  exit
 exit
line con 0
 login local
 logging synchronous
 exec-timeout 0 0
 exit
line vty 0 4
 login local
 transport input telnet
 access-class VTY-CONTROL in
```

```
 exec-timeout 0 0
 exit
alias exec reset.now tclsh flash:/enarsi/reset.tcl
end
}
tclquit
```

! R3 - Trouble Ticket # 2 - ONLY FOR ISR 4000 SERIES ROUTERS (4xxx)

```
tclsh
puts [ open "flash:/enarsi/23.1.4.2-r3-config.txt" w+ ] {
hostname R3
no ip domain lookup
ipv6 unicast-routing
banner motd # This is R3, Trouble Ticket 23.1.4.2 #
ip domain name ENCOR.23
enable algorithm-type scrypt secret cisco12345
username admin privilege 15 algorithm-type scrypt secret cisco12345
ip access-list standard VTY-CONTROL
 permit 172.16.0.0 0.0.255.255
 deny any log
 exit
interface g0/0/0
 ip address 209.165.201.1 255.255.255.0
 ipv6 address fe80::3:1 link-local
 ipv6 address 2001:db8:201::1/64
 no shutdown
interface g0/0/1
 ip address 172.16.1.1 255.255.255.0
 ipv6 address fe80::3:2 link-local
 ipv6 address 2001:db8:acad:1::1/64
 no shutdown
 exit
ip route 172.16.0.0 255.255.0.0 null0
ipv6 route 2001:db8:acad::/48 null0
ip route 0.0.0.0 0.0.0.0 209.165.201.2
ipv6 route ::/0 2001:db8:201::2
router ospfv3 1
 router-id 0.0.138.3
 address-family ipv4 unicast
  default-information originate metric-type 1
  exit
 address-family ipv6 unicast
  default-information originate metric-type 1
  exit
interface g0/0/1
 ospfv3 1 ipv4 area 0
```

```
 ospfv3 1 ipv6 area 0
 exit
router bgp 138
 bgp router-id 4.6.138.3
 no bgp default ipv4-unicast
 neighbor 209.165.201.2 remote-as 77
 neighbor 2001:db8:201::2 remote-as 77
 address-family ipv4 unicast
  network 172.16.0.0 mask 255.255.0.0
  neighbor 209.165.201.2 activate
  exit
 address-family ipv6 unicast
  network 2001:db8:acad::/48
  neighbor 2001:db8:201::2 activate
  exit
 exit
flow record 2314-OUT
 description Custom Flow Record for outbound traffic
 match ipv4 destination address
 match transport destination
 collect counter bytes
 collect counter packets
 exit
flow exporter 2314-COLLECTOR
 destination 172.16.3.10
 export-protocol netflow-v9
 transport UDP 9999
 exit
flow monitor 2314-INBOUND-MON
 record netflow ipv4 original-input
 cache timeout active 30
 exporter 2314-COLLECTOR
 exit
flow monitor 2314-OUTBOUND-MON
 record 2314-OUT
 cache timeout active 30
 exporter 2314-COLLECTOR
 exit
line con 0
 login local
 logging synchronous
 exec-timeout 0 0
 exit
line vty 0 4
 login local
```

```
 transport input telnet
 access-class VTY-CONTROL in
 exec-timeout 0 0
 exit
alias exec reset.now tclsh flash:/enarsi/reset.tcl
end
}
tclquit
```

! R3 - Trouble Ticket # 3 - ONLY FOR ISR G2 SERIES ROUTERS (29/39xx)

```
tclsh
puts [ open "flash:/enarsi/23.1.4.3-r3-config.txt" w+ ] {
hostname R3
no ip domain lookup
ipv6 unicast-routing
banner motd # This is R3, Trouble Ticket 23.1.4.3 #
ip domain name ENCOR.23
enable algorithm-type scrypt secret cisco12345
username admin privilege 15 algorithm-type scrypt secret cisco12345
ip access-list standard VTY-CONTROL
 permit 172.16.0.0 0.0.255.255
 deny any log
 exit
interface g0/0
 ip address 209.165.201.1 255.255.255.0
 ipv6 address fe80::3:1 link-local
 ipv6 address 2001:db8:201::1/64
 no shutdown
interface g0/1
 ip address 172.16.1.1 255.255.255.0
 ipv6 address fe80::3:2 link-local
 ipv6 address 2001:db8:acad:1::1/64
 no shutdown
 exit
ip route 172.16.0.0 255.255.0.0 null0
ipv6 route 2001:db8:acad::/48 null0
ip route 0.0.0.0 0.0.0.0 209.165.201.2
ipv6 route ::/0 2001:db8:201::2
router ospfv3 1
 router-id 0.0.138.3
 address-family ipv4 unicast
  default-information originate metric-type 1
  exit
 address-family ipv6 unicast
  default-information originate metric-type 1
  exit
```

