



Sample Configurations

This appendix presents sample configurations for the following:

- [Configuration for the Source Router, page A-1](#)
- [Configurations for the Aggregation Routers, page A-9](#)
- [Configurations for the Hub Routers, page A-21](#)



Note

See [Network Topology, page 3-1](#).

Configuration for the Source Router

The following is the configuration for SR1a.

```
#####
!
! Description
! =====
! Video Networking Solution 3.0
! SR1a running-config
!
! Version Information
! =====
! IOS
! ---
! 12.2(18)SXF
!
! Hardware
! -----
!
! Mod  Port  Model                Serial !  Versions
! -----
!   1    4    WS-X6704-10GE        SAL09337DN0 Hw : 2.2
!                                     Fw : 12.2(14r)S5
!                                     Sw : 12.2(18)SXF
!                                     Sw1: 8.6(0.123)RFW8
!
!           WS-F6700-DFC3BXL  SAL09295P6K Hw : 5.0
!   2   48  WS-X6748-GE-TX      SAL090607K5 Hw : 2.1
!                                     Fw : 12.2(14r)S5
!                                     Sw : 12.2(18)SXF
!                                     Sw1: 8.6(0.123)RFW8
!
!           WS-F6700-DFC3BXL  SAL09295P90 Hw : 5.0
```

```

! 5 2 WS-SUP720-3BXL SAL09137GNV Hw : 4.3
!                                     Fw : 8.1(3)
!                                     Sw : 12.2(18)SXF
!                                     Sw1: 8.6(0.123)RFW8
! WS-SUP720 SAL091279RT Hw : 2.3
!                                     Fw : 12.2(17r)S2
!                                     Sw : 12.2(18)SXF
! WS-F6K-PFC3BXL SAL0912725W Hw : 1.6
!
!
!#####
!
!
upgrade fpd auto
version 12.2
service nagle
no service pad
service tcp-keepalives-in
service tcp-keepalives-out
service timestamps debug datetime msec localtime
service timestamps log datetime msec localtime
no service password-encryption
service internal
service counters max age 5
no service dhcp
!
hostname SR1a
!
boot system disk0:s72033-adventerprisek9_wan-mz.122-18.SXF.bin

logging snmp-authfail
logging buffered 64000 informational
no logging console
enable password cisco123
!
no aaa new-model
clock timezone PST -8
clock summer-time PDT recurring
ip subnet-zero
no ip source-route
ip spd mode aggressive
!
!
!
ip cef accounting non-recursive
ip tftp source-interface Loopback0
no ip bootp server
ip multicast-routing
ip igmp ssm-map enable
no ip igmp ssm-map query dns
ip igmp ssm-map static acl_SSM-map-DB 192.168.71.2
ip igmp ssm-map static acl_SSM-map-DS 192.168.72.2
ip igmp ssm-map static acl_SSM-map-DS-post-splice 192.168.160.2
ip tcp window-size 65535
ip tcp path-mtu-discovery
ip telnet source-interface Loopback0
no ip domain-lookup
vtp domain SR1a
vtp mode transparent
mls ip multicast replication-mode ingress
mls ip multicast flow-stat-timer 9
no mls flow ip
no mls flow ipv6
mls qos map dscp-cos 16 18 20 to 3

```



```

    trust dscp
    class class_net-mgmt
      set dscp cs2
    class class_suspect
      set dscp default
  policy-map pmap_broadcast-video-port
    class class_broadcast-video
      set dscp af41
    class class_video-signaling
      set dscp cs3
    class class_net-mgmt
      set dscp cs2
    class class_suspect
      set dscp default
  policy-map pmap_ad-server-port
    class class_ad-server
      set dscp af41
    class class_video-signaling
      set dscp cs3
    class class_net-mgmt
      set dscp cs2
    class class_suspect
      set dscp default
  policy-map pmap_net-mgmt-port
    class class_net-mgmt
      set dscp cs2
    class class_suspect
      set dscp default
  policy-map pmap_internet-access-port
    class class_internet-access
      set dscp 8
    class class_net-mgmt
      set dscp cs2
    class class_suspect
      set dscp default
  !
  !
  !
  interface Loopback0
    description RAN Loopback
    ip address 99.99.0.1 255.255.255.255
  !
  interface Loopback1
    description Local Loopback
    ip address 99.99.1.1 255.255.255.255
  !
  interface Loopback99
    description ASM Multicast Rendezvous Point
    ip address 99.99.99.1 255.255.255.255
    ip pim sparse-mode
  !
  interface Null0
    no ip unreachable
  !
  interface TenGigabitEthernet1/1
    description Transport between AR1 (TenGig1/1)
    ip address 192.168.250.1 255.255.255.252
    no ip redirects
    no ip proxy-arp
    ip pim sparse-mode
    ip ospf network point-to-point
    ip ospf hello-interval 1
    wrr-queue cos-map 1 3 2
    wrr-queue cos-map 2 1 3

```

```
wrr-queue cos-map 2 2 4
mls qos trust dscp
!
interface TenGigabitEthernet1/2
no ip address
shutdown
!
interface TenGigabitEthernet1/3
description Transport between AR2 (TenGig1/1)
ip address 192.168.251.1 255.255.255.252
no ip redirects
no ip proxy-arp
ip pim sparse-mode
ip ospf network point-to-point
ip ospf hello-interval 1
wrr-queue cos-map 1 3 2
wrr-queue cos-map 2 1 3
wrr-queue cos-map 2 2 4
mls qos trust dscp
!
interface TenGigabitEthernet1/4
no ip address
shutdown
!
interface GigabitEthernet2/1
description Syslog/TFTP/NTP on PC0a (Eth2) dual-homed to 1.1.1.0/24
ip address 192.168.10.1 255.255.255.252
no ip redirects
no ip proxy-arp
no cdp enable
service-policy input pmap_net-mgmt-port
!
interface GigabitEthernet2/2
description Voice over IP
ip address 192.168.80.1 255.255.255.252
no ip redirects
no ip proxy-arp
ip pim sparse-mode
no cdp enable
service-policy input pmap_voice-port
!
interface GigabitEthernet2/3
description Internet Access
ip address 192.168.90.1 255.255.255.252
no ip redirects
no ip proxy-arp
ip pim sparse-mode
no cdp enable
service-policy input pmap_internet-access-port
!
interface GigabitEthernet2/4
description CherryPicker DM0a (Port 1) - DB
ip address 192.168.71.1 255.255.255.252
no ip redirects
no ip proxy-arp
ip pim sparse-mode
no cdp enable
service-policy input pmap_broadcast-video-port
!
interface GigabitEthernet2/5
description CherryPicker DM0b (Port 1) - DS
ip address 192.168.72.1 255.255.255.252
no ip redirects
no ip proxy-arp
```

```

ip pim sparse-mode
no cdp enable
service-policy input pmap_broadcast-video-port
!
interface GigabitEthernet2/6
description Ad Server Ad0a
ip address 192.168.60.1 255.255.255.252
no ip redirects
no ip proxy-arp
ip pim sparse-mode
no cdp enable
service-policy input pmap_ad-server-port
!
interface GigabitEthernet2/7
no ip address
shutdown
!
!
! <<< omitted interface GigabitEthernet2/8 - interface GigabitEthernet2/47 >>>
!
!
interface GigabitEthernet2/48
no ip address
!
interface GigabitEthernet5/1
no ip address
shutdown
!
interface GigabitEthernet5/2
description Management port for Syslog/TFTP/NTP
ip address 1.1.1.1 255.255.255.0
media-type rj45
!
interface Vlan1
no ip address
shutdown
!
router ospf 100
router-id 99.99.0.1
max-metric router-lsa on-startup wait-for-bgp
log-adjacency-changes detail
timers throttle spf 400 400 4000
passive-interface default
no passive-interface TenGigabitEthernet1/1
no passive-interface TenGigabitEthernet1/3
network 99.99.0.0 0.0.255.255 area 0
network 192.168.250.0 0.0.0.255 area 0
network 192.168.251.0 0.0.0.255 area 0
maximum-paths 6
!
router bgp 100
no synchronization
bgp router-id 99.99.0.1
bgp log-neighbor-changes
redistribute connected route-map rmap_Connected-to-BGP
neighbor rr-server peer-group
neighbor rr-server remote-as 100
neighbor rr-server update-source Loopback0
neighbor rr-server version 4
neighbor rr-server send-community
neighbor 99.99.0.2 peer-group rr-server
neighbor 99.99.0.2 description AR1
neighbor 99.99.0.3 peer-group rr-server
neighbor 99.99.0.3 description AR2

