Configuration Examples

This appendix is designed to provide examples of how some common networking tasks can be accomplished on the Cisco ASR 1000 Series Routers. The examples in this appendix are provided for illustrative purposes only; little or no context is given with these examples.

When reading this section, also be aware that networking configurations are complex and can be configured many ways. The examples in this section simply show one method of accomplishing a configuration.

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Configuring the Router to Boot the Consolidated Package on the TFTP Server

The following example shows how to configure the router to boot the consolidated package on the TFTP server:

```
Router(config)# boot system
tftp://198.51.100.81/auto/tftp-users/user/asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.bin


Router(config)#config-reg 0x2102
Router(config)# exit

*May 29 21:51:11.963: %SYS-5-CONFIG_I: Configured from console by user on console
Router# show run | include boot
boot-start-marker
boot system
tftp://198.51.100.81/auto/tftp-users/user/asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.bin
boot-end-marker
```

```
Router# copy run start
Destination filename [startup-config]?
Building configuration...
[OK]
Router# reload
Proceed with reload? [confirm]
*May 29 21:52:01.500: %SYS-5-RELOAD: Reload requested by user on console. Reload Reason:
Reload command.
System Bootstrap, Version 12.2(33r)XN2, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 2008 by cisco Systems, Inc.
Current image running: Boot ROM0
Last reset cause: LocalSoft
ASR1000-RP1 platform with 4194303 Kbytes of main memory
          IP_ADDRESS: 198.51.100.155
      IP_SUBNET_MASK: 255.255.255.0
     DEFAULT_GATEWAY: 198.51.100.1
         TFTP_SERVER: 198.51.100.81
           TFTP_FILE: auto/tftp-users/user/asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.bin
Using midplane macaddr
        TFTP_MACADDR: 00:1a:30:46:e3:ff
        TFTP_VERBOSE: Progress
    TFTP_RETRY_COUNT: 18
        TFTP_TIMEOUT: 7200
       TFTP_CHECKSUM: Yes
          ETHER_PORT: 3
    ETHER_SPEED_MODE: Auto Detect
link up 100Mbps/HD
Receiving auto/tftp-users/user/asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.bin from
198.51.100.81
File reception completed.
Boot image size = 208904396 (0xc73a0cc) bytes
Using midplane macaddr
Package header rev 0 structure detected
Calculating SHA-1 hash...done
validate_package: SHA-1 hash:
        calculated fb456e80:4ba2fa07:8556d27c:ea643e4f:512236df
        expected   fb456e80:4ba2fa07:8556d27c:ea643e4f:512236df
Image validated
PPC/IOS XE loader version: 0.0.3
loaded at:     00800000 0CF3C004
zimage at:     00807673 009B92D6
initrd at:     009BA000 01041CC9
isord at:      01042000 0CF39800
avail ram:     00400000 00800000
Kernel load:
Uncompressing image... dst: 00000000 lim: 00400000 start: 00807673 size: 001B1C63...done.
Now booting the IOS XE kernel
%IOSXEBOOT-4-BOOT_SRC: (rp/0): Non-HD Boot
%IOSXEBOOT-4-BOOT_PARAMETER: (rp/0): Booting with custom BOOT_PARAM setting
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           170 West Tasman Drive
           San Jose, California 95134-1706
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```

```
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cisco ASR1006 (RP1) processor with 1772131K/6147K bytes of memory.
5 Gigabit Ethernet interfaces
2 Packet over SONET interfaces
2 Channelized T3 ports
32768K bytes of non-volatile configuration memory.
4194304K bytes of physical memory.
921599K bytes of eUSB flash at bootflash:.
39004543K bytes of SATA hard disk at harddisk:.
Duplex is configured.Remove duplex configuration before enabling auto-negotiation
<output removed for brevity>
User Access Verification
Username: user
Password:
Router>en
Password:
Router# show version
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 RELEASE SOFTWARE (fc1)
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documentation or License Notice file accompanying the IOS-XE software,
or the applicable URL provided on the flyer accompanying the IOS-XE
software.
ROM: IOS-XE ROMMON
 Router uptime is 2 minutes
Uptime for this control processor is 4 minutes
System returned to ROM by reload at 14:52:01 DST Thu May 29 2008System image file is
"tftp://172.17.16.81/auto/tftp-users/user/asr1000rp1-adve"Last reload reason: Reload command
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States and local country laws governing import, export, transfer and
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```
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http://www.cisco.com/wwl/export/crypto/tool/stqrg.html
If you require further assistance please contact us by sending email to
export@cisco.com.
cisco ASR1006 (RP1) processor with 1772131K/6147K bytes of memory.
5 Gigabit Ethernet interfaces
8 Serial interfaces
8 Channelized T1 ports
2 Packet over SONET interfaces
2 Channelized T3 ports
32768K bytes of non-volatile configuration memory.
4194304K bytes of physical memory.
921599K bytes of eUSB flash at bootflash:.
39004543K bytes of SATA hard disk at harddisk:.
Configuration register is 0x2102
```

Copying the Consolidated Package from the TFTP Server to the Router

The following example shows how to copy the consolidated package from the TFTP server to the router:

```
Router# dir bootflash:
Directory of bootflash:/
   11  drwx       16384   Dec 4 2007 04:32:46 -08:00  lost+found
86401  drwx        4096   Dec 4 2007 06:06:24 -08:00  .ssh
14401  drwx        4096   Dec 4 2007 06:06:36 -08:00  .rollback_timer
28801  drwx        4096  Mar 18 2008 17:31:17 -07:00  .prst_sync
43201  drwx        4096   Dec 4 2007 04:34:45 -08:00  .installer
   13  -rw-       45977   Apr 9 2008 16:48:46 -07:00  target_support_output.tgz.tgz
928862208 bytes total (712273920 bytes free)
Router# copy tftp bootflash:
Address or name of remote host []? 198.51.100.81
Source filename []? /auto/tftp-users/user/asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.bin
Destination filename [asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.bin]?
Accessing
tftp://198.51.100.81//auto/tftp-users/user/asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.bin...
Loading /auto/tftp-users/user/asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.bin from
198.51.100.81 (via GigabitEthernet0):
[OK - 208904396 bytes]
208904396 bytes copied in 330.453 secs (632176 bytes/sec)
Router# dir bootflash:
Directory of bootflash:/
   11  drwx       16384   Dec 4 2007 04:32:46 -08:00  lost+found
86401  drwx        4096   Dec 4 2007 06:06:24 -08:00  .ssh
14401  drwx        4096   Dec 4 2007 06:06:36 -08:00  .rollback_timer
28801  drwx        4096  Mar 18 2008 17:31:17 -07:00  .prst_sync
43201  drwx        4096   Dec 4 2007 04:34:45 -08:00  .installer
   12  -rw-   208904396  May 28 2008 16:17:34 -07:00
asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.bin
   13  -rw-       45977   Apr 9 2008 16:48:46 -07:00  target_support_output.tgz.tgz
928862208 bytes total (503156736 bytes free)
```

Configuring the Router to Boot Using the Consolidated Package Stored on the Router

The following example shows hot to configure the router to boot using the consolidated package stored on the router:

```
Router# dir bootflash:
Directory of bootflash:/
   11  drwx       16384   Dec 4 2007 04:32:46 -08:00  lost+found
86401  drwx        4096   Dec 4 2007 06:06:24 -08:00  .ssh
14401  drwx        4096   Dec 4 2007 06:06:36 -08:00  .rollback_timer
28801  drwx        4096  Mar 18 2008 17:31:17 -07:00  .prst_sync
43201  drwx        4096   Dec 4 2007 04:34:45 -08:00  .installer
   12  -rw-   208904396  May 28 2008 16:17:34 -07:00
asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.bin
   13  -rw-       45977   Apr 9 2008 16:48:46 -07:00  target_support_output.tgz.tgz
928862208 bytes total (503156736 bytes free)
Router# config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#boot system bootflash:asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.bin
Router(config)#config-reg 0x2102
Router(config)#exit
Router#show run | include boot
boot-start-marker
boot system bootflash:asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.bin
boot-end-marker
Router# copy run start
Destination filename [startup-config]?
Building configuration...
[OK]
Router# reload
<output removed for brevity>
User Access Verification
Username: user
Password:
Router>en
Password:
Router#show version
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documentation or License Notice file accompanying the IOS-XE software,
or the applicable URL provided on the flyer accompanying the IOS-XE
software.
ROM: IOS-XE ROMMON
 Router uptime is 3 minutes
Uptime for this control processor is 5 minutes
System returned to ROM by reload at 16:20:55 DST Wed May 28 2008System image file is
bootflash:asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.binLast reload reason: Reload
command
This product contains cryptographic features and is subject to United
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cisco ASR1006 (RP1) processor with 1772131K/6147K bytes of memory.
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8 Serial interfaces
8 Channelized T1 ports
2 Packet over SONET interfaces
2 Channelized T3 ports
32768K bytes of non-volatile configuration memory.
4194304K bytes of physical memory.
921599K bytes of eUSB flash at bootflash:.
39004543K bytes of SATA hard disk at harddisk:.Configuration register is 0x2102
```

Extracting the SubPackages from a Consolidated Package into the Same File System

The following example shows how to extract the subpackages from a consolidated package into the same file system:

The asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.bin consolidated package file is in bootflash, but no sub-packages are in the directory.

```
Router# dir bootflash:
Directory of bootflash:/
   11  drwx       16384   Dec 4 2007 04:32:46 -08:00  lost+found
86401  drwx        4096   Dec 4 2007 06:06:24 -08:00  .ssh
14401  drwx        4096   Dec 4 2007 06:06:36 -08:00  .rollback_timer
28801  drwx        4096  Mar 18 2008 17:31:17 -07:00  .prst_sync
43201  drwx        4096   Dec 4 2007 04:34:45 -08:00  .installer
   12  -rw-   208904396   May 9 2008 14:36:31 -07:00
asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.bin
   13  -rw-       45977   Apr 9 2008 16:48:46 -07:00  target_support_output.tgz.tgz
928862208 bytes total (503156736 bytes free)
Router# request platform software package expand file
bootflash:asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.bin
Verifying parameters
Validating package type
Copying package files
SUCCESS: Finished expanding all-in-one software package.
```

After entering the **request platform software package expand file bootflash:asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.bin** command, noting that the **to** option is not used, the sub-packages are extracted from the consolidated package into bootflash:.

```
Router# dir bootflash:
Directory of bootflash:/
   11  drwx       16384   Dec 4 2007 04:32:46 -08:00  lost+found
86401  drwx        4096   Dec 4 2007 06:06:24 -08:00  .ssh
14401  drwx        4096   Dec 4 2007 06:06:36 -08:00  .rollback_timer
```

```
28801  drwx        4096  Mar 18 2008 17:31:17 -07:00  .prst_sync
43201  drwx        4096   Dec 4 2007 04:34:45 -08:00  .installer
   12  -rw-   208904396   May 9 2008 14:36:31 -07:00
asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.bin
57611  -rw-    47071436  May 22 2008 11:26:23 -07:00
asr1000rp1-espbase.02.01.00.122-33.XNA.pkg
57602  -rw-        5740  May 22 2008 11:26:22 -07:00
asr1000rp1-packages-adventerprisek9.02.01.00.122-33.XNA.conf
57612  -rw-    20334796  May 22 2008 11:26:24 -07:00
asr1000rp1-rpaccess.02.01.00.122-33.XNA.pkg
57613  -rw-    22294732  May 22 2008 11:26:24 -07:00
asr1000rp1-rpbase.02.01.00.122-33.XNA.pkg
57614  -rw-    21946572  May 22 2008 11:26:25 -07:00
asr1000rp1-rpcontrol.02.01.00.122-33.XNA.pkg
57615  -rw-    48099532  May 22 2008 11:26:26 -07:00
asr1000rp1-rpios-adventerprisek9.02.01.00.122-33.XNA.pkg
57616  -rw-    34324684  May 22 2008 11:26:27 -07:00
asr1000rp1-sipbase.02.01.00.122-33.XNA.pkg
57617  -rw-    22124748  May 22 2008 11:26:28 -07:00
asr1000rp1-sipspa.02.01.00.122-33.XNA.pkg
57603  -rw-        6256  May 22 2008 11:26:28 -07:00  packages.conf
   13  -rw-       45977   Apr 9 2008 16:48:46 -07:00  target_support_output.tgz.tgz
928862208 bytes total (286662656 bytes free)
```

Extracting the SubPackages from a Consolidated Package into a Different File System

The following example shows how to extract the subpackages from a consolidated package into a different file system:

The asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.bin consolidated package file is in usb0:

```
Router# dir usb0:
Directory of usb0:/
 1240  -rwx   208904396  May 27 2008 14:10:20 -07:00
asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.bin
255497216 bytes total (40190464 bytes free)
```

No sub-packages are in the bootflash: directory.