```
interface g0/1
 ospfv3 1 ipv4 area 0
 ospfv3 1 ipv6 area 0
 exit
router bgp 138
 bgp router-id 4.6.138.3
 no bgp default ipv4-unicast
 neighbor 209.165.201.2 remote-as 77
 neighbor 2001:db8:201::2 remote-as 77
 address-family ipv4 unicast
  network 172.16.0.0 mask 255.255.0.0
  neighbor 209.165.201.2 activate
  exit
 address-family ipv6 unicast
  network 2001:db8:acad::/48
  neighbor 2001:db8:201::2 activate
  exit
 exit
ip flow-export version 9
ip flow-export destination 172.16.3.10 9999
interface g0/0
 ip flow ingress
 ip flow egress
 exit
line con 0
 login local
 logging synchronous
 exec-timeout 0 0
 exit
line vty 0 4
 login local
 transport input telnet
 access-class VTY-CONTROL in
 exec-timeout 0 0
 exit
alias exec reset.now tclsh flash:/enarsi/reset.tcl
end
}
tclquit
```

D1 Configuration File Scripts

! D1 - Trouble Ticket # 1

```
tclsh
puts [ open "flash:/enarsi/23.1.4.1-d1-config.txt" w+ ] {
hostname D1
```

```
no ip domain lookup
ip routing
ipv6 unicast-routing
banner motd # This is D1, Trouble Ticket 23.1.4.1 #
ip domain name ENCOR.23
enable algorithm-type scrypt secret cisco12345
username admin privilege 15 algorithm-type scrypt secret cisco12345
ip access-list standard VTY-CONTROL
 permit 172.16.0.0 0.0.255.255
 deny any log
 exit
interface range g1/0/1-24
 switchport mode access
 shutdown
 exit
interface g1/0/22
 switchport mode access
 switchport access vlan 8
 spanning-tree portfast
 shutdown
interface g1/0/23
 switchport mode access
 switchport access vlan 3
 spanning-tree portfast
 no shutdown
interface g1/0/24
 switchport mode access
 switchport access vlan 13
 spanning-tree portfast
 shutdown
 exit
interface range g1/0/1-4
 switchport mode trunk
 channel-group 12 mode active
 no shutdown
 exit
interface range g1/0/5-6
 switchport mode trunk
 channel-group 1 mode active
 no shutdown
 exit
interface g1/0/11
 no switchport
 ip address 172.16.0.2 255.255.255.0
 ipv6 address fe80::d1:1 link-local
```

```
 ipv6 address 2001:db8:acad::2/64
 no shutdown
 exit
interface vlan 3
 ip address 172.16.3.1 255.255.255.0
 ipv6 address fe80::d1:2 link-local
 ipv6 address 2001:db8:acad:3::1/64
 standby version 2
 standby 34 ip 172.16.3.254
 standby 34 priority 110
 standby 34 preempt
 standby 36 ipv6 autoconfig
 standby 36 priority 110
 standby 36 preempt
 no shutdown
 exit
interface vlan 8
 ip address 172.16.8.1 255.255.255.0
 ipv6 address fe80::d1:3 link-local
 ipv6 address 2001:db8:acad:8::1/64
 standby version 2
 standby 84 ip 172.16.8.254
 standby 84 preempt
 standby 86 ipv6 autoconfig
 standby 86 preempt
 no shutdown
 exit
interface vlan 13
 ip address 172.16.13.1 255.255.255.0
 ipv6 address 2001:db8:acad:13::1/64
standby version 2
 standby 134 ip 172.16.13.254
 standby 134 priority 110
 standby 134 preempt
 standby 136 ipv6 autoconfig
 standby 136 priority 110
 standby 136 preempt
 no shutdown
 exit
router ospfv3 1
 router-id 0.0.138.131
  exit
interface g1/0/11
 ospfv3 1 ipv4 area 0
 ospfv3 1 ipv6 area 0
```

```
 exit
interface vlan 3
 ospfv3 1 ipv4 area 0
 ospfv3 1 ipv6 area 0
 exit
interface vlan 8
 ospfv3 1 ipv4 area 0
 ospfv3 1 ipv6 area 0
 exit
interface vlan 13
 ospfv3 1 ipv4 area 0
 ospfv3 1 ipv6 area 0
 exit
ip dhcp excluded-address 172.16.8.1 172.16.8.5
ip dhcp excluded-address 172.16.8.11 172.16.8.254
ip dhcp excluded-address 172.16.13.1 172.16.13.5
ip dhcp excluded-address 172.16.13.11 172.16.13.254
ip dhcp pool VLAN8DHCP
 network 172.16.8.0 255.255.255.0
 default-router 172.16.8.254
 exit
ip dhcp pool VLAN13DHCP
 network 172.16.13.0 255.255.255.0
 default-router 172.16.13.254
 exit
ip sla 14
 icmp-echo 209.165.200.2
  frequency 10
  exit
ip sla 16
 icmp-echo 2001:db8:200::2
  frequency 10
  exit
track 14 ip sla 14
 exit
track 16 ip sla 16
 exit
interface vlan 3
 standby 34 track 14 decrement 20
 standby 36 track 16 decrement 20
 exit
interface vlan 8
 standby 84 track 14 decrement 20
 standby 86 track 16 decrement 20
 exit
```