```

```
no auto-summary
!
ip classless
!
ip bgp-community new-format
no ip http server
ip pim ssm range acl_SSM-IPmc-range
!
ip access-list standard acl_SSM-IPmc-range
  permit 239.0.0.0 0.255.255.255
ip access-list standard acl_SSM-map-DB
  remark SSM mapping for DB blue/red
  permit 239.16.0.0 0.0.0.255
ip access-list standard acl_SSM-map-DS
  remark SSM mapping for DS blue/red
  permit 239.20.0.0 0.0.255.255
ip access-list standard acl_SSM-map-DS-post-splice
  remark SSM mapping for post splice DS blue/red
  permit 239.28.0.0 0.0.255.255
!
ip access-list extended acl_voice
  remark Identify voice traffic
  permit ip any 192.168.161.0 0.0.0.255

ip access-list extended acl_broadcast-video
  remark Identify broadcast video traffic (multicast on 239.x.x.x)
  permit ip any 239.0.0.0 0.255.255.255
ip access-list extended acl_ad-server
  remark Identify ad server traffic
  permit ip 192.168.60.0 0.0.0.255 any
ip access-list extended acl_video-signaling
  remark Identify video signaling
  permit ip any 192.168.61.0 0.0.0.255
ip access-list extended acl_net-mgmt
  remark Identify net management traffic (TFTP, Syslog, NTP, etc)
  permit ip 192.168.10.0 0.0.0.255 any
  permit ip any 192.168.10.0 0.0.0.255
ip access-list extended acl_internet-access
  remark Identify Internet access traffic
  permit ip 192.168.90.0 0.0.0.255 any
ip access-list extended acl_permit-any
  permit ip any any
!
!
ip prefix-list pl_Connected-to-BGP seq 5 permit 192.168.10.0/24 le 32
ip prefix-list pl_Connected-to-BGP seq 10 permit 192.168.60.0/24 le 32
ip prefix-list pl_Connected-to-BGP seq 15 permit 192.168.70.0/24 le 32
ip prefix-list pl_Connected-to-BGP seq 20 permit 192.168.71.0/24 le 32
ip prefix-list pl_Connected-to-BGP seq 25 permit 192.168.72.0/24 le 32
ip prefix-list pl_Connected-to-BGP seq 30 permit 192.168.73.0/24 le 32
ip prefix-list pl_Connected-to-BGP seq 30 permit 192.168.80.0/24 le 32
ip prefix-list pl_Connected-to-BGP seq 30 permit 192.168.90.0/24 le 32
!
logging event link-status default
logging trap debugging
logging source-interface Loopback0
logging 1.1.1.254
!
route-map rmap_Connected-to-BGP permit 100
  match ip address prefix-list pl_Connected-to-BGP
  set metric 100
  set ip next-hop 99.99.0.1
!
!
```

```

!
control-plane
!
!
!
dial-peer cor custom
!
!
!
banner motd ^C
#####

Project = Video Networking Solution
Switch = SR1a

Chassis = 7606
Slot1 = WS-X6704 (3BXL)
Slot2 = WS-X6748 (3BXL)
Slot5 = Sup720 (3BXL)

#####
^C
!
line con 0
  exec-timeout 0 0
  history size 100
  transport preferred none
line vty 0 4
  exec-timeout 0 0
  password cisco123
  login
  history size 100
  transport preferred none
!
!
monitor event-trace timestamps
scheduler runtime netinput 300
ntp source Loopback0
ntp server 1.1.1.254
ntp update-calendar
no cns aaa enable
end

```



```
main-cpu
  auto-sync running-config
  auto-sync standard
!
spanning-tree mode pvst
no spanning-tree optimize bpdu transmission
no spanning-tree vlan 1-4094
error-detection packet-buffer action none
diagnostic cns publish cisco.cns.device.diag_results
diagnostic cns subscribe cisco.cns.device.diag_commands
fabric buffer-reserve queue
!
vlan internal allocation policy ascending
!
!
interface Loopback0
  description RAN Loopback
  ip address 99.99.0.2 255.255.255.255
!
interface Null0
  no ip unreachable
!
interface TenGigabitEthernet1/1
  description Transport between SR1a (TenGig1/1)
  ip address 192.168.250.2 255.255.255.252
  no ip redirects
  no ip proxy-arp
  ip pim sparse-mode
  ip ospf network point-to-point
  ip ospf hello-interval 1
  wrr-queue cos-map 1 3 2
  wrr-queue cos-map 2 1 3
  wrr-queue cos-map 2 2 4
  mls qos trust dscp
!
interface TenGigabitEthernet1/2
  description Transport between AR2 (TenGig1/2)
  ip address 192.168.249.1 255.255.255.252
  no ip redirects
  no ip proxy-arp
  ip pim sparse-mode
  ip ospf network point-to-point
  ip ospf hello-interval 1
  wrr-queue cos-map 1 3 2
  wrr-queue cos-map 2 1 3
  wrr-queue cos-map 2 2 4
  mls qos trust dscp
!
interface TenGigabitEthernet1/3
  description Transport between HR1a (TenGig1/1)
  ip address 192.168.250.5 255.255.255.252
  no ip redirects
  no ip proxy-arp
  ip pim sparse-mode
  ip ospf network point-to-point
  ip ospf hello-interval 1
  wrr-queue cos-map 1 3 2
  wrr-queue cos-map 2 1 3
  wrr-queue cos-map 2 2 4
  mls qos trust dscp
!
interface TenGigabitEthernet1/4
  no ip address
  shutdown
```

```

!
interface GigabitEthernet5/1
  no ip address
  shutdown
!
interface GigabitEthernet5/2
  description Management port for Syslog/TFTP/NTP
  ip address 1.1.1.2 255.255.255.0
  media-type rj45
!
interface Vlan1
  no ip address
  shutdown
!
router ospf 100
  router-id 99.99.0.2
  max-metric router-lsa on-startup wait-for-bgp
  log-adjacency-changes detail
  timers throttle spf 400 400 4000
  network 99.99.0.0 0.0.255.255 area 0
  network 192.168.249.0 0.0.0.255 area 0
  network 192.168.250.0 0.0.0.255 area 0
  maximum-paths 6
  default-information originate metric-type 1
!
router bgp 100
  no synchronization
  bgp router-id 99.99.0.2
  bgp log-neighbor-changes
  network 192.168.10.0 route-map rmap_Network-Management
  network 192.168.60.0 route-map rmap_Ad-Insertion
  network 192.168.71.0 route-map rmap_IPmc-DS-Source
  network 192.168.72.0 route-map rmap_IPmc-DB-Source
  network 192.168.80.0 route-map rmap_Voice
  network 192.168.90.0 route-map rmap_Internet-Access
  network 192.168.150.0 route-map rmap_Hub1
  network 192.168.160.0 route-map rmap_Hub2
  network 192.168.170.0 route-map rmap_Hub2
  network 192.168.180.0 route-map rmap_Hub3
  neighbor rr-client peer-group
  neighbor rr-client remote-as 100
  neighbor rr-client update-source Loopback0
  neighbor rr-client version 4
  neighbor rr-client route-reflector-client
  neighbor rr-client send-community
  neighbor ibgp peer-group
  neighbor ibgp remote-as 100
  neighbor ibgp update-source Loopback0
  neighbor ibgp version 4
  neighbor ibgp send-community
  neighbor 99.99.0.1 peer-group rr-client
  neighbor 99.99.0.1 description SR1a
  neighbor 99.99.0.3 peer-group ibgp
  neighbor 99.99.0.3 description AR2
  neighbor 99.99.0.4 peer-group rr-client
  neighbor 99.99.0.4 description HR1a
  neighbor 99.99.0.5 peer-group rr-client
  neighbor 99.99.0.5 description HR2a
  neighbor 99.99.0.6 peer-group rr-client
  neighbor 99.99.0.6 description HR2b
  neighbor 99.99.0.7 peer-group rr-client
  neighbor 99.99.0.7 description HR3a
  no auto-summary
!