```
Router# dir bootflash:
Directory of bootflash:/
   11  drwx       16384  Dec 13 2004 03:45:47 -08:00  lost+found
87937  drwx        4096  Dec 13 2004 03:46:45 -08:00  .rollback_timer
14657  drwx        4096  Dec 13 2004 03:47:17 -08:00  .installer
29313  drwx        4096  Dec 13 2004 03:53:00 -08:00  .ssh
   12  -rw-    33554432  Dec 13 2004 03:53:49 -08:00  nvram_00100
58625  drwx        4096   May 7 2008 17:27:51 -07:00  .prst_sync
945377280 bytes total (695246848 bytes free)
Router# request platform software package expand file
usb0:asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.bin to bootflash:
Verifying parameters
Validating package type
Copying package files
SUCCESS: Finished expanding all-in-one software package.
```

After the **request platform software package expand file usb0:asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.bin to bootflash:** command is entered, the sub-packages are now in the bootflash: directory.

```
Router# dir bootflash:
Directory of bootflash:/
   11  drwx       16384  Dec 13 2004 03:45:47 -08:00  lost+found
87937  drwx        4096  Dec 13 2004 03:46:45 -08:00  .rollback_timer
14657  drwx        4096  Dec 13 2004 03:47:17 -08:00  .installer
29313  drwx        4096  Dec 13 2004 03:53:00 -08:00  .ssh
   12  -rw-    33554432  Dec 13 2004 03:53:49 -08:00  nvram_00100
43979  -rw-    47071436  May 27 2008 14:25:01 -07:00
asr1000rp1-espbase.02.01.00.122-33.XNA.pkg
58625  drwx        4096   May 7 2008 17:27:51 -07:00  .prst_sync
43970  -rw-        5740  May 27 2008 14:25:00 -07:00
asr1000rp1-packages-adventerprisek9.02.01.00.122-33.XNA.conf
43980  -rw-    20334796  May 27 2008 14:25:01 -07:00
asr1000rp1-rpaccess.02.01.00.122-33.XNA.pkg
43981  -rw-    22294732  May 27 2008 14:25:02 -07:00
asr1000rp1-rpbase.02.01.00.122-33.XNA.pkg
43982  -rw-    21946572  May 27 2008 14:25:03 -07:00
asr1000rp1-rpcontrol.02.01.00.122-33.XNA.pkg
43983  -rw-    48099532  May 27 2008 14:25:04 -07:00
asr1000rp1-rpios-adventerprisek9.02.01.00.122-33.XNA.pkg
43984  -rw-    34324684  May 27 2008 14:25:05 -07:00
asr1000rp1-sipbase.02.01.00.122-33.XNA.pkg
43985  -rw-    22124748  May 27 2008 14:25:05 -07:00
asr1000rp1-sipspa.02.01.00.122-33.XNA.pkg
43971  -rw-        6256  May 27 2008 14:25:05 -07:00  packages.conf
945377280 bytes total (478752768 bytes free)
```

Configuring the Router to Boot Using the SubPackages

The following example shows how to configure the router to boot using the subpackages:

Enter the **dir bootflash:** command to confirm all sub-packages and the provisioning file are in the same file system:

```
Router# dir bootflash:
Directory of bootflash:/
   11  drwx       16384   Dec 4 2007 04:32:46 -08:00  lost+found
86401  drwx        4096   Dec 4 2007 06:06:24 -08:00  .ssh
14401  drwx        4096   Dec 4 2007 06:06:36 -08:00  .rollback_timer
28801  drwx        4096  Mar 18 2008 17:31:17 -07:00  .prst_sync
43201  drwx        4096   Dec 4 2007 04:34:45 -08:00  .installer
   12  -rw-   208904396   May 9 2008 14:36:31 -07:00
asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.bin
57611  -rw-    47071436  May 22 2008 11:26:23 -07:00
asr1000rp1-espbase.02.01.00.122-33.XNA.pkg
57602  -rw-        5740  May 22 2008 11:26:22 -07:00
asr1000rp1-packages-adventerprisek9.02.01.00.122-33.XNA.conf
57612  -rw-    20334796  May 22 2008 11:26:24 -07:00
asr1000rp1-rpaccess.02.01.00.122-33.XNA.pkg
57613  -rw-    22294732  May 22 2008 11:26:24 -07:00
asr1000rp1-rpbase.02.01.00.122-33.XNA.pkg
57614  -rw-    21946572  May 22 2008 11:26:25 -07:00
asr1000rp1-rpcontrol.02.01.00.122-33.XNA.pkg
57615  -rw-    48099532  May 22 2008 11:26:26 -07:00
asr1000rp1-rpios-adventerprisek9.02.01.00.122-33.XNA.pkg
```