```
interface vlan 13
 standby 134 track 14 decrement 20
 standby 136 track 16 decrement 20
 exit
line con 0
 login local
 logging synchronous
 exec-timeout 0 0
 exit
line vty 0 4
 login local
 transport input telnet
 access-class VTY-CONTROL in
 exec-timeout 0 0
 exit
alias exec reset.now tclsh flash:/enarsi/reset.tcl
end
}
tclquit
```

! D1 - Trouble Ticket # 2 - ONLY FOR ISR 4000 SERIES ROUTERS

```
tclsh
puts [ open "flash:/enarsi/23.1.4.2-d1-config.txt" w+ ] {
hostname D1
no ip domain lookup
ip routing
ipv6 unicast-routing
banner motd # This is D1, Trouble Ticket 23.1.4.2 #
ip domain name ENCOR.23
enable algorithm-type scrypt secret cisco12345
username admin privilege 15 algorithm-type scrypt secret cisco12345
ip access-list standard VTY-CONTROL
 permit 172.16.0.0 0.0.255.255
 deny any log
 exit
interface range g1/0/1-24
 switchport mode access
 shutdown
 exit
interface g1/0/22
 switchport mode access
 switchport access vlan 8
 spanning-tree portfast
 shutdown
interface g1/0/23
 switchport mode access
```

```
 switchport access vlan 3
 spanning-tree portfast
 no shutdown
interface g1/0/24
 switchport mode access
 switchport access vlan 13
 spanning-tree portfast
 shutdown
 exit
interface range g1/0/1-4
 switchport mode trunk
 channel-group 12 mode active
 no shutdown
 exit
interface range g1/0/5-6
 switchport mode trunk
 channel-group 1 mode active
 no shutdown
 exit
interface g1/0/11
 no switchport
 ip address 172.16.0.2 255.255.255.0
 ipv6 address fe80::d1:1 link-local
 ipv6 address 2001:db8:acad::2/64
 no shutdown
 exit
interface vlan 3
 ip address 172.16.3.1 255.255.255.0
 ipv6 address fe80::d1:2 link-local
 ipv6 address 2001:db8:acad:3::1/64
 standby version 2
 standby 34 ip 172.16.3.254
 standby 34 priority 110
 standby 34 preempt
 standby 36 ipv6 autoconfig
 standby 36 priority 110
 standby 36 preempt
 no shutdown
 exit
interface vlan 8
 ip address 172.16.8.1 255.255.255.0
 ipv6 address fe80::d1:3 link-local
 ipv6 address 2001:db8:acad:8::1/64
 standby version 2
 standby 84 ip 172.16.8.254
```

```
 standby 84 preempt
 standby 86 ipv6 autoconfig
 standby 86 preempt
 no shutdown
 exit
interface vlan 13
 ip address 172.16.13.1 255.255.255.0
 ipv6 address 2001:db8:acad:13::1/64
standby version 2
 standby 134 ip 172.16.13.254
 standby 134 priority 110
 standby 134 preempt
 standby 136 ipv6 autoconfig
 standby 136 priority 110
 standby 136 preempt
 no shutdown
 exit
router ospfv3 1
 router-id 0.0.138.131
  exit
interface g1/0/11
 ospfv3 1 ipv4 area 0
 ospfv3 1 ipv6 area 0
 exit
interface vlan 3
 ospfv3 1 ipv4 area 0
 ospfv3 1 ipv6 area 0
 exit
interface vlan 8
 ospfv3 1 ipv4 area 0
 ospfv3 1 ipv6 area 0
 exit
interface vlan 13
 ospfv3 1 ipv4 area 0
 ospfv3 1 ipv6 area 0
 exit
ip dhcp excluded-address 172.16.8.1 172.16.8.5
ip dhcp excluded-address 172.16.8.11 172.16.8.254
ip dhcp excluded-address 172.16.13.1 172.16.13.5
ip dhcp excluded-address 172.16.13.11 172.16.13.254
ip dhcp pool VLAN8DHCP
 network 172.16.8.0 255.255.255.0
 default-router 172.16.8.254
 exit
ip dhcp pool VLAN13DHCP
```

```
 network 172.16.13.0 255.255.255.0
 default-router 172.16.13.254
 exit
ip sla 14
 icmp-echo 209.165.200.2
  frequency 10
  exit
ip sla 16
 icmp-echo 2001:db8:200::2
  frequency 10
  exit
ip sla schedule 14 life forever start-time now
ip sla schedule 16 life forever start-time now
track 14 ip sla 14
 exit
track 16 ip sla 16
 exit
interface vlan 3
 standby 34 track 14 decrement 20
 standby 36 track 16 decrement 20
 exit
interface vlan 8
 standby 84 track 14 decrement 20
 standby 86 track 16 decrement 20
 exit
interface vlan 13
 standby 134 track 14 decrement 20
 standby 136 track 16 decrement 20
 exit
line con 0
 login local
 logging synchronous
 exec-timeout 0 0
 exit
line vty 0 4
 login local
 transport input telnet
 access-class VTY-CONTROL in
 exec-timeout 0 0
 exit
alias exec reset.now tclsh flash:/enarsi/reset.tcl
end
}
tclquit
```

! D1 - Trouble Ticket # 3 - ONLY FOR ISR G2 SERIES ROUTERS 29/39xx