```

```

ip classless
!
ip bgp-community new-format
no ip http server
ip pim ssm range acl_SSM-IPmc-range
!
ip access-list standard acl_SSM-IPmc-range
 permit 239.0.0.0 0.255.255.255
ip access-list standard acl_SSM-map-DB
 remark SSM mapping for DB blue/red
 permit 239.16.0.0 0.0.0.255
ip access-list standard acl_SSM-map-DS
 remark SSM mapping for DS blue/red
 permit 239.20.0.0 0.0.255.255
ip access-list standard acl_SSM-map-DS-post-splice
 remark SSM mapping for post splice DS blue/red
 permit 239.28.0.0 0.0.255.255
!
logging event link-status default
logging trap debugging
logging source-interface Loopback0
logging 1.1.1.254
!
route-map rmap_Network-Management permit 100
 set metric 100
!
route-map rmap_Ad-Insertion permit 100
 set metric 100
!
route-map rmap_IPmc-DS-Source permit 100
 set metric 100
!
route-map rmap_IPmc-DB-Source permit 100
 set metric 100
!
route-map rmap_Voice permit 100
 set metric 100
!
route-map rmap_Internet-Access permit 100
 set metric 100
!
route-map rmap_Hub1 permit 100
 set metric 100
!
route-map rmap_Hub2 permit 100
 set metric 100
!
route-map rmap_Hub3 permit 100
 set metric 100
!
!
!
control-plane
!
!
!
dial-peer cor custom
!
!
!
banner motd ^C
#####

```

```
Project = Video Networking Solution
Switch = AR1
```

```
Chassis = 6509
Slot1 = WS-X6704 (3BXL)
Slot5 = Sup720 (3BXL)
```

```
#####
^C
!
line con 0
  exec-timeout 0 0
  history size 100
  transport preferred none
line vty 0 4
  exec-timeout 0 0
  password cisco123
  login
  history size 100
  transport preferred none
!
scheduler runtime netinput 300
ntp clock-period 17179699
ntp source Loopback0
ntp update-calendar
ntp server 1.1.1.254
no cns aaa enable
end
```

Configuration for AR2a

```

#####
!
! Description
! =====
! Video Networking Solution 3.0
! AR2 running-config
!
! Version Information
! =====
! IOS
! ---
! 12.2(18)SXF
!
! Hardware
! -----
!
! Mod  Port  Model                Serial #    Versions
! -----
!   1    4    WS-X6704-10GE          SAD074706G4 Hw : 1.2
!                                           Fw : 12.2(14r)S5
!                                           Sw : 12.2(18)SXF
!                                           Sw1: 8.6(0.123)RFW8
!
!           WS-F6700-DFC3A      SAD081603HC Hw : 2.2
!   5    2    WS-SUP720-3BXL        SAL09222B4P Hw : 4.3
!                                           Fw : 8.1(3)
!                                           Sw : 12.2(18)SXF
!                                           Sw1: 8.6(0.123)RFW8
!
!           WS-SUP720           SAL09232GEE Hw : 2.3
!                                           Fw : 12.2(17r)S2
!                                           Sw : 12.2(18)SXF
!
!           WS-F6K-PFC3BXL      SAL09222CUH Hw : 1.6
!
#####
!
!
! upgrade fpd auto
! version 12.2
! service nagle
! no service pad
! service tcp-keepalives-in
! service tcp-keepalives-out
! service timestamps debug datetime msec localtime
! service timestamps log datetime msec localtime
! no service password-encryption
! service internal
! service counters max age 5
! no service dhcp
!
! hostname AR2
!
! boot system disk0:s72033-adventerprisek9_wan-mz.122-18.SXF.bin
! logging snmp-authfail
! logging buffered 64000 informational
! enable password cisco123
!
! no aaa new-model
! clock timezone PST -8
! clock summer-time PDT recurring
! ip subnet-zero
! no ip source-route
! ip spd mode aggressive

```



```
vlan internal allocation policy ascending
!
!
interface Loopback0
  description RAN Loopback
  ip address 99.99.0.3 255.255.255.255
!
interface Null0
  no ip unreachable
!
interface TenGigabitEthernet1/1
  description Transport between SR1a (TenGig1/3)
  ip address 192.168.251.2 255.255.255.252
  no ip redirects
  no ip proxy-arp
  ip pim sparse-mode
  ip ospf network point-to-point
  ip ospf hello-interval 1
  wrp-queue cos-map 1 3 2
  wrp-queue cos-map 2 1 3
  wrp-queue cos-map 2 2 4
  mls qos trust dscp
!
interface TenGigabitEthernet1/2
  description Transport between AR1 (TenGig1/2)
  ip address 192.168.249.2 255.255.255.252
  no ip redirects
  no ip proxy-arp
  ip pim sparse-mode
  ip ospf network point-to-point
  ip ospf hello-interval 1
  wrp-queue cos-map 1 3 2
  wrp-queue cos-map 2 1 3
  wrp-queue cos-map 2 2 4
  mls qos trust dscp
!
interface TenGigabitEthernet1/3
  description Transport between HR3a (TenGig1/1)
  ip address 192.168.251.5 255.255.255.252
  no ip redirects
  no ip proxy-arp
  ip pim sparse-mode
  ip ospf network point-to-point
  ip ospf hello-interval 1
  wrp-queue cos-map 1 3 2
  wrp-queue cos-map 2 1 3
  wrp-queue cos-map 2 2 4
  mls qos trust dscp
!
interface TenGigabitEthernet1/4
  no ip address
  shutdown
!
interface GigabitEthernet5/1
  no ip address
  shutdown
!
interface GigabitEthernet5/2
  description Management port for Syslog/TFTP/NTP
  ip address 1.1.1.3 255.255.255.0
  media-type rj45
!
interface Vlan1
  no ip address
```

```

shutdown
!
router ospf 100
router-id 99.99.0.3
max-metric router-lsa on-startup wait-for-bgp
log-adjacency-changes detail
timers throttle spf 400 400 4000
network 99.99.0.0 0.0.255.255 area 0
network 192.168.249.0 0.0.0.255 area 0
network 192.168.251.0 0.0.0.255 area 0
maximum-paths 6
default-information originate metric-type 1
!
router bgp 100
no synchronization
bgp router-id 99.99.0.3
bgp log-neighbor-changes
network 192.168.10.0 route-map rmap_Network-Management
network 192.168.60.0 route-map rmap_Ad-Insertion
network 192.168.71.0 route-map rmap_IPmc-DS-Source
network 192.168.72.0 route-map rmap_IPmc-DB-Source
network 192.168.80.0 route-map rmap_Voice
network 192.168.90.0 route-map rmap_Internet-Access
network 192.168.150.0 route-map rmap_Hub1
network 192.168.160.0 route-map rmap_Hub2
network 192.168.170.0 route-map rmap_Hub2
network 192.168.180.0 route-map rmap_Hub3
neighbor rr-client peer-group
neighbor rr-client remote-as 100
neighbor rr-client update-source Loopback0
neighbor rr-client version 4
neighbor rr-client route-reflector-client
neighbor rr-client send-community
neighbor ibgp peer-group
neighbor ibgp remote-as 100
neighbor ibgp update-source Loopback0
neighbor ibgp version 4
neighbor ibgp send-community
neighbor 99.99.0.1 peer-group rr-client
neighbor 99.99.0.1 description SR1a
neighbor 99.99.0.2 peer-group ibgp
neighbor 99.99.0.2 description AR1
neighbor 99.99.0.4 peer-group rr-client
neighbor 99.99.0.4 description HR1a
neighbor 99.99.0.5 peer-group rr-client
neighbor 99.99.0.5 description HR2a
neighbor 99.99.0.6 peer-group rr-client
neighbor 99.99.0.6 description HR2b
neighbor 99.99.0.7 peer-group rr-client
neighbor 99.99.0.7 description HR3a
no auto-summary
!
ip classless
!
ip bgp-community new-format
no ip http server
ip pim ssm range acl_SSM-IPmc-range
!
ip access-list standard acl_SSM-IPmc-range
permit 239.0.0.0 0.255.255.255
ip access-list standard acl_SSM-map-DB
remark SSM mapping for DB blue/red
permit 239.16.0.0 0.0.0.255
ip access-list standard acl_SSM-map-DS

```

```

    remark SSM mapping for DS blue/red
    permit 239.20.0.0 0.0.255.255
ip access-list standard acl_SSM-map-DS-post-splice
    remark SSM mapping for post splice DS blue/red
    permit 239.28.0.0 0.0.255.255
!
logging event link-status default
logging trap debugging
logging source-interface Loopback0
logging 1.1.1.254
!
route-map rmap_Network-Management permit 100
    set metric 100
!
route-map rmap_Ad-Insertion permit 100
    set metric 100
!
route-map rmap_IPmc-DS-Source permit 100
    set metric 100
!
route-map rmap_IPmc-DB-Source permit 100
    set metric 100
!
route-map rmap_Voice permit 100
    set metric 100
!
route-map rmap_Internet-Access permit 100
    set metric 100
!
route-map rmap_Hub1 permit 100
    set metric 100
!
route-map rmap_Hub2 permit 100
    set metric 100
!
route-map rmap_Hub3 permit 100
    set metric 100
!
!
!
control-plane
!
!
!
dial-peer cor custom
!
!
!
banner motd ^C
#####

Project = Video Networking Solution
Switch = AR2

Chassis = 6509
Slot1 = WS-X6704 (3A)
Slot5 = Sup720 (3BXL)

#####
^C
!