```
57616  -rw-    34324684  May 22 2008 11:26:27 -07:00
asr1000rp1-sipbase.02.01.00.122-33.XNA.pkg
57617  -rw-    22124748  May 22 2008 11:26:28 -07:00
asr1000rp1-sipspa.02.01.00.122-33.XNA.pkg
57603  -rw-        6256  May 22 2008 11:26:28 -07:00  packages.conf
   13  -rw-       45977   Apr 9 2008 16:48:46 -07:00  target_support_output.tgz.tgz
928862208 bytes total (286662656 bytes free)
Router# show running-config | include boot
boot-start-marker
boot-end-marker
Router# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)# boot system bootflash:packages.conf
Router(config)# config-reg 0x2102
Router(config)# exit
Router# config t
*May 29 22:47:57.433: %SYS-5-CONFIG_I: Configured from console by user
Router# show running-config | include boot
boot-start-marker
boot system bootflash:packages.conf
boot-end-marker
Router# copy run start
Destination filename [startup-config]?
Building configuration...
[OK]
Router# reload
Proceed with reload? [confirm]
*May 29 22:51:54.194: %SYS-5-RELOAD: Reload requested by user on console. Reload Reason:
Reload command.
System Bootstrap, Version 12.2(33r)XN2, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
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Current image running: Boot ROM0
Last reset cause: LocalSoft
ASR1000-RP1 platform with 4194303 Kbytes of main memory
Located packages.conf
Image size 6256 inode num 57603, bks cnt 2 blk size 8*512
#
Located asr1000rp1-rpbase.02.01.00.122-33.XNA.pkg
Image size 22294732 inode num 57606, bks cnt 5444 blk size 8*512
############################################################################################################################
Boot image size = 22294732 (0x15430cc) bytes
Using midplane macaddr
Package header rev 0 structure detected
Calculating SHA-1 hash...done
validate_package: SHA-1 hash:
        calculated 4ad33773:e1cb7492:db502416:4ad586f2:7c4d9701
        expected   4ad33773:e1cb7492:db502416:4ad586f2:7c4d9701
Image validated
PPC/IOS XE loader version: 0.0.3
loaded at:     00800000 01D45004
zimage at:     00807673 009B92D6
initrd at:     009BA000 01041CC9
isord at:      01042000 01D42800
avail ram:     00400000 00800000
Kernel load:
Uncompressing image... dst: 00000000 lim: 00400000 start: 00807673 size: 001B1C63...done.
Now booting the IOS XE kernel
%IOSXEBOOT-4-BOOT_SRC: (rp/0): Non-HD Boot
%IOSXEBOOT-4-BOOT_PARAMETER: (rp/0): Booting with custom BOOT_PARAM setting
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```

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           170 West Tasman Drive
           San Jose, California 95134-1706
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Copyright (c) 1986-2008 by Cisco Systems, Inc.
Compiled Thu 01-May-08 00:29 by mcpre
Image text-base: 0x10064AF0, data-base: 0x137E0958
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cisco ASR1006 (RP1) processor with 1776227K/6147K bytes of memory.
5 Gigabit Ethernet interfaces
2 Packet over SONET interfaces
2 Channelized T3 ports
32768K bytes of non-volatile configuration memory.
4194304K bytes of physical memory.
921599K bytes of eUSB flash at bootflash:.
39004543K bytes of SATA hard disk at harddisk:.
Duplex is configured.Remove duplex configuration before enabling auto-negotiation
Press RETURN to get started!
<some output removed for brevity?
User Access Verification
Username: user
Password:
Router> enable
Password:
Router# show version
Cisco IOS Software, IOS-XE Software (PPC_LINUX_IOSD-ADVENTERPRISEK9-M), Version 12.2(33)XNA,
 RELEASE SOFTWARE (fc1)
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software.
```

```
ROM: IOS-XE ROMMON
 Router uptime is 1 minute
Uptime for this control processor is 3 minutes
System returned to ROM by reload at 15:51:54 DST Thu May 29 2008System image file is
bootflash:packages.confLast reload reason: Reload command
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http://www.cisco.com/wwl/export/crypto/tool/stqrg.html
If you require further assistance please contact us by sending email to
export@cisco.com.
cisco ASR1006 (RP1) processor with 1776227K/6147K bytes of memory.
5 Gigabit Ethernet interfaces
8 Serial interfaces
8 Channelized T1 ports
2 Packet over SONET interfaces
2 Channelized T3 ports
32768K bytes of non-volatile configuration memory.
4194304K bytes of physical memory.
921599K bytes of eUSB flash at bootflash:.
39004543K bytes of SATA hard disk at harddisk:.
Configuration register is 0x2102
```

Backing Up Configuration Files

This section provides the following examples:

Copying a Startup Configuration File to Bootflash

```
Router# dir bootflash:
Directory of bootflash:/
   11  drwx       16384   Dec 4 2007 04:32:46 -08:00  lost+found
86401  drwx        4096   Dec 4 2007 06:06:24 -08:00  .ssh
14401  drwx        4096   Dec 4 2007 06:06:36 -08:00  .rollback_timer
28801  drwx        4096  May 29 2008 16:31:41 -07:00  .prst_sync
43201  drwx        4096   Dec 4 2007 04:34:45 -08:00  .installer
   12  -rw-   208904396  May 28 2008 16:17:34 -07:00
asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.bin
Router# copy nvram:startup-config bootflash:
Destination filename [startup-config]?
3517 bytes copied in 0.647 secs (5436 bytes/sec)
Router# dir bootflash:
Directory of bootflash:/
   11  drwx       16384   Dec 4 2007 04:32:46 -08:00  lost+found
86401  drwx        4096   Dec 4 2007 06:06:24 -08:00  .ssh
14401  drwx        4096   Dec 4 2007 06:06:36 -08:00  .rollback_timer
28801  drwx        4096  May 29 2008 16:31:41 -07:00  .prst_sync
43201  drwx        4096   Dec 4 2007 04:34:45 -08:00  .installer
   12  -rw-   208904396  May 28 2008 16:17:34 -07:00
asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.bin
13 -rw-        7516   Jul 2 2008 15:01:39 -07:00  startup-config
```

Copying a Startup Configuration File to an USB Flash Disk

```
Router# dir usb0:
Directory of usb0:/
43261  -rwx   208904396  May 27 2008 14:10:20 -07:00
asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.bin
255497216 bytes total (40190464 bytes free)
Router# copy nvram:startup-config usb0:
Destination filename [startup-config]?
3172 bytes copied in 0.214 secs (14822 bytes/sec)
Router# dir usb0:
Directory of usb0:/
43261  -rwx   208904396  May 27 2008 14:10:20 -07:00
asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.bin43262 -rwx        3172   Jul 2 2008
15:40:45 -07:00  startup-config255497216 bytes total (40186880 bytes free)
```

Copying a Startup Configuration File to a TFTP Server

```
Router# copy bootflash:startup-config tftp:
Address or name of remote host []? 198.51.100.81
Destination filename [pe24_asr-1002-confg]? /auto/tftp-users/user/startup-config
!!
3517 bytes copied in 0.122 secs (28828 bytes/sec)
```

Enabling a Second IOS Process on a Single RP Using SSO

The **show platform** command output does not indicate a second IOS process is active:

```
Router# show platform
Chassis type: ASR1004
Slot      Type                State                 Insert time (ago)
--------- ------------------- --------------------- -----------------
0         ASR1000-SIP10       ok                    00:04:39
 0/0      SPA-5X1GE-V2        ok                    00:03:23
 0/1      SPA-2XT3/E3         ok                    00:03:18
R0        ASR1000-RP1         ok, active            00:04:39
F0        ASR1000-ESP10       ok, active            00:04:39
P0        ASR1004-PWR-AC      ok                    00:03:52
P1        ASR1004-PWR-AC      ok                    00:03:52
Slot      CPLD Version        Firmware Version
--------- ------------------- ----------------------------------------
0         07091401            12.2(33r)XN2
R0        07062111            12.2(33r)XN2
F0        07051680            12.2(33r)XN2
```

The **show redundancy states** command output shows that the redundancy state is nonredundant:

```
Router# show redundancy states
       my state = 13 -ACTIVE
     peer state = 1  -DISABLED
           Mode = Simplex
        Unit ID = 48
Redundancy Mode (Operational) = Non-redundant
Redundancy Mode (Configured)  = Non-redundant
Redundancy State              = Non Redundant
     Maintenance Mode = Disabled
```

```
    Manual Swact = disabled (system is simplex (no peer unit))
 Communications = Down      Reason: Simplex mode
   client count = 66
 client_notification_TMR = 30000 milliseconds
           RF debug mask = 0x0
```

SSO is configured:

```
Router# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)# redundancy
Router(config-red)# mode sso
*May 27 19:43:43.539: %CMRP-6-DUAL_IOS_REBOOT_REQUIRED: R0/0: cmand:  Configuration must
be saved and the chassis must be rebooted for IOS redundancy changes to take effect
Router(config-red)# exit
Router(config)# exit
Router#show
*May 27 19:44:04.173: %SYS-5-CONFIG_I: Configured from console by user on console
```

The **show redundancy states** command output now indicates that SSO is configured but not operational:

```
Router# show redundancy states
       my state = 13 -ACTIVE
     peer state = 1  -DISABLED
           Mode = Simplex
         Unit ID = 48
Redundancy Mode (Operational) = Non-redundant
Redundancy Mode (Configured)  = sso
Redundancy State              = Non Redundant
     Maintenance Mode = Disabled
    Manual Swact = disabled (system is simplex (no peer unit))
 Communications = Down      Reason: Simplex mode
   client count = 66
 client_notification_TMR = 30000 milliseconds
           RF debug mask = 0x0
```

The **show platform** command output continues to show a second IOS process is still not running:

```
Router# show platform
Chassis type: ASR1004
Slot      Type                State                 Insert time (ago)
--------- ------------------- --------------------- -----------------
0         ASR1000-SIP10       ok                    00:05:53
 0/0      SPA-5X1GE-V2        ok                    00:04:37
 0/1      SPA-2XT3/E3         ok                    00:04:32
R0        ASR1000-RP1         ok, active            00:05:53
F0        ASR1000-ESP10       ok, active            00:05:53
P0        ASR1004-PWR-AC      ok                    00:05:06
P1        ASR1004-PWR-AC      ok                    00:05:06
Slot      CPLD Version        Firmware Version
--------- ------------------- ---------------------------------------
0         07091401            12.2(33r)XN2
R0        07062111            12.2(33r)XN2
F0        07051680            12.2(33r)XN2
Router# copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
```

The router needs to be reloaded after saving the running configuration to make SSO the operational redundancy mode:

```
Router# reload
Proceed with reload? [confirm]
*May 27 19:45:16.917: %SYS-5-RELOAD: Reload requested by user on console. Reload Reason:
Reload command.
System Bootstrap, Version 12.2(33r)XN2, RELEASE SOFTWARE (fc1)
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Current image running: Boot ROM1
Last reset cause: LocalSoft
ASR1000-RP1 platform with 4194303 Kbytes of main memory
Located packages.conf
Image size 6256 inode num 43971, bks cnt 2 blk size 8*512
#
Located asr1000rp1-rpbase.02.01.00.122-33.XNA.pkg
Image size 22294732 inode num 43974, bks cnt 5444 blk size 8*512
################################################################################################################################
Boot image size = 22294732 (0x15430cc) bytes
Using midplane macaddr
Package header rev 0 structure detected
Calculating SHA-1 hash...done
validate_package: SHA-1 hash:
        calculated 4ad33773:e1cb7492:db502416:4ad586f2:7c4d9701
        expected   4ad33773:e1cb7492:db502416:4ad586f2:7c4d9701
Image validated
PPC/IOS XE loader version: 0.0.3
loaded at:     00800000 01D45004
zimage at:     00807673 009B92D6
initrd at:     009BA000 01041CC9
isord at:      01042000 01D42800
avail ram:     00400000 00800000
Kernel load:
Uncompressing image... dst: 00000000 lim: 00400000 start: 00807673 size: 001B1C63...done.
Now booting the IOS XE kernel
%IOSXEBOOT-4-BOOT_SRC: (rp/0): Non-HD Boot
%IOSXEBOOT-4-BOOT_PARAMETER: (rp/0): Booting with custom BOOT_PARAM setting
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If you require further assistance please contact us by sending email to
export@cisco.com.
cisco ASR1004 (RP1) processor with 752227K/6147K bytes of memory.
5 Gigabit Ethernet interfaces
32768K bytes of non-volatile configuration memory.
4194304K bytes of physical memory.
937983K bytes of eUSB flash at bootflash:.
39004543K bytes of SATA hard disk at harddisk:.
253424K bytes of USB flash at usb0:.
Press RETURN to get started!
<some output omitted for brevity>
User Access Verification
Username: user
Password:
Router> enable
Password:
```

The **show platform** command output now indicates a second IOS process is active on RP 0:

```
Router# show platform
Chassis type: ASR1004
Slot      Type                State                 Insert time (ago)
--------- ------------------- --------------------- -----------------
0         ASR1000-SIP10       ok                    00:29:34
 0/0      SPA-5X1GE-V2        ok                    00:28:13
 0/1      SPA-2XT3/E3         ok                    00:28:18
R0        ASR1000-RP1         ok                    00:29:34       R0/0
      ok, active            00:29:34       R0/1                         ok, standby
    00:27:49      F0        ASR1000-ESP10       ok, active            00:29:34
P0        ASR1004-PWR-AC      ok                    00:28:47
P1        ASR1004-PWR-AC      ok                    00:28:47
Slot      CPLD Version        Firmware Version
--------- ------------------- ----------------------------------------
0         07091401            12.2(33r)XN2
R0        07062111            12.2(33r)XN2
F0        07051680            12.2(33r)XN2
```

The **show redundancy states** command shows SSO as the operational redundancy mode:

```
Router# show redundancy states
       my state = 13 -ACTIVE
     peer state = 8  -STANDBY HOT
           Mode = Duplex
        Unit ID = 48
Redundancy Mode (Operational) = sso
Redundancy Mode (Configured)  = sso
Redundancy State              = sso
     Maintenance Mode = Disabled
    Manual Swact = enabled
 Communications = Up
   client count = 66
 client_notification_TMR = 30000 milliseconds
           RF debug mask = 0x0
```

ISSU—Consolidated Package Upgrade

In the following example, ISSU is used to upgrade two RPs in the same Cisco ASR 1000 Series Router to consolidated packages. The RPs are being upgraded from Cisco IOS XE Release 2.1.0, which uses Cisco IOS Release 12.2(33)XNA, to Cisco IOS XE Release 2.1.1, which uses Cisco IOS Release 12.2(33)XNA1.

The example starts with the user logged into RP 0, the active RP.

```
Router# show version


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software.
ROM: IOS-XE ROMMON
 Router uptime is 2 weeks, 2 hours, 54 minutes
Uptime for this control processor is 1 hour, 7 minutes
System returned to ROM by reload at 15:24:15 DST Mon Jul 21 2008
System image file is bootflash:asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.bin
Last reload reason: redundancy force-switchover
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cisco ASR1006 (RP1) processor with 1772131K/6147K bytes of memory.
8 FastEthernet interfaces
5 Gigabit Ethernet interfaces
8 Serial interfaces
8 Channelized T1 ports
2 Packet over SONET interfaces
2 Channelized T3 ports
32768K bytes of non-volatile configuration memory.
4194304K bytes of physical memory.
921599K bytes of eUSB flash at bootflash:.
39004543K bytes of SATA hard disk at harddisk:.
Configuration register is 0x2102
Router# dir bootflash:
Directory of bootflash:/
   11  drwx       16384   Dec 4 2007 04:32:46 -08:00  lost+found
86401  drwx        4096   Dec 4 2007 06:06:24 -08:00  .ssh
14401  drwx        4096   Dec 4 2007 06:06:36 -08:00  .rollback_timer
```

```
28801  drwx        4096  Jul 21 2008 15:29:25 -07:00  .prst_sync
43201  drwx        4096   Dec 4 2007 04:34:45 -08:00  .installer
   12  -rw-   208904396  May 28 2008 16:17:34 -07:00
asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.bin
13 -rw-        7516   Jul 2 2008 15:01:39 -07:00  startup-config
   14 -rw-       45977   Apr 9 2008 16:48:46 -07:00  target_support_output.tgz.tgz
928862208 bytes total (76644352 bytes free)
Router# dir stby-bootflash:
Directory of stby-bootflash:/
   11  drwx       16384  Dec 13 2004 03:45:47 -08:00  lost+found
87937  drwx        4096  Jul 17 2008 16:43:34 -07:00  .rollback_timer
14657  drwx        4096  Jul 17 2008 16:43:34 -07:00  .installer
29313  drwx        4096  Dec 13 2004 03:53:00 -08:00  .ssh
   12  -rw-    33554432  Dec 13 2004 03:53:49 -08:00  nvram_00100
   13  -rw-   208904396   Jun 5 2008 20:12:53 -07:00
asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.bin
58625  drwx        4096  Jul 21 2008 15:32:59 -07:00  .prst_sync
945377280 bytes total (276652032 bytes free)
Router# copy tftp bootflash:
Address or name of remote host []? 198.51.100.81

Source filename []? /auto/tftp-users/user/asr1000rp1-adventerprisek9.02.01.01.122-33.XNA1.bin


Destination filename [asr1000rp1-adventerprisek9.02.01.01.122-33.XNA1.bin]?
Accessing
tftp://198.51.100.81//auto/tftp-users/user/asr1000rp1-adventerprisek9.02.01.01.122-33.XNA1.bin...
Loading /auto/tftp-users/user/asr1000rp1-adventerprisek9.02.01.01.122-33.XNA1.bin from
198.51.100.81 (via GigabitEthernet0):
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
[OK - 209227980 bytes]
209227980 bytes copied in 329.215 secs (635536 bytes/sec)
Router# copy bootflash:asr1000rp1-adventerprisek9.02.01.01.122-33.XNA1.bin stby-bootflash:

Destination filename [asr1000rp1-adventerprisek9.02.01.01.122-33.XNA1.bin]?
Copy in progress...CCCCCCCC<output removed for brevity>
209227980 bytes copied in 434.790 secs (481216 bytes/sec)
Router# dir bootflash:
Directory of bootflash:/
   11  drwx       16384   Dec 4 2007 04:32:46 -08:00  lost+found
86401  drwx        4096   Dec 4 2007 06:06:24 -08:00  .ssh
14401  drwx        4096   Dec 4 2007 06:06:36 -08:00  .rollback_timer
28801  drwx        4096  Jul 21 2008 15:29:25 -07:00  .prst_sync
43201  drwx        4096   Dec 4 2007 04:34:45 -08:00  .installer
   12  -rw-   208904396  May 28 2008 16:17:34 -07:00
asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.bin
   15  -rw-        7516   Jul 2 2008 15:01:39 -07:00  startup-config
   13  -rw-       45977   Apr 9 2008 16:48:46 -07:00  target_support_output.tgz.tgz
   16  -rw-   209227980  Jul 17 2008 16:06:58 -07:00
asr1000rp1-adventerprisek9.02.01.01.122-33.XNA1.bin
928862208 bytes total (76644352 bytes free)
Router# dir stby-bootflash:
Directory of stby-bootflash:/
   11  drwx       16384  Dec 13 2004 03:45:47 -08:00  lost+found
87937  drwx        4096  Jul 17 2008 16:43:34 -07:00  .rollback_timer
14657  drwx        4096  Jul 17 2008 16:43:34 -07:00  .installer
29313  drwx        4096  Dec 13 2004 03:53:00 -08:00  .ssh
   12  -rw-    33554432  Dec 13 2004 03:53:49 -08:00  nvram_00100
   13  -rw-   208904396   Jun 5 2008 20:12:53 -07:00
asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.bin
58625  drwx        4096  Jul 21 2008 15:32:59 -07:00  .prst_sync
   14  -rw-   209227980  Jul 17 2008 16:16:07 -07:00
asr1000rp1-adventerprisek9.02.01.01.122-33.XNA1.bin
945377280 bytes total (276652032 bytes free)
```