```
tclsh
puts [ open "flash:/enarsi/23.1.4.1-d1-config.txt" w+ ] {
hostname D1
no ip domain lookup
ip routing
ipv6 unicast-routing
banner motd # This is D1, Trouble Ticket 23.1.4.3 #
ip domain name ENCOR.23
enable algorithm-type scrypt secret cisco12345
username admin privilege 15 algorithm-type scrypt secret cisco12345
ip access-list standard VTY-CONTROL
 permit 172.16.0.0 0.0.255.255
 deny any log
 exit
interface range g1/0/1-24
 switchport mode access
 shutdown
 exit
interface g1/0/22
 switchport mode access
 switchport access vlan 8
 spanning-tree portfast
 shutdown
interface g1/0/23
 switchport mode access
 switchport access vlan 3
 spanning-tree portfast
 no shutdown
interface g1/0/24
 switchport mode access
 switchport access vlan 13
 spanning-tree portfast
 shutdown
 exit
interface range g1/0/1-4
 switchport mode trunk
 channel-group 12 mode active
 no shutdown
 exit
interface range g1/0/5-6
 switchport mode trunk
 channel-group 1 mode active
 no shutdown
 exit
interface g1/0/11
```

```
 no switchport
 ip address 172.16.0.2 255.255.255.0
 ipv6 address fe80::d1:1 link-local
 ipv6 address 2001:db8:acad::2/64
 no shutdown
 exit
interface vlan 3
 ip address 172.16.3.1 255.255.255.0
 ipv6 address fe80::d1:2 link-local
 ipv6 address 2001:db8:acad:3::1/64
 standby version 2
 standby 34 ip 172.16.3.254
 standby 34 priority 110
 standby 34 preempt
 standby 36 ipv6 autoconfig
 standby 36 priority 110
 standby 36 preempt
 no shutdown
 exit
interface vlan 8
 ip address 172.16.8.1 255.255.255.0
 ipv6 address fe80::d1:3 link-local
 ipv6 address 2001:db8:acad:8::1/64
 standby version 2
 standby 84 ip 172.16.8.254
 standby 84 preempt
 standby 86 ipv6 autoconfig
 standby 86 preempt
 no shutdown
 exit
interface vlan 13
 ip address 172.16.13.1 255.255.255.0
 ipv6 address 2001:db8:acad:13::1/64
standby version 2
 standby 134 ip 172.16.13.254
 standby 134 priority 110
 standby 134 preempt
 standby 136 ipv6 autoconfig
 standby 136 priority 110
 standby 136 preempt
 no shutdown
 exit
router ospfv3 1
 router-id 0.0.138.131
  exit
```

```
interface g1/0/11
 ospfv3 1 ipv4 area 0
 ospfv3 1 ipv6 area 0
 exit
interface vlan 3
 ospfv3 1 ipv4 area 0
 ospfv3 1 ipv6 area 0
 exit
interface vlan 8
 ospfv3 1 ipv4 area 0
 ospfv3 1 ipv6 area 0
 exit
interface vlan 13
 ospfv3 1 ipv4 area 0
 ospfv3 1 ipv6 area 0
 exit
ip dhcp excluded-address 172.16.8.1 172.16.8.5
ip dhcp excluded-address 172.16.8.11 172.16.8.254
ip dhcp excluded-address 172.16.13.1 172.16.13.5
ip dhcp excluded-address 172.16.13.11 172.16.13.254
ip dhcp pool VLAN8DHCP
 network 172.16.8.0 255.255.255.0
 default-router 172.16.8.254
 exit
ip dhcp pool VLAN13DHCP
 network 172.16.13.0 255.255.255.0
 default-router 172.16.13.254
 exit
ip sla 14
 icmp-echo 209.165.200.2
  frequency 10
  exit
ip sla 16
 icmp-echo 2001:db8:200::2
  frequency 10
  exit
ip sla schedule 14 life forever start-time now
ip sla schedule 16 life forever start-time now
track 14 ip sla 14
 exit
track 16 ip sla 16
 exit
interface vlan 3
 standby 34 track 14 decrement 20
 standby 36 track 16 decrement 20
```