```

```
line con 0
  exec-timeout 0 0
  history size 100
  transport preferred none
line vty 0 4
  exec-timeout 0 0
  password cisco123
  login
  history size 100
  transport preferred none
!
monitor event-trace timestamps
scheduler runtime netinput 300
ntp clock-period 17179765
ntp source Loopback0
ntp update-calendar
ntp server 1.1.1.254
no cns aaa enable
end
```

Configurations for the Hub Routers

The following configurations are presented:

- [Configuration for HR1a](#)
- [Configuration for HR2a](#)
- [Configuration for HR2b](#)
- [Configuration for HR3a](#)

Configuration for HR1a

```
#####
!
! Description
! =====
! Video Networking Solution 3.0
! HR1a running-config
!
! Version Information
! =====
! IOS
! ---
! 12.2(18)SXF
!
! Hardware
! -----
!
! Mod  Port  Model                Serial #    Versions
! -----
!   1    4    WS-X6704-10GE         SAL09337DQA Hw : 2.2
!                                     Fw : 12.2(14r)S5
!                                     Sw : 12.2(18)SXF
!                                     Sw1: 8.6(0.123)RFW8
!
!           WS-F6700-DFC3BXL   SAL09274W3N Hw : 5.0
!   2   24  WS-X6724-SFP         SAL093486ND Hw : 2.3
!                                     Fw : 12.2(14r)S5
!                                     Sw : 12.2(18)SXF
!                                     Sw1: 8.6(0.123)RFW8
!
!           WS-F6700-DFC3BXL   SAL0930689L Hw : 5.2
!   5    2  WS-SUP720-3BXL      SAL09337GL6 Hw : 4.3
!                                     Fw : 8.1(3)
!                                     Sw : 12.2(18)SXF
!                                     Sw1: 8.6(0.123)RFW8
!
!           WS-SUP720          SAL09337FTZ Hw : 2.3
!                                     Fw : 12.2(17r)S2
!                                     Sw : 12.2(18)SXF
!
!           WS-F6K-PFC3BXL     SAL09337FN8 Hw : 1.6
!
#####
!
!
! upgrade fpd auto
! version 12.2
! service nagle
! no service pad
! service tcp-keepalives-in
! service tcp-keepalives-out
! service timestamps debug datetime msec localtime
```

```

service timestamps log datetime msec localtime
no service password-encryption
service internal
service counters max age 5
no service dhcp
!
hostname HR1a
!
boot system disk0:s72033-adventerprisek9_wan-mz.122-18.SXF.bin
logging snmp-authfail
logging buffered 64000 informational
no logging console
enable password cisco123
!
no aaa new-model
clock timezone PST -8
clock summer-time PDT recurring
ip subnet-zero
no ip source-route
ip spd mode aggressive
!
!
!
ip cef accounting non-recursive
ip tftp source-interface Loopback0
no ip bootp server
ip multicast-routing
ip igmp ssm-map enable
no ip igmp ssm-map query dns
ip igmp ssm-map static acl_SSM-map-DB 192.168.71.2
ip igmp ssm-map static acl_SSM-map-DS 192.168.72.2
ip igmp ssm-map static acl_SSM-map-DS-post-splice 192.168.160.2
ip tcp window-size 65535
ip tcp path-mtu-discovery
ip telnet source-interface Loopback0
no ip domain-lookup
vtp domain HR1a
vtp mode transparent
mls ip multicast replication-mode ingress
mls ip multicast flow-stat-timer 9
no mls flow ip
no mls flow ipv6
mls qos map dscp-cos 16 18 20 to 3
mls qos map dscp-cos 26 28 30 to 4
mls qos map dscp-cos 34 36 38 to 6
mls qos map dscp-cos 40 42 44 to 2
mls qos map dscp-cos 48 to 5
mls qos
mls rate-limit multicast ipv4 fib-miss 10000 250
mls rate-limit multicast ipv4 connected 2500 250
mls rate-limit multicast ipv4 igmp 1000 10
mls rate-limit multicast ipv4 ip-options 1000 10
mls rate-limit multicast ipv4 partial 500 250
mls rate-limit unicast acl input 1000 10
mls rate-limit unicast acl output 1000 10
no mls rate-limit unicast acl vacl-log
mls rate-limit unicast ip options 1000 10
mls rate-limit all ttl-failure 100 10
mls rate-limit all mtu-failure 100 10
no mls acl tcam share-global
mls cef error action freeze
!
!
!

```

```

!
!
!
!
!
!
!
redundancy
 mode sso
 main-cpu
  auto-sync running-config
  auto-sync standard
!
spanning-tree mode pvst
no spanning-tree optimize bpdu transmission
spanning-tree extend system-id
no spanning-tree vlan 1-4094
!
power redundancy-mode combined
error-detection packet-buffer action none
diagnostic cns publish cisco.cns.device.diag_results
diagnostic cns subscribe cisco.cns.device.diag_commands
fabric buffer-reserve queue
!
vlan internal allocation policy ascending
!
class-map match-all class_voice
 match access-group name acl_voice
class-map match-all class_broadcast-video
 match access-group name acl_broadcast-video
class-map match-all class_ad-server
 match access-group name acl_ad-server
class-map match-all class_video-signaling
 match access-group name acl_video-signaling
class-map match-all class_net-mgmt
 match access-group name acl_net-mgmt
class-map match-all class_internet-access
 match access-group name acl_internet-access
class-map match-all class_suspect
 match access-group name acl_permit-any
!
!
policy-map pmap_voice-port
 class class_voice
  trust dscp
 class class_net-mgmt
  set dscp cs2
 class class_suspect
  set dscp default
policy-map pmap_broadcast-video-port
 class class_broadcast-video
  set dscp af41
 class class_video-signaling
  set dscp cs3
 class class_net-mgmt
  set dscp cs2
 class class_suspect
  set dscp default
policy-map pmap_ad-server-port
 class class_ad-server
  set dscp af41
 class class_video-signaling
  set dscp cs3
 class class_net-mgmt

```

```

        set dscp cs2
    class class_suspect
        set dscp default
policy-map pmap_net-mgmt-port
    class class_net-mgmt
        set dscp cs2
    class class_suspect
        set dscp default
policy-map pmap_internet-access-port
    class class_internet-access
        set dscp 8
    class class_net-mgmt
        set dscp cs2
    class class_suspect
        set dscp default
!
!
!
interface Loopback0
    description RAN Loopback
    ip address 99.99.0.4 255.255.255.255
!
interface Loopback1
    description Hub Loopback
    ip address 99.99.1.4 255.255.255.255
!
interface Null0
    no ip unreachable
!
interface TenGigabitEthernet1/1
    description Transport between AR1 (TenGig1/3)
    ip address 192.168.250.6 255.255.255.252
    no ip redirects
    no ip proxy-arp
    ip pim sparse-mode
    ip multicast boundary acl_Hub-only-IPmc
    ip ospf network point-to-point
    ip ospf hello-interval 1
    wrr-queue cos-map 1 3 2
    wrr-queue cos-map 2 1 3
    wrr-queue cos-map 2 2 4
    mls qos trust dscp
!
interface TenGigabitEthernet1/2
    no ip address
    shutdown
!
interface TenGigabitEthernet1/3
    description Transport between HR2a (TenGig1/1)
    ip address 192.168.250.9 255.255.255.252
    no ip redirects
    no ip proxy-arp
    ip pim sparse-mode
    ip multicast boundary acl_Hub-only-IPmc
    ip ospf network point-to-point
    ip ospf hello-interval 1
    wrr-queue cos-map 1 3 2
    wrr-queue cos-map 2 1 3
    wrr-queue cos-map 2 2 4
    mls qos trust dscp
!
interface TenGigabitEthernet1/4
    no ip address
    shutdown

```



```

!
!
!
interface GigabitEthernet5/1
  no ip address
  shutdown
!
interface GigabitEthernet5/2
  description Management port for Syslog/TFTP/NTP
  ip address 1.1.1.4 255.255.255.0
  media-type rj45
!
interface Vlan1
  no ip address
  shutdown
!
router ospf 100
  router-id 99.99.0.4
  max-metric router-lsa on-startup wait-for-bgp
  log-adjacency-changes detail
  timers throttle spf 400 400 4000
  passive-interface default
  no passive-interface TenGigabitEthernet1/1
  no passive-interface TenGigabitEthernet1/3
  network 99.99.0.0 0.0.255.255 area 0
  network 192.168.250.0 0.0.0.255 area 0
  maximum-paths 6
!
router bgp 100
  no synchronization
  bgp router-id 99.99.0.4
  bgp log-neighbor-changes
  redistribute connected route-map rmap_Connected-to-BGP
  neighbor rr-server peer-group
  neighbor rr-server remote-as 100
  neighbor rr-server update-source Loopback0
  neighbor rr-server version 4
  neighbor rr-server send-community
  neighbor 99.99.0.2 peer-group rr-server
  neighbor 99.99.0.2 description AR1
  neighbor 99.99.0.3 peer-group rr-server
  neighbor 99.99.0.3 description AR2
  no auto-summary
!
ip classless
!
ip bgp-community new-format
no ip http server
ip pim ssm range acl_SSM-IPmc-range
!
ip access-list standard acl_SSM-IPmc-range
  permit 239.0.0.0 0.255.255.255
ip access-list standard acl_SSM-map-DB
  remark SSM mapping for DB blue/red
  permit 239.16.0.0 0.0.0.255
ip access-list standard acl_SSM-map-DS
  remark SSM mapping for DS blue/red
  permit 239.20.0.0 0.0.255.255
ip access-list standard acl_SSM-map-DS-post-splice
  remark SSM mapping for post splice DS blue/red
  permit 239.28.0.0 0.0.255.255
!
ip access-list extended acl_voice
  remark Identify voice traffic