```
Router# issu loadversion rp 1 file
stby-bootflash:asr1000rp1-adventerprisek9.02.01.01.122-33.XNA1.bin

--- Starting installation state synchronization ---
Finished installation state synchronization
--- Starting file path checking ---
Finished file path checking
--- Starting system installation readiness checking ---
Finished system installation readiness checking
--- Starting installation changes ---
Setting up image to boot on next reset
Starting automatic rollback timer
Finished installation changes
SUCCESS: Software will now load.
Router#
*Jul 21 23:34:27.206: %ASR1000_OIR-6-OFFLINECARD: Card (rp) offline in slot R1
*Jul 21 23:34:27.271: %REDUNDANCY-3-STANDBY_LOST: Standby processor fault (PEER_NOT_PRESENT)
*Jul 21 23:34:27.271: %REDUNDANCY-3-STANDBY_LOST: Standby processor fault (PEER_DOWN)
*Jul 21 23:34:27.271: %REDUNDANCY-3-STANDBY_LOST: Standby processor fault
(PEER_REDUNDANCY_STATE_CHANGE)
*Jul 21 23:37:05.528: %ASR1000_OIR-6-ONLINECARD: Card (rp) online in slot R1
*Jul 21 23:37:25.480: %REDUNDANCY-5-PEER_MONITOR_EVENT: Active detected a standby insertion
 (raw-event=PEER_FOUND(4))
*Jul 21 23:37:25.480: %REDUNDANCY-5-PEER_MONITOR_EVENT: Active detected a standby insertion
 (raw-event=PEER_REDUNDANCY_STATE_CHANGE(5))
Finished installation state synchronization
*Jul 21 23:37:26.349: %REDUNDANCY-3-IPC: IOS versions do not match.
*Jul 21 23:38:47.172: %HA_CONFIG_SYNC-6-BULK_CFGSYNC_SUCCEED: Bulk Sync succeeded
*Jul 21 23:38:47.173: %RF-5-RF_TERMINAL_STATE: Terminal state reached for (SSO)
Router# issu runversion
--- Starting installation state synchronization ---
Finished installation state synchronization
Initiating active RP failover
SUCCESS: Standby RP will now become active
Router#
System Bootstrap, Version 12.2(33r)XN2, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 2008 by cisco Systems, Inc.
<additional output removed for brevity>
*Jul 21 23:43:31.970: %SYS-5-RESTART: System restarted --
Cisco IOS Software, IOS-XE Software (PPC_LINUX_IOSD-ADVENTERPRISEK9-M), Version 12.2(33)XNA,
 RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2008 by Cisco Systems, Inc.
Compiled Thu 01-May-08 00:29 by mcpre
*Jul 21 23:43:31.978: %SSH-5-ENABLED: SSH 1.99 has been enabled
*Jul 21 23:43:35.196: Relay: standby progression done
*Jul 21 23:43:35.197: %PLATFORM-6-RF_PROG_SUCCESS: RF state STANDBY HOT
```

At this point of the process, the user has to log onto RP1, which started the upgrade as the standby RP but is the active RP after the switchover.

The following commands are entered from RP1:

```
Router# issu acceptversion
Cancelling rollback timer
SUCCESS: Rollback timer cancelled
Router# issu commitversion
--- Starting installation changes ---
Cancelling rollback timer
Saving image changes
Finished installation changes
Building configuration...
```

```
[OK]
SUCCESS: version committed: bootflash:asr1000rp1-adventerprisek9.02.01.01.122-33.XNA1.bin
Router# show version
Cisco IOS Software, IOS-XE Software (PPC_LINUX_IOSD-ADVENTERPRISEK9-M), Version 12.2(33)XNA1,
 RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2008 by Cisco Systems, Inc.
Compiled Tue 08-Jul-08 14:40 by mcpre
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with ABSOLUTELY NO WARRANTY.  You can redistribute and/or modify such
GPL code under the terms of GPL Version 2.0.  For more details, see the
documentation or License Notice file accompanying the IOS-XE software,
or the applicable URL provided on the flyer accompanying the IOS-XE
software.
ROM: IOS-XE ROMMON
 Router uptime is 2 weeks, 3 hours, 8 minutes
Uptime for this control processor is 11 minutes
System returned to ROM by reload at 15:29:24 DST Mon Jul 21 2008
System image file is bootflash:asr1000rp1-adventerprisek9.02.01.01.122-33.XNA1.bin
Last reload reason: EHSA standby down
This product contains cryptographic features and is subject to United
States and local country laws governing import, export, transfer and
use. Delivery of Cisco cryptographic products does not imply
third-party authority to import, export, distribute or use encryption.
Importers, exporters, distributors and users are responsible for
compliance with U.S. and local country laws. By using this product you
agree to comply with applicable laws and regulations. If you are unable
to comply with U.S. and local laws, return this product immediately.
A summary of U.S. laws governing Cisco cryptographic products may be found at:
http://www.cisco.com/wwl/export/crypto/tool/stqrg.html
If you require further assistance please contact us by sending email to
export@cisco.com.
cisco ASR1006 (RP1) processor with 1772046K/6147K bytes of memory.
8 FastEthernet interfaces
5 Gigabit Ethernet interfaces
8 Serial interfaces
8 Channelized T1 ports
2 Packet over SONET interfaces
2 Channelized T3 ports
32768K bytes of non-volatile configuration memory.
4194304K bytes of physical memory.
937983K bytes of eUSB flash at bootflash:.
39004543K bytes of SATA hard disk at harddisk:.
253424K bytes of USB flash at usb0:.
Configuration register is 0x2102
Router# show running-config | include boot
boot-start-marker
boot system bootflash:asr1000rp1-adventerprisek9.02.01.01.122-33.XNA1.bin
boot system bootflash:asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.bin
boot-end-marker
Router#
```

At this point of the procedure, the upgrade of RP1 is complete.

The following procedure uses the same steps to upgrade RP0. The user is still on RP1 when this process begins:

```
Router# show platform

Chassis type: ASR1006
Slot      Type                State                 Insert time (ago)
```