```
 exit
interface vlan 8
 standby 84 track 14 decrement 20
 standby 86 track 16 decrement 20
 exit
interface vlan 13
 standby 134 track 14 decrement 20
 standby 136 track 16 decrement 20
 exit
line con 0
 login local
 logging synchronous
 exec-timeout 0 0
 exit
line vty 0 4
 login local
 transport input telnet
 access-class VTY-CONTROL in
 exec-timeout 0 0
 exit
alias exec reset.now tclsh flash:/enarsi/reset.tcl
end
}
tclquit
```

D2 Configuration File Scripts

! D2 - Trouble Ticket # 1

```
tclsh
puts [ open "flash:/enarsi/23.1.4.1-d2-config.txt" w+ ] {
hostname D2
no ip domain lookup
ip routing
ipv6 unicast-routing
banner motd # This is D2, Trouble Ticket 23.1.4.1 #
ip domain name ENCOR.23
enable algorithm-type scrypt secret cisco12345
username admin privilege 15 algorithm-type scrypt secret cisco12345
ip access-list standard VTY-CONTROL
 permit 172.16.0.0 0.0.255.255
 deny any log
 exit
interface range g1/0/1-24
 switchport mode access
 shutdown
 exit
```

```
interface range g1/0/1-4
 switchport mode trunk
 channel-group 12 mode active
 no shutdown
 exit
interface range g1/0/5-6
 switchport mode trunk
 channel-group 2 mode active
 no shutdown
 exit
interface range g1/0/5-6
 switchport mode trunk
 no shutdown
 exit
interface g1/0/22
 switchport mode access
 switchport access vlan 3
 spanning-tree portfast
 shutdown
interface g1/0/23
 switchport mode access
 switchport access vlan 8
 spanning-tree portfast
 shutdown
interface g1/0/24
 switchport mode access
 switchport access vlan 13
 spanning-tree portfast
 shutdown
 exit
interface g1/0/11
 no switchport
 ip address 172.16.1.2 255.255.255.0
 ipv6 address fe80::d1:1 link-local
 ipv6 address 2001:db8:acad:1::2/64
 no shutdown
 exit
interface vlan 3
 ip address 172.16.3.2 255.255.255.0
 ipv6 address fe80::d2:2 link-local
 ipv6 address 2001:db8:acad:3::2/64
 standby version 2
 standby 34 ip 172.16.3.254
 standby 34 preempt
 standby 36 ipv6 autoconfig
```

```
 standby 36 preempt
 no shutdown
 exit
interface vlan 8
 ip address 172.16.8.2 255.255.255.0
 ipv6 address fe80::d2:3 link-local
 ipv6 address 2001:db8:acad:8::2/64
 standby version 2
 standby 84 ip 172.16.8.254
 standby 84 priority 110
 standby 84 preempt
 standby 86 ipv6 autoconfig
 standby 86 priority 110
 standby 86 preempt
 no shutdown
 exit
interface vlan 13
 ip address 172.16.13.2 255.255.255.0
 ipv6 address 2001:db8:acad:13::2/64
standby version 2
 standby 134 ip 172.16.13.254
 standby 134 preempt
 standby 136 ipv6 autoconfig
 standby 136 preempt
 no shutdown
 exit
router ospfv3 1
 router-id 0.0.138.132
  exit
interface g1/0/11
 ospfv3 1 ipv4 area 0
 ospfv3 1 ipv6 area 0
 exit
interface vlan 3
 ospfv3 1 ipv4 area 0
 ospfv3 1 ipv6 area 0
 exit
interface vlan 8
 ospfv3 1 ipv4 area 0
 ospfv3 1 ipv6 area 0
 exit
interface vlan 13
 ospfv3 1 ipv4 area 0
 ospfv3 1 ipv6 area 0
 exit
```

```
ip dhcp excluded-address 172.16.8.1 172.16.8.20
ip dhcp excluded-address 172.16.8.31 172.16.8.254
ip dhcp excluded-address 172.16.13.1 172.16.13.20
ip dhcp excluded-address 172.16.13.31 172.16.13.254
ip dhcp pool VLAN8DHCP
 network 172.16.8.0 255.255.255.0
 default-router 172.16.8.254
 exit
ip dhcp pool VLAN13DHCP
 network 172.16.13.0 255.255.255.0
 default-router 172.16.13.254
 exit
ip sla 14
 icmp-echo 209.165.201.2
  frequency 10
  exit
ip sla 16
 icmp-echo 2001:db8:201::2
  frequency 10
  exit
track 14 ip sla 14
 exit
track 16 ip sla 16
 exit
interface vlan 3
 standby 34 track 14 decrement 20
 standby 36 track 16 decrement 20
 exit
interface vlan 8
 standby 84 track 14 decrement 20
 standby 86 track 16 decrement 20
 exit
interface vlan 13
 standby 134 track 14 decrement 20
 standby 136 track 16 decrement 20
 exit
line con 0
 login local
 logging synchronous
 exec-timeout 0 0
 exit
line vty 0 4
 login local
 transport input telnet
 access-class VTY-CONTROL in
```