```

```

    permit ip any 192.168.80.0 0.0.0.255
ip access-list extended acl_broadcast-video
remark Identify broadcast video traffic (multicast on 239.x.x.x)
permit ip any 239.0.0.0 0.255.255.255
ip access-list extended acl_video-signaling
remark Identify video signaling
permit ip any 192.168.61.0 0.0.0.255
ip access-list extended acl_net-mgmt
remark Identify net management traffic (TFTP, Syslog, NTP, etc)
permit ip any 192.168.10.0 0.0.0.255
ip access-list extended acl_internet-access
remark Identify Internet access traffic
permit ip any 192.168.90.0 0.0.0.255
ip access-list extended acl_permit-any
permit ip any any
!
ip access-list extended acl_qam-port
remark Permit only video and signaling out port connected to QAM
permit ip any any dscp af41
permit ip any any dscp af43
permit ip any any dscp cs3
permit ip any any dscp cs6
deny ip any any
ip access-list standard acl_Hub-only-IPmc
remark Multicast video in 239.255.0.0/16 must remain in Hub
deny 239.255.0.0 0.0.255.255
remark Allow all other IPmc to pass
permit any
!
!
ip prefix-list pl_Connected-to-BGP seq 5 permit 192.168.150.0/24 le 32
logging event link-status default
logging trap debugging
logging source-interface Loopback0
logging 1.1.1.254
!
route-map rmap_Connected-to-BGP permit 100
match ip address prefix-list pl_Connected-to-BGP
set metric 100
set ip next-hop 99.99.0.4
!
!
!
control-plane
!
!
!
dial-peer cor custom
!
!
!
banner motd ^C
#####

Project = Video Networking Solution
Switch = HR1a

Chassis = 7606
Slot1 = WS-X6704 (3BXL)
Slot2 = WS-X6724 (3BXL)
Slot5 = Sup720 (3BXL)

```

```
#####  
^C  
!  
line con 0  
  exec-timeout 0 0  
  history size 100  
  transport preferred none  
line vty 0 4  
  exec-timeout 0 0  
  password cisco123  
  login  
  history size 100  
  transport preferred none  
!  
scheduler runtime netinput 300  
ntp clock-period 17179872  
ntp source Loopback0  
ntp update-calendar  
ntp server 1.1.1.254  
no cns aaa enable  
end
```

Configuration for HR2a

```

#####
!
! Description
! =====
! Video Networking Solution 3.0
! HR2a running-config
!
! Version Information
! =====
! IOS
! ---
! 12.2(18)SXF
!
! Hardware
! -----
!
! Mod  Port  Model                Serial #    Versions
! -----
!   1    4   WS-X6704-10GE         SAL09337DN3 Hw : 2.2
!                                           Fw : 12.2(14r)S5
!                                           Sw : 12.2(18)SXF
!                                           Sw1: 8.6(0.123)RFW8
!
!           WS-F6700-DFC3BXL   SAL09295P64 Hw : 5.0
!   2   48   WS-X6748-GE-TX        SAD0805027C Hw : 1.4
!                                           Fw : 12.2(14r)S5
!                                           Sw : 12.2(18)SXF
!                                           Sw1: 8.6(0.123)RFW8
!
!           WS-F6700-DFC3BXL   SAD0917016G Hw : 4.0
!   5    2   WS-SUP720-3BXL       SAL09169RG7 Hw : 4.3
!                                           Fw : 8.1(3)
!                                           Sw : 12.2(18)SXF
!                                           Sw1: 8.6(0.123)RFW8
!
!           WS-SUP720          SAL09169UAY Hw : 2.3
!                                           Fw : 12.2(17r)S2
!                                           Sw : 12.2(18)SXF
!
!           WS-F6K-PFC3BXL     SAL091594SL Hw : 1.6
!
#####
!
!
! upgrade fpd auto
! version 12.2
! service nagle
! no service pad
! service tcp-keepalives-in
! service tcp-keepalives-out
! service timestamps debug datetime msec localtime
! service timestamps log datetime msec localtime
! no service password-encryption
! service internal
! service counters max age 5
! no service dhcp
!
! hostname HR2a
!
! boot system disk0:s72033-adventerprisek9_wan-mz.122-18.SXF.bin
! logging snmp-authfail
! logging buffered 64000 informational
! no logging console
! enable password cisco123
!

```



```

no spanning-tree optimize bpdu transmission
spanning-tree extend system-id
no spanning-tree vlan 1-4094
error-detection packet-buffer action none
diagnostic cns publish cisco.cns.device.diag_results
diagnostic cns subscribe cisco.cns.device.diag_commands
fabric buffer-reserve queue
!
vlan internal allocation policy ascending
!
class-map match-all class_voice
  match access-group name acl_voice
class-map match-all class_broadcast-video
  match access-group name acl_broadcast-video
class-map match-all class_ad-server
  match access-group name acl_ad-server
class-map match-all class_video-signaling
  match access-group name acl_video-signaling
class-map match-all class_net-mgmt
  match access-group name acl_net-mgmt
class-map match-all class_internet-access
  match access-group name acl_internet-access
class-map match-all class_suspect
  match access-group name acl_permit-any
!
!
policy-map pmap_voice-port
  class class_voice
    trust dscp
  class class_net-mgmt
    set dscp cs2
  class class_suspect
    set dscp default
policy-map pmap_broadcast-video-port
  class class_broadcast-video
    set dscp af41
  class class_video-signaling
    set dscp cs3
  class class_net-mgmt
    set dscp cs2
  class class_suspect
    set dscp default
policy-map pmap_ad-server-port
  class class_ad-server
    set dscp af41
  class class_video-signaling
    set dscp cs3
  class class_net-mgmt
    set dscp cs2
  class class_suspect
    set dscp default
policy-map pmap_net-mgmt-port
  class class_net-mgmt
    set dscp cs2
  class class_suspect
    set dscp default
policy-map pmap_internet-access-port
  class class_internet-access
    set dscp 8
  class class_net-mgmt
    set dscp cs2
  class class_suspect
    set dscp default
!

```

```
!  
!  
interface Loopback0  
  description RAN Loopback  
  ip address 99.99.0.5 255.255.255.255  
!  
interface Loopback1  
  description Hub Loopbacks  
  ip address 99.99.1.6 255.255.255.255 secondary  
  ip address 99.99.1.5 255.255.255.255  
  no ip redirects  
!  
interface Loopback99  
  description Multicast Rendezvous Point  
  ip address 99.99.99.5 255.255.255.255  
!  
interface Null0  
  no ip unreachable  
!  
interface TenGigabitEthernet1/1  
  description Transport between HR1a (TenGig1/3)  
  ip address 192.168.250.10 255.255.255.252  
  no ip redirects  
  no ip proxy-arp  
  ip pim sparse-mode  
  ip multicast boundary acl_Hub-only-IPmc  
  ip ospf network point-to-point  
  ip ospf hello-interval 1  
  wrr-queue cos-map 1 3 2  
  wrr-queue cos-map 2 1 3  
  wrr-queue cos-map 2 2 4  
  mls qos trust dscp  
!  
interface TenGigabitEthernet1/2  
  no ip address  
  shutdown  
!  
interface TenGigabitEthernet1/3  
  description Transport between HR2b (TenGig1/3)  
  ip address 192.168.249.5 255.255.255.252  
  no ip redirects  
  no ip proxy-arp  
  ip pim sparse-mode  
  ip ospf network point-to-point  
  ip ospf hello-interval 1  
  wrr-queue cos-map 1 3 2  
  wrr-queue cos-map 2 1 3  
  wrr-queue cos-map 2 2 4  
  mls qos trust dscp  
!  
interface TenGigabitEthernet1/4  
  no ip address  
  shutdown  
!  
interface GigabitEthernet2/1  
  description Voice over IP VoIP2a  
  ip address 192.168.161.1 255.255.255.252  
  no ip redirects  
  no ip proxy-arp  
  ip pim sparse-mode  
  no cdp enable  
  service-policy input pmap_voice-port  
!  
interface GigabitEthernet2/2
```

```

description Internet Access IA2a
ip address 192.168.162.1 255.255.255.252
no ip redirects
no ip proxy-arp
ip pim sparse-mode
no cdp enable
service-policy input pmap_internet-access-port
!
interface GigabitEthernet2/3
description Local PEG video PEG2a
ip address 192.168.160.13 255.255.255.252
ip access-group acl_qam-port out
no ip redirects
no ip proxy-arp
ip pim sparse-mode
wrr-queue cos-map 1 3 2
wrr-queue cos-map 2 1 3
wrr-queue cos-map 2 2 4
no cdp enable
service-policy input pmap_broadcast-video-port
!
interface GigabitEthernet2/4
description CherryPicker DM2a (Port 1) - Pre/Post-splice DS
ip address 192.168.160.1 255.255.255.252
ip access-group acl_qam-port out
no ip redirects
no ip proxy-arp
ip pim sparse-mode
wrr-queue cos-map 1 3 2
wrr-queue cos-map 2 1 3
wrr-queue cos-map 2 2 4
no cdp enable
service-policy input pmap_broadcast-video-port
!
interface GigabitEthernet2/5
description Motorola SEM2a (GigE 1) - DS Post-splice
ip address 192.168.160.5 255.255.255.252
ip access-group acl_qam-port out
no ip redirects
no ip proxy-arp
ip pim sparse-mode
wrr-queue cos-map 1 3 2
wrr-queue cos-map 2 1 3
wrr-queue cos-map 2 2 4
no cdp enable
service-policy input pmap_broadcast-video-port
!
interface GigabitEthernet2/6
description Motorola SEM2b (GigE 1) - DB
ip address 192.168.160.9 255.255.255.252
ip access-group acl_qam-port out
no ip redirects
no ip proxy-arp
ip pim sparse-mode
wrr-queue cos-map 1 3 2
wrr-queue cos-map 2 1 3
wrr-queue cos-map 2 2 4
no cdp enable
service-policy input pmap_broadcast-video-port
!
interface GigabitEthernet2/7
no ip address
shutdown
!