```
--------- ------------------- --------------------- -----------------
0         ASR1000-SIP10       ok                    00:16:10
 0/0      SPA-5X1GE-V2        ok                    00:10:50
 0/1      SPA-8X1FE-TX-V2     ok                    00:10:46
 0/2      SPA-2XCT3/DS0       ok                    00:10:42
1         ASR1000-SIP10       ok                    00:16:10
 1/0      SPA-2XOC3-POS       ok                    00:10:49
 1/1      SPA-8XCHT1/E1       ok                    00:10:45
 1/2      SPA-2XT3/E3         ok                    00:10:41
R0        ASR1000-RP1         ok, standby           00:16:10
R1        ASR1000-RP1         ok, active            00:16:10
F0        ASR1000-ESP10       ok, standby           00:16:10
F1        ASR1000-ESP10       ok, active            00:16:10
P0        ASR1006-PWR-AC      ok                    00:15:07
P1        ASR1006-FAN         ok                    00:15:07
Slot      CPLD Version        Firmware Version
--------- ------------------- ---------------------------------------
0         06120701            12.2(33r)XN2
1         06120701            12.2(33r)XN2
R0        07082312            12.2(33r)XN2
R1        07062111            12.2(33r)XN2
F0        07051680            12.2(33r)XN2
F1        07051680            12.2(33r)XN2
Router# issu loadversion rp 0 file
stby-bootflash:asr1000rp1-adventerprisek9.02.01.01.122-33.XNA1.bin
--- Starting installation state synchronization ---
Finished installation state synchronization
--- Starting file path checking ---
Finished file path checking
--- Starting system installation readiness checking ---
Finished system installation readiness checking
--- Starting installation changes ---
Setting up image to boot on next reset
Starting automatic rollback timer
Finished installation changes
SUCCESS: Software will now load.
Router#
*Jul 21 23:53:41.218: %ASR1000_OIR-6-OFFLINECARD: Card (rp) offline in slot R0
*Jul 21 23:53:41.256: %REDUNDANCY-3-STANDBY_LOST: Standby processor fault (PEER_NOT_PRESENT)
*Jul 21 23:53:41.256: %REDUNDANCY-3-STANDBY_LOST: Standby processor fault (PEER_DOWN)
*Jul 21 23:53:41.256: %REDUNDANCY-3-STANDBY_LOST: Standby processor fault
(PEER_REDUNDANCY_STATE_CHANGE)
*Jul 21 23:53:42.423: %IP-4-DUPADDR: Duplicate address 198.51.100.155 on GigabitEthernet0,
 sourced by 001a.3046.e3ff
*Jul 21 23:56:19.885: %ASR1000_OIR-6-ONLINECARD: Card (rp) online in slot R0
*Jul 21 23:56:39.324: %REDUNDANCY-5-PEER_MONITOR_EVENT: Active detected a standby insertion
 (raw-event=PEER_FOUND(4))
*Jul 21 23:56:39.324: %REDUNDANCY-5-PEER_MONITOR_EVENT: Active detected a standby insertion
 (raw-event=PEER_REDUNDANCY_STATE_CHANGE(5))
*Jul 21 23:58:03.660: %HA_CONFIG_SYNC-6-BULK_CFGSYNC_SUCCEED: Bulk Sync succeeded
*Jul 21 23:58:03.661: %RF-5-RF_TERMINAL_STATE: Terminal state reached for (SSO)
Router# issu runversion
--- Starting installation state synchronization ---
Finished installation state synchronization
Initiating active RP failover
SUCCESS: Standby RP will now become active
Router#
System Bootstrap, Version 12.2(33r)XN2, RELEASE SOFTWARE (fc1)
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<Output removed for brevity>
```

After the switchover, the user must log onto RP0.

The remaining commands are all entered from RP0:

```
Router# issu acceptversion
Cancelling rollback timer
SUCCESS: Rollback timer cancelled
Router# issu commitversion
*Jul 22 00:10:45.488: %HA_CONFIG_SYNC-6-BULK_CFGSYNC_SUCCEED: Bulk Sync succeeded
*Jul 22 00:10:45.489: %RF-5-RF_TERMINAL_STATE: Terminal state reached for (SSO)
--- Starting installation changes ---
Cancelling rollback timer
Saving image changes
Finished installation changes
Building configuration...
[OK]
SUCCESS: version committed: bootflash:asr1000rp1-adventerprisek9.02.01.01.122-33.XNA1.bin
Router# show version
Cisco IOS Software, IOS-XE Software (PPC_LINUX_IOSD-ADVENTERPRISEK9-M), Version 12.2(33)XNA1,
 RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
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GPL code under the terms of GPL Version 2.0.  For more details, see the
documentation or License Notice file accompanying the IOS-XE software,
or the applicable URL provided on the flyer accompanying the IOS-XE
software.
ROM: IOS-XE ROMMON
 Router uptime is 2 weeks, 3 hours, 33 minutes
Uptime for this control processor is 16 minutes
System returned to ROM by reload at 15:24:15 DST Mon Jul 21 2008
System image file is bootflash:asr1000rp1-adventerprisek9.02.01.01.122-33.XNA1.bin
Last reload reason: EHSA standby down
This product contains cryptographic features and is subject to United
States and local country laws governing import, export, transfer and
use. Delivery of Cisco cryptographic products does not imply
third-party authority to import, export, distribute or use encryption.
Importers, exporters, distributors and users are responsible for
compliance with U.S. and local country laws. By using this product you
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to comply with U.S. and local laws, return this product immediately.
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http://www.cisco.com/wwl/export/crypto/tool/stqrg.html
If you require further assistance please contact us by sending email to
export@cisco.com.
cisco ASR1006 (RP1) processor with 1772046K/6147K bytes of memory.
8 FastEthernet interfaces
5 Gigabit Ethernet interfaces
8 Serial interfaces
8 Channelized T1 ports
2 Packet over SONET interfaces
2 Channelized T3 ports
32768K bytes of non-volatile configuration memory.
4194304K bytes of physical memory.
921599K bytes of eUSB flash at bootflash:.
39004543K bytes of SATA hard disk at harddisk:.
Configuration register is 0x2102
Router# show running-config | include boot
boot-start-marker
boot system bootflash:asr1000rp1-adventerprisek9.02.01.01.122-33.XNA1.bin
```

```
boot system bootflash:asr1000rp1-adventerprisek9.02.01.00.122-33.XNA.bin
boot-end-marker
Router#
```