```
 exec-timeout 0 0
 exit
alias exec reset.now tclsh flash:/enarsi/reset.tcl
end
}
tclquit
```

! D2 - Trouble Ticket # 2 - ONLY FOR ISR 4000 SERIES ROUTERS

```
tclsh
puts [ open "flash:/enarsi/23.1.4.2-d2-config.txt" w+ ] {
hostname D2
no ip domain lookup
ip routing
ipv6 unicast-routing
banner motd # This is D2, Trouble Ticket 23.1.4.2 #
ip domain name ENCOR.23
enable algorithm-type scrypt secret cisco12345
username admin privilege 15 algorithm-type scrypt secret cisco12345
ip access-list standard VTY-CONTROL
 permit 172.16.0.0 0.0.255.255
 deny any log
 exit
interface range g1/0/1-24
 switchport mode access
 shutdown
 exit
interface range g1/0/1-4
 switchport mode trunk
 channel-group 12 mode active
 no shutdown
 exit
interface range g1/0/5-6
 switchport mode trunk
 channel-group 2 mode active
 no shutdown
 exit
interface g1/0/22
 switchport mode access
 switchport access vlan 3
 spanning-tree portfast
 shutdown
interface g1/0/23
 switchport mode access
 switchport access vlan 8
 spanning-tree portfast
 shutdown
```

```
interface g1/0/24
 switchport mode access
 switchport access vlan 13
 spanning-tree portfast
 shutdown
 exit
interface g1/0/11
 no switchport
 ip address 172.16.1.2 255.255.255.0
 ipv6 address fe80::d1:1 link-local
 ipv6 address 2001:db8:acad:1::2/64
 no shutdown
 exit
interface vlan 3
 ip address 172.16.3.2 255.255.255.0
 ipv6 address fe80::d2:2 link-local
 ipv6 address 2001:db8:acad:3::2/64
 standby version 2
 standby 34 ip 172.16.3.254
 standby 34 preempt
 standby 36 ipv6 autoconfig
 standby 36 preempt
 no shutdown
 exit
interface vlan 8
 ip address 172.16.8.2 255.255.255.0
 ipv6 address fe80::d2:3 link-local
 ipv6 address 2001:db8:acad:8::2/64
 standby version 2
 standby 84 ip 172.16.8.254
 standby 84 priority 110
 standby 84 preempt
 standby 86 ipv6 autoconfig
 standby 86 priority 110
 standby 86 preempt
 no shutdown
 exit
interface vlan 13
 ip address 172.16.13.2 255.255.255.0
 ipv6 address 2001:db8:acad:13::2/64
standby version 2
 standby 134 ip 172.16.13.254
 standby 134 preempt
 standby 136 ipv6 autoconfig
 standby 136 preempt
```

```
 no shutdown
 exit
router ospfv3 1
 router-id 0.0.138.132
  exit
interface g1/0/11
 ospfv3 1 ipv4 area 0
 ospfv3 1 ipv6 area 0
 exit
interface vlan 3
 ospfv3 1 ipv4 area 0
 ospfv3 1 ipv6 area 0
 exit
interface vlan 8
 ospfv3 1 ipv4 area 0
 ospfv3 1 ipv6 area 0
 exit
interface vlan 13
 ospfv3 1 ipv4 area 0
 ospfv3 1 ipv6 area 0
 exit
ip dhcp excluded-address 172.16.8.1 172.16.8.20
ip dhcp excluded-address 172.16.8.31 172.16.8.254
ip dhcp excluded-address 172.16.13.1 172.16.13.20
ip dhcp excluded-address 172.16.13.31 172.16.13.254
ip dhcp pool VLAN8DHCP
 network 172.16.8.0 255.255.255.0
 default-router 172.16.8.254
 exit
ip dhcp pool VLAN13DHCP
 network 172.16.13.0 255.255.255.0
 default-router 172.16.13.254
 exit
ip sla 14
 icmp-echo 209.165.201.2
  frequency 10
  exit
ip sla 16
 icmp-echo 2001:db8:201::2
  frequency 10
  exit
ip sla schedule 14 life forever start-time now
ip sla schedule 16 life forever start-time now
track 14 ip sla 14
exit
```

```
track 16 ip sla 16
exit
interface vlan 3
 standby 34 track 14 decrement 20
 standby 36 track 16 decrement 20
 exit
interface vlan 8
 standby 84 track 14 decrement 20
 standby 86 track 16 decrement 20
 exit
interface vlan 13
 standby 134 track 14 decrement 20
 standby 136 track 16 decrement 20
 exit
line con 0
 login local
 logging synchronous
 exec-timeout 0 0
 exit
line vty 0 4
 login local
 transport input telnet
 access-class VTY-CONTROL in
 exec-timeout 0 0
 exit
alias exec reset.now tclsh flash:/enarsi/reset.tcl
end
}
tclquit
```

! D2 - Trouble Ticket # 3 - ONLY FOR ISR G2 SERIES ROUTERS 29/39xx