```



```

!
! <<<omitted interface GigabitEthernet2/8 - interface GigabitEthernet2/47
!
!
interface GigabitEthernet2/48
  no ip address
  shutdown
!
interface GigabitEthernet5/1
  no ip address
  shutdown
!
interface GigabitEthernet5/2
  description Management port for Syslog/TFTP/NTP
  ip address 1.1.1.5 255.255.255.0
  media-type rj45
!
interface Vlan1
  no ip address
  shutdown
!
router ospf 100
  router-id 99.99.0.5
  max-metric router-lsa on-startup wait-for-bgp
  log-adjacency-changes detail
  timers throttle spf 400 400 4000
  passive-interface default
  no passive-interface TenGigabitEthernet1/1
  no passive-interface TenGigabitEthernet1/3
  network 99.99.0.0 0.0.255.255 area 0
  network 192.168.249.0 0.0.0.255 area 0
  network 192.168.250.0 0.0.0.255 area 0
  maximum-paths 6
!
router bgp 100
  no synchronization
  bgp router-id 99.99.0.5
  bgp log-neighbor-changes
  redistribute connected route-map rmap_Connected-to-BGP
  neighbor rr-server peer-group
  neighbor rr-server remote-as 100
  neighbor rr-server update-source Loopback0
  neighbor rr-server version 4
  neighbor rr-server send-community
  neighbor 99.99.0.2 peer-group rr-server
  neighbor 99.99.0.2 description AR1
  neighbor 99.99.0.3 peer-group rr-server
  neighbor 99.99.0.3 description AR2
  no auto-summary
!
ip classless
!
ip bgp-community new-format
no ip http server
ip pim ssm range acl_SSM-IPmc-range
!
ip access-list standard acl_SSM-IPmc-range
  permit 239.0.0.0 0.255.255.255
ip access-list standard acl_SSM-map-DB
  remark SSM mapping for DB blue/red
  permit 239.16.0.0 0.0.0.255
ip access-list standard acl_SSM-map-DS
  remark SSM mapping for DS blue/red
  permit 239.20.0.0 0.0.255.255

```

```

ip access-list standard acl_SSM-map-DS-post-splice
remark SSM mapping for post splice DS blue/red
permit 239.28.0.0 0.0.255.255
!
ip access-list extended acl_voice
remark Identify voice traffic
permit ip any 192.168.80.0 0.0.0.255
ip access-list extended acl_broadcast-video
remark Identify broadcast video traffic (multicast on 239.x.x.x)
permit ip any 239.0.0.0 0.255.255.255
ip access-list extended acl_video-signaling
remark Identify video signaling
permit ip any 192.168.61.0 0.0.0.255
ip access-list extended acl_net-mgmt
remark Identify net management traffic (TFTP, Syslog, NTP, etc)
permit ip any 192.168.10.0 0.0.0.255
ip access-list extended acl_internet-access
remark Identify Internet access traffic
permit ip any 192.168.90.0 0.0.0.255
ip access-list extended acl_permit-any
permit ip any any
!
ip access-list extended acl_qam-port
remark Permit only video and signaling out port connected to QAM
permit ip any any dscp af41
permit ip any any dscp af43
permit ip any any dscp cs3
permit ip any any dscp cs6
deny ip any any
ip access-list standard acl_Hub-only-IPmc
remark Multicast video in 239.255.0.0/16 must remain in Hub
deny 239.255.0.0 0.0.255.255
remark Allow all other IPmc to pass
permit any
!
!
ip prefix-list pl_Connected-to-BGP seq 5 permit 192.168.160.0/24 le 32
logging event link-status default
logging trap debugging
logging source-interface Loopback0
logging 1.1.1.254
!
route-map rmap_Connected-to-BGP permit 100
match ip address prefix-list pl_Connected-to-BGP
set metric 100
set ip next-hop 99.99.0.5
!
!
!
control-plane
!
!
!
dial-peer cor custom
!
!
!
banner motd ^C
#####

Project = Video Networking Solution
Switch = HR2a

```

```
Chassis = 7606
Slot1 = WS-X6704 (3BXL)
Slot2 = WS-X6748 (3BXL)
Slot5 = Sup720 (3BXL)

#####
^C
!
line con 0
  exec-timeout 0 0
  history size 100
  transport preferred none
line vty 0 4
  exec-timeout 0 0
  password cisco123
  login
  history size 100
  transport preferred none
!
scheduler runtime netinput 300
ntp clock-period 17179860
ntp source Loopback0
ntp update-calendar
ntp server 1.1.1.254
no cns aaa enable
end
```

Configuration for HR2b

```

#####
!
! Description
! =====
! Video Networking Solution 3.0
! HR2b running-config
!
! Version Information
! =====
! IOS
! ---
! 12.2(18)SXF
!
! Hardware
! -----
!
! Mod  Port  Model                Serial #    Versions
! -----
!   1    4   WS-X6704-10GE          SAD074604B5 Hw : 1.2
!                                           Fw : 12.2(14r)S5
!                                           Sw : 12.2(18)SXF
!                                           Sw1: 8.6(0.123)RFW8
!           WS-F6700-DFC3A          SAD08150203 Hw : 2.1
!   2   24   WS-X6724-SFP           SAD091503A7 Hw : 2.2
!                                           Fw : 12.2(14r)S5
!                                           Sw : 12.2(18)SXF
!                                           Sw1: 8.6(0.123)RFW8
!           WS-F6700-DFC3A          SAD08140B7D Hw : 2.1
!   5    2   WS-SUP720-BASE        SAD07510A0A Hw : 3.0
!                                           Fw : 7.7(1)
!                                           Sw : 12.2(18)SXF
!                                           Sw1: 8.6(0.123)RFW8
!           WS-SUP720              SAD075109GK Hw : 2.0
!                                           Fw : 12.2(14r)S9
!                                           Sw : 12.2(18)SXF
!           WS-F6K-PFC3BXL         SAD0817029M Hw : 1.2
!
#####
!
!
upgrade fpd auto
version 12.2
service nagle
no service pad
service tcp-keepalives-in
service tcp-keepalives-out
service timestamps debug datetime msec localtime
service timestamps log datetime msec localtime
no service password-encryption
service internal
service counters max age 5
no service dhcp
!
hostname HR2b
!
boot system disk0:s72033-adventerprisek9_wan-mz.122-18.SXF.bin
logging snmp-authfail
logging buffered 64000 informational
enable password cisco123
!
no aaa new-model