```
tclsh
puts [ open "flash:/enarsi/23.1.4.1-d2-config.txt" w+ ] {
hostname D2
no ip domain lookup
ip routing
ipv6 unicast-routing
banner motd # This is D2, Trouble Ticket 23.1.4.3 #
ip domain name ENCOR.23
enable algorithm-type scrypt secret cisco12345
username admin privilege 15 algorithm-type scrypt secret cisco12345
ip access-list standard VTY-CONTROL
 permit 172.16.0.0 0.0.255.255
 deny any log
 exit
interface range g1/0/1-24
```

```
 switchport mode access
 shutdown
 exit
interface range g1/0/1-4
 switchport mode trunk
 channel-group 12 mode active
 no shutdown
 exit
interface range g1/0/5-6
 switchport mode trunk
 channel-group 2 mode active
 no shutdown
 exit
interface g1/0/22
 switchport mode access
 switchport access vlan 3
 spanning-tree portfast
 shutdown
interface g1/0/23
 switchport mode access
 switchport access vlan 8
 spanning-tree portfast
 shutdown
interface g1/0/24
 switchport mode access
 switchport access vlan 13
 spanning-tree portfast
 shutdown
 exit
interface g1/0/11
 no switchport
 ip address 172.16.1.2 255.255.255.0
 ipv6 address fe80::d1:1 link-local
 ipv6 address 2001:db8:acad:1::2/64
 no shutdown
 exit
interface vlan 3
 ip address 172.16.3.2 255.255.255.0
 ipv6 address fe80::d2:2 link-local
 ipv6 address 2001:db8:acad:3::2/64
 standby version 2
 standby 34 ip 172.16.3.254
 standby 34 preempt
 standby 36 ipv6 autoconfig
 standby 36 preempt
```

```
 no shutdown
 exit
interface vlan 8
 ip address 172.16.8.2 255.255.255.0
 ipv6 address fe80::d2:3 link-local
 ipv6 address 2001:db8:acad:8::2/64
 standby version 2
 standby 84 ip 172.16.8.254
 standby 84 priority 110
 standby 84 preempt
 standby 86 ipv6 autoconfig
 standby 86 priority 110
 standby 86 preempt
 no shutdown
 exit
interface vlan 13
 ip address 172.16.13.2 255.255.255.0
 ipv6 address 2001:db8:acad:13::2/64
standby version 2
 standby 134 ip 172.16.13.254
 standby 134 preempt
 standby 136 ipv6 autoconfig
 standby 136 preempt
 no shutdown
 exit
router ospfv3 1
 router-id 0.0.138.132
  exit
interface g1/0/11
 ospfv3 1 ipv4 area 0
 ospfv3 1 ipv6 area 0
 exit
interface vlan 3
 ospfv3 1 ipv4 area 0
 ospfv3 1 ipv6 area 0
 exit
interface vlan 8
 ospfv3 1 ipv4 area 0
 ospfv3 1 ipv6 area 0
 exit
interface vlan 13
 ospfv3 1 ipv4 area 0
 ospfv3 1 ipv6 area 0
 exit
ip dhcp excluded-address 172.16.8.1 172.16.8.20
```

```
ip dhcp excluded-address 172.16.8.31 172.16.8.254
ip dhcp excluded-address 172.16.13.1 172.16.13.20
ip dhcp excluded-address 172.16.13.31 172.16.13.254
ip dhcp pool VLAN8DHCP
 network 172.16.8.0 255.255.255.0
 default-router 172.16.8.254
 exit
ip dhcp pool VLAN13DHCP
 network 172.16.13.0 255.255.255.0
 default-router 172.16.13.254
 exit
ip sla 14
 icmp-echo 209.165.201.2
  frequency 10
  exit
ip sla 16
 icmp-echo 2001:db8:201::2
  frequency 10
  exit
ip sla schedule 14 life forever start-time now
ip sla schedule 16 life forever start-time now
track 14 ip sla 14
 exit
track 16 ip sla 16
 exit
interface vlan 3
 standby 34 track 14 decrement 20
 standby 36 track 16 decrement 20
 exit
interface vlan 8
 standby 84 track 14 decrement 20
 standby 86 track 16 decrement 20
 exit
interface vlan 13
 standby 134 track 14 decrement 20
 standby 136 track 16 decrement 20
 exit
line con 0
 login local
 logging synchronous
 exec-timeout 0 0
 exit
line vty 0 4
 login local
 transport input telnet
```

```
 access-class VTY-CONTROL in
 exec-timeout 0 0
 exit
alias exec reset.now tclsh flash:/enarsi/reset.tcl
end
}
tclquit
```

A1 Configuration File Scripts

! A1 - Trouble Ticket # 1