```

```
clock timezone PST -8
clock summer-time PDT recurring
ip subnet-zero
no ip source-route
ip spd mode aggressive
!
!
!
ip cef accounting non-recursive
ip tftp source-interface Loopback0
no ip bootp server
ip multicast-routing
ip igmp ssm-map enable
no ip igmp ssm-map query dns
ip igmp ssm-map static acl_SSM-map-DB 192.168.71.2
ip igmp ssm-map static acl_SSM-map-DS 192.168.72.2
ip igmp ssm-map static acl_SSM-map-DS-post-splice 192.168.160.2
ip tcp window-size 65535
ip tcp path-mtu-discovery
ip telnet source-interface Loopback0
no ip domain-lookup
vtp domain HR2b
vtp mode transparent
mls ip multicast replication-mode ingress
mls ip multicast flow-stat-timer 9
no mls flow ip
no mls flow ipv6
mls qos map dscp-cos 16 18 20 to 3
mls qos map dscp-cos 26 28 30 to 4
mls qos map dscp-cos 34 36 38 to 6
mls qos map dscp-cos 40 42 44 to 2
mls qos map dscp-cos 48 to 5
mls qos
mls rate-limit multicast ipv4 fib-miss 10000 250
mls rate-limit multicast ipv4 connected 2500 250
mls rate-limit multicast ipv4 igmp 1000 10
mls rate-limit multicast ipv4 partial 500 250
mls rate-limit unicast acl input 1000 10
mls rate-limit unicast acl output 1000 10
no mls rate-limit unicast acl vacl-log
mls rate-limit all ttl-failure 100 10
mls rate-limit all mtu-failure 100 10
no mls acl tcam share-global
mls cef error action freeze
!
!
!
!
!
!
redundancy
mode sso
main-cpu
auto-sync running-config
auto-sync standard
!
spanning-tree mode pvst
no spanning-tree optimize bpdu transmission
spanning-tree extend system-id
no spanning-tree vlan 1-4094
!
power redundancy-mode combined
error-detection packet-buffer action none
diagnostic cns publish cisco.cns.device.diag_results
```

```

diagnostic cns subscribe cisco.cns.device.diag_commands
fabric buffer-reserve queue
!
vlan internal allocation policy ascending
!
class-map match-all class_voice
  match access-group name acl_voice
class-map match-all class_broadcast-video
  match access-group name acl_broadcast-video
class-map match-all class_ad-server
  match access-group name acl_ad-server
class-map match-all class_video-signaling
  match access-group name acl_video-signaling
class-map match-all class_net-mgmt
  match access-group name acl_net-mgmt
class-map match-all class_internet-access
  match access-group name acl_internet-access
class-map match-all class_suspect
  match access-group name acl_permit-any
!
!
policy-map pmap_voice-port
  class class_voice
    trust dscp
  class class_net-mgmt
    set dscp cs2
  class class_suspect
    set dscp default
policy-map pmap_broadcast-video-port
  class class_broadcast-video
    set dscp af41
  class class_video-signaling
    set dscp cs3
  class class_net-mgmt
    set dscp cs2
  class class_suspect
    set dscp default
policy-map pmap_ad-server-port
  class class_ad-server
    set dscp af41
  class class_video-signaling
    set dscp cs3
  class class_net-mgmt
    set dscp cs2
  class class_suspect
    set dscp default
policy-map pmap_net-mgmt-port
  class class_net-mgmt
    set dscp cs2
  class class_suspect
    set dscp default
policy-map pmap_internet-access-port
  class class_internet-access
    set dscp 8
  class class_net-mgmt
    set dscp cs2
  class class_suspect
    set dscp default
!
!
!
interface Loopback0
  description RAN Loopback
  ip address 99.99.0.6 255.255.255.255

```

```
!  
interface Loopback1  
  description Hub Loopbacks  
  ip address 99.99.1.5 255.255.255.255 secondary  
  ip address 99.99.1.6 255.255.255.255  
  no ip redirects  
!  
interface Null0  
  no ip unreachable  
!  
interface TenGigabitEthernet1/1  
  description Transport between HR3a (TenGig1/3)  
  ip address 192.168.251.10 255.255.255.252  
  no ip redirects  
  no ip proxy-arp  
  ip pim sparse-mode  
  ip multicast boundary acl_Hub-only-IPmc  
  ip ospf network point-to-point  
  ip ospf hello-interval 1  
  wrr-queue cos-map 1 3 2  
  wrr-queue cos-map 2 1 3  
  wrr-queue cos-map 2 2 4  
  mls qos trust dscp  
!  
interface TenGigabitEthernet1/2  
  no ip address  
  shutdown  
!  
interface TenGigabitEthernet1/3  
  description Transport between HR2a (TenGig1/3)  
  ip address 192.168.249.6 255.255.255.252  
  no ip redirects  
  no ip proxy-arp  
  ip pim sparse-mode  
  ip ospf network point-to-point  
  ip ospf hello-interval 1  
  wrr-queue cos-map 1 3 2  
  wrr-queue cos-map 2 1 3  
  wrr-queue cos-map 2 2 4  
  mls qos trust dscp  
!  
interface TenGigabitEthernet1/4  
  no ip address  
  shutdown  
!  
interface GigabitEthernet5/1  
  no ip address  
  shutdown  
!  
interface GigabitEthernet5/2  
  description Management port for Syslog/TFTP/NTP  
  ip address 1.1.1.6 255.255.255.0  
  media-type rj45  
!  
interface Vlan1  
  no ip address  
  shutdown  
!  
router ospf 100  
  router-id 99.99.0.6  
  max-metric router-lsa on-startup wait-for-bgp  
  log-adjacency-changes detail  
  timers throttle spf 400 400 4000  
  passive-interface default
```

```

no passive-interface TenGigabitEthernet1/1
no passive-interface TenGigabitEthernet1/3
network 99.99.0.0 0.0.255.255 area 0
network 192.168.249.0 0.0.0.255 area 0
network 192.168.251.0 0.0.0.255 area 0
maximum-paths 6
!
router bgp 100
no synchronization
bgp router-id 99.99.0.6
bgp log-neighbor-changes
redistribute connected route-map rmap_Connected-to-BGP
neighbor rr-server peer-group
neighbor rr-server remote-as 100
neighbor rr-server update-source Loopback0
neighbor rr-server version 4
neighbor rr-server send-community
neighbor 99.99.0.2 peer-group rr-server
neighbor 99.99.0.2 description AR1
neighbor 99.99.0.3 peer-group rr-server
neighbor 99.99.0.3 description AR2
no auto-summary
!
ip classless
!
ip bgp-community new-format
no ip http server
ip pim ssm range acl_SSM-IPmc-range
!
ip access-list standard acl_SSM-IPmc-range
permit 239.0.0.0 0.255.255.255
ip access-list standard acl_SSM-map-DB
remark SSM mapping for DB blue/red
permit 239.16.0.0 0.0.0.255
ip access-list standard acl_SSM-map-DS
remark SSM mapping for DS blue/red
permit 239.20.0.0 0.0.255.255
ip access-list standard acl_SSM-map-DS-post-splice
remark SSM mapping for post splice DS blue/red
permit 239.28.0.0 0.0.255.255
!
ip access-list extended acl_voice
remark Identify voice traffic
permit ip any 192.168.80.0 0.0.0.255
ip access-list extended acl_broadcast-video
remark Identify broadcast video traffic (multicast on 239.x.x.x)
permit ip any 239.0.0.0 0.255.255.255
ip access-list extended acl_video-signaling
remark Identify video signaling
permit ip any 192.168.61.0 0.0.0.255
ip access-list extended acl_net-mgmt
remark Identify net management traffic (TFTP, Syslog, NTP, etc)
permit ip any 192.168.10.0 0.0.0.255
ip access-list extended acl_internet-access
remark Identify Internet access traffic
permit ip any 192.168.90.0 0.0.0.255
ip access-list extended acl_permit-any
permit ip any any
!
ip access-list extended acl_gam-port
remark Permit only video and signaling out port connected to QAM
permit ip any any dscp af41
permit ip any any dscp af43
permit ip any any dscp cs3

```



```

    permit ip any any dscp cs6
    deny ip any any
ip access-list standard acl_Hub-only-IPmc
    remark Multicast video in 239.255.0.0/16 must remain in Hub
    deny 239.255.0.0 0.0.255.255
    remark Allow all other IPmc to pass
    permit any
!
!
ip prefix-list pl_Connected-to-BGP seq 5 permit 192.168.170.0/24 le 32
logging event link-status default
logging source-interface Loopback0
logging 1.1.1.254
!
route-map rmap_Connected-to-BGP permit 100
    match ip address prefix-list pl_Connected-to-BGP
    set metric 100
    set ip next-hop 99.99.0.6
!
!
!
control-plane
!
!
!
dial-peer cor custom
!
!
!
banner motd ^C
#####

Project = Video Networking Solution
Switch = HR2b

Chassis = 7606
Slot1 = WS-X6704 (3A)
Slot2 = WS-X6748 (3A)
Slot5 = Sup720 (3BXL)

#####
^C
!
line con 0
    exec-timeout 0 0
    history size 100
    transport preferred none
line vty 0 4
    exec-timeout 0 0
    password cisco123
    login
    history size 100
    transport preferred none
!
scheduler runtime netinput 300
ntp clock-period 17179977
ntp source Loopback0
ntp update-calendar
ntp server 1.1.1.254
no cns aaa enable
end

```

Configuration for HR3a

```

#####
!
! Description
! =====
! Video Networking Solution 3.0
! HR3a running-config
!
! Version Information
! =====
! IOS
! ---
! 12.2(18)SXF
!
! Hardware
! -----
!
! Mod  Port  Model                Serial #    Versions
! -----
!   1    4   WS-X6704-10GE         SAL09337QJF Hw : 2.2
!                                           Fw : 12.2(14r)S5
!                                           Sw : 12.2(18)SXF
!                                           Sw1: 8.6(0.123)RFW8
!           WS-F6700-DFC3A         SAD08240A5L Hw : 2.2
!   2   48   WS-X6748-GE-TX        SAL091052FB Hw : 2.1
!                                           Fw : 12.2(14r)S5
!                                           Sw : 12.2(18)SXF
!                                           Sw1: 8.6(0.123)RFW8
!           WS-F6700-DFC3A         SAD0816029X Hw : 2.2
!   5    2   WS-SUP720-3BXL       SAL09337CES Hw : 4.3
!                                           Fw : 8.1(3)
!                                           Sw : 12.2(18)SXF
!                                           Sw1: 8.6(0.123)RFW8
!           WS-SUP720              SAL09316T46 Hw : 2.3
!                                           Fw : 12.2(17r)S2
!                                           Sw : 12.2(18)SXF
!           WS-F6K-PFC3BXL         SAL09337FPL Hw : 1.6
!
#####
!
!
upgrade fpd auto
version 12.2
service nagle
no service pad
service tcp-keepalives-in
service tcp-keepalives-out
service timestamps debug datetime msec localtime
service timestamps log datetime msec localtime
no service password-encryption
service internal
service counters max age 5
no service dhcp
!
hostname HR3a
!
boot system disk0:s72033-adventerprisek9_wan-mz.122-18.SXF.bin
logging snmp-authfail
logging buffered 64000 informational
enable password cisco123
!
no aaa new-model

```



```

diagnostic cns publish cisco.cns.device.diag_results
diagnostic cns subscribe cisco.cns.device.diag_commands
fabric buffer-reserve queue
!
vlan internal allocation policy ascending
!
class-map match-all class_voice
  match access-group name acl_voice
class-map match-all class_broadcast-video
  match access-group name acl_broadcast-video
class-map match-all class_ad-server
  match access-group name acl_ad-server
class-map match-all class_video-signaling
  match access-group name acl_video-signaling
class-map match-all class_net-mgmt
  match access-group name acl_net-mgmt
class-map match-all class_internet-access
  match access-group name acl_internet-access
class-map match-all class_suspect
  match access-group name acl_permit-any
!
!
policy-map pmap_voice-port
  class class_voice
    trust dscp
  class class_net-mgmt
    set dscp cs2
  class class_suspect
    set dscp default
policy-map pmap_broadcast-video-port
  class class_broadcast-video
    set dscp af41
  class class_video-signaling
    set dscp cs3
  class class_net-mgmt
    set dscp cs2
  class class_suspect
    set dscp default
policy-map pmap_ad-server-port
  class class_ad-server
    set dscp af41
  class class_video-signaling
    set dscp cs3
  class class_net-mgmt
    set dscp cs2
  class class_suspect
    set dscp default
policy-map pmap_net-mgmt-port
  class class_net-mgmt
    set dscp cs2
  class class_suspect
    set dscp default
policy-map pmap_internet-access-port
  class class_internet-access
    set dscp 8
  class class_net-mgmt
    set dscp cs2
  class class_suspect
    set dscp default
!
!
!
interface Loopback0
  description RAN Loopback

```

```
ip address 99.99.0.7 255.255.255.255
!
interface Loopback1
  description Hub Loopback
  ip address 99.99.1.7 255.255.255.255
!
interface Null0
  no ip unreachable
!
interface TenGigabitEthernet1/1
  description Transport between AR2 (TenGig1/3)
  ip address 192.168.251.6 255.255.255.252
  no ip redirects
  no ip proxy-arp
  ip pim sparse-mode
  ip multicast boundary acl_Hub-only-IPmc
  ip ospf network point-to-point
  ip ospf hello-interval 1
  wrp-queue cos-map 1 3 2
  wrp-queue cos-map 2 1 3
  wrp-queue cos-map 2 2 4
  mls qos trust dscp
!
interface TenGigabitEthernet1/2
  no ip address
  shutdown
!
interface TenGigabitEthernet1/3
  description Transport between HR2b (TenGig1/1)
  ip address 192.168.251.9 255.255.255.252
  no ip redirects
  no ip proxy-arp
  ip pim sparse-mode
  ip multicast boundary acl_Hub-only-IPmc
  ip ospf network point-to-point
  ip ospf hello-interval 1
  wrp-queue cos-map 1 3 2
  wrp-queue cos-map 2 1 3
  wrp-queue cos-map 2 2 4
  mls qos trust dscp
!
interface TenGigabitEthernet1/4
  no ip address
  shutdown
!
!
interface GigabitEthernet5/1
  no ip address
  shutdown
!
interface GigabitEthernet5/2
  description Management port for Syslog/TFTP/NTP
  ip address 1.1.1.7 255.255.255.0
  media-type rj45
!
interface Vlan1
  no ip address
  shutdown
!
router ospf 100
  router-id 99.99.0.7
  max-metric router-lsa on-startup wait-for-bgp
  log-adjacency-changes detail
  timers throttle spf 400 400 4000
```

```

passive-interface default
no passive-interface TenGigabitEthernet1/1
no passive-interface TenGigabitEthernet1/3
network 99.99.0.0 0.0.255.255 area 0
network 192.168.251.0 0.0.0.255 area 0
maximum-paths 6
!
router bgp 100
no synchronization
bgp router-id 99.99.0.7
bgp log-neighbor-changes
redistribute connected route-map rmap_Connected-to-BGP
neighbor rr-server peer-group
neighbor rr-server remote-as 100
neighbor rr-server update-source Loopback0
neighbor rr-server version 4
neighbor rr-server send-community
neighbor 99.99.0.2 peer-group rr-server
neighbor 99.99.0.2 description AR1
neighbor 99.99.0.3 peer-group rr-server
neighbor 99.99.0.3 description AR2
no auto-summary
!
ip classless
!
ip bgp-community new-format
no ip http server
ip pim ssm range acl_SSM-IPmc-range
!
ip access-list standard acl_SSM-IPmc-range
permit 239.0.0.0 0.255.255.255
ip access-list standard acl_SSM-map-DB
remark SSM mapping for DB blue/red
permit 239.16.0.0 0.0.0.255
ip access-list standard acl_SSM-map-DS
remark SSM mapping for DS blue/red
permit 239.20.0.0 0.0.255.255
ip access-list standard acl_SSM-map-DS-post-splice
remark SSM mapping for post splice DS blue/red
permit 239.28.0.0 0.0.255.255
!
ip access-list extended acl_voice
remark Identify voice traffic
permit ip any 192.168.80.0 0.0.0.255
ip access-list extended acl_broadcast-video
remark Identify broadcast video traffic (multicast on 239.x.x.x)
permit ip any 239.0.0.0 0.255.255.255
ip access-list extended acl_video-signaling
remark Identify video signaling
permit ip any 192.168.61.0 0.0.0.255
ip access-list extended acl_net-mgmt
remark Identify net management traffic (TFTP, Syslog, NTP, etc)
permit ip any 192.168.10.0 0.0.0.255
ip access-list extended acl_internet-access
remark Identify Internet access traffic
permit ip any 192.168.90.0 0.0.0.255
ip access-list extended acl_permit-any
permit ip any any
!
ip access-list extended acl_gam-port
remark Permit only video and signaling out port connected to QAM
permit ip any any dscp af41
permit ip any any dscp af43
permit ip any any dscp cs3

```

```

    permit ip any any dscp cs6
    deny ip any any
ip access-list standard acl_Hub-only-IPmc
    remark Multicast video in 239.255.0.0/16 must remain in Hub
    deny 239.255.0.0 0.0.255.255
    remark Allow all other IPmc to pass
    permit any
!
ip prefix-list pl_Connected-to-BGP seq 5 permit 192.168.180.0/24 le 32
logging event link-status default
logging source-interface Loopback0
logging 1.1.1.254
!
route-map rmap_Connected-to-BGP permit 100
    match ip address prefix-list pl_Connected-to-BGP
    set metric 100
    set ip next-hop 99.99.0.7
!
!
!
control-plane
!
!
!
dial-peer cor custom
!
!
!
banner motd ^C
#####

Project = Video Networking Solution
Switch = HR3a

Chassis = 7606
Slot1 = WS-X6704 (3A)
Slot2 = WS-X6748 (3A)
Slot5 = Sup720 (3BXL)

#####
^C
!
line con 0
    exec-timeout 0 0
    history size 100
    transport preferred none
line vty 0 4
    exec-timeout 0 0
    password cisco123
    login
    history size 100
    transport preferred none
!
scheduler runtime netinput 300
ntp clock-period 17179820
ntp source Loopback0
ntp update-calendar
ntp server 1.1.1.254
no cns aaa enable
end

```