```
tclsh
puts [ open "flash:/enarsi/23.1.4.1-a1-config.txt" w+ ] {
hostname A1
no ip domain lookup
banner motd # This is A1, Trouble Ticket 23.1.4.1 #
ip domain name ENCOR.23
enable algorithm-type scrypt secret cisco12345
username admin privilege 15 algorithm-type scrypt secret cisco12345
ip access-list standard VTY-CONTROL
 permit 172.16.0.0 0.0.255.255
 deny any log
 exit
interface range f0/1-24
 switchport mode access
 shutdown
 exit
interface range f0/1-2
 switchport mode trunk
 channel-group 1 mode active
 no shutdown
 exit
interface range f0/3-4
 switchport mode trunk
 channel-group 2 mode active
 no shutdown
 exit
interface f0/22
 switchport mode access
 switchport access vlan 3
 spanning-tree portfast
 shutdown
interface f0/23
 switchport mode access
 switchport access vlan 8
 spanning-tree portfast
```

```
 no shutdown
interface f0/24
 switchport mode access
 switchport access vlan 13
 spanning-tree portfast
 no shutdown
 exit
interface vlan 3
 ip address 172.16.3.3 255.255.255.0
 ipv6 address fe80::a1:1 link-local
 ipv6 address 2001:db8:acad:3::3/64
 exit
ip default-gateway 172.16.3.254
line con 0
 login local
 logging synchronous
 exec-timeout 0 0
 exit
line vty 0 4
 login local
 transport input telnet
 access-class VTY-CONTROL in
 exec-timeout 0 0
 exit
alias exec reset.now tclsh flash:/enarsi/reset.tcl
end
}
tclquit
```

! A1 - Trouble Ticket # 2 - ONLY FOR ISR 4000 SERIES ROUTERS

```
tclsh
puts [ open "flash:/enarsi/23.1.4.2-a1-config.txt" w+ ] {
hostname A1
no ip domain lookup
banner motd # This is A1, Trouble Ticket 23.1.4.2 #
ip domain name ENCOR.23
enable algorithm-type scrypt secret cisco12345
username admin privilege 15 algorithm-type scrypt secret cisco12345
ip access-list standard VTY-CONTROL
 permit 172.16.0.0 0.0.255.255
 deny any log
 exit
interface range f0/1-24
 switchport mode access
 shutdown
 exit
```

```
interface range f0/1-2
 switchport mode trunk
 channel-group 1 mode active
 no shutdown
 exit
interface range f0/3-4
 switchport mode trunk
 channel-group 2 mode active
 no shutdown
 exit
interface f0/22
 switchport mode access
 switchport access vlan 3
 spanning-tree portfast
 shutdown
interface f0/23
 switchport mode access
 switchport access vlan 8
 spanning-tree portfast
 no shutdown
interface f0/24
 switchport mode access
 switchport access vlan 13
 spanning-tree portfast
 no shutdown
 exit
interface vlan 3
 ip address 172.16.3.3 255.255.255.0
 ipv6 address fe80::a1:1 link-local
 ipv6 address 2001:db8:acad:3::3/64
 exit
ip default-gateway 172.16.3.254
interface f0/22
 shutdown
 exit
line con 0
 login local
 logging synchronous
 exec-timeout 0 0
 exit
line vty 0 4
 login local
 transport input telnet
 access-class VTY-CONTROL in
 exec-timeout 0 0
```

```
 exit
alias exec reset.now tclsh flash:/enarsi/reset.tcl
end
}
tclquit
```

! A1 - Trouble Ticket # 3 - ONLY FOR ISR G2 SERIES ROUTERS 29/39xx

```
tclsh
puts [ open "flash:/enarsi/23.1.4.1-a1-config.txt" w+ ] {
hostname A1
no ip domain lookup
banner motd # This is A1, Trouble Ticket 23.1.4.3 #
ip domain name ENCOR.23
enable algorithm-type scrypt secret cisco12345
username admin privilege 15 algorithm-type scrypt secret cisco12345
ip access-list standard VTY-CONTROL
 permit 172.16.0.0 0.0.255.255
 deny any log
 exit
interface range f0/1-24
 switchport mode access
 shutdown
 exit
interface range f0/1-2
 switchport mode trunk
 channel-group 1 mode active
 no shutdown
 exit
interface range f0/3-4
 switchport mode trunk
 channel-group 2 mode active
 no shutdown
 exit
interface f0/22
 switchport mode access
 switchport access vlan 3
 spanning-tree portfast
 shutdown
interface f0/23
 switchport mode access
 switchport access vlan 8
 spanning-tree portfast
 no shutdown
interface f0/24
 switchport mode access
 switchport access vlan 13
```

```
 spanning-tree portfast
 no shutdown
 exit
interface vlan 3
 ip address 172.16.3.3 255.255.255.0
 ipv6 address fe80::a1:1 link-local
 ipv6 address 2001:db8:acad:3::3/64
 exit
ip default-gateway 172.16.3.254
interface f0/22
 shutdown
 exit
line con 0
 login local
 logging synchronous
 exec-timeout 0 0
 exit
line vty 0 4
 login local
 transport input telnet
 access-class VTY-CONTROL in
 exec-timeout 0 0
 exit
alias exec reset.now tclsh flash:/enarsi/reset.tcl
end
}
tclquit
```