ASR9K Pre-staged Tar File 方式版本升级步骤

（适用于 A9K-RSP-4G/8G）

2018 年 1 月

Pre-Staged Tar File 升级方案说明

此方案是通过 FTP 将从思科 AS LAB 打包做好的系统文件 copy 到 ASR9K 引擎的 DISK1 上，使用 tar 命令在引擎上解压，设备重启后通过修改 ROMMON 启动参数后直接可以从启动文件启动系统，相当于提前做好系统盘，升级时间较短，启动时间约 15 分钟，避免了 Turboboot 方式的 mini pie/install pie/install SMU 等工作。

*****此升级方案适用于 ASR9K-RSP-4G/8G 设备，ASR9K-RSP-440 设备请忽略*****

软件及工具需求

1. Windows电脑一台，需安装好TFTP/FTP server、SecurtCRT、对比软件等升级所需软件。
2. 配备Console线，RJ45网线等专用线缆。
3. 用于此方案的TAR启动文件（从FTP服务器上获取）。
4. 安装板卡使用的螺丝刀等工具（自行准备）。
5. 调测线路使用的测试仪等仪器（自行准备）。

升级前准备工作

一、 备份

（1）配置备份

configure 模式和 admin-config 模式下的配置文件都 copy 到 compactflash 里，升级之后直接 load compactflash:xxxx 即可。

```
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B#copy running-config
compactflash:20150211-config
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B(admin)#copy running-config
compactflash:20150211-admin-config

RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B#dir compactflash:
Fri Feb 27 21:21:03.324 GMT

Directory of compactflash:

65568      -rw-  9216        Sun Jan  2 07:55:59 2000   Test
3          drwx  16384       Sun Jan  2 15:47:54 2000   LOST.DIR
65920      -rw-  49624       Wed Feb 11 18:47:35 2015
20150211-config
66016      -rw-  179         Wed Feb 11 18:48:27 2015
20150211-admin-config

1049427968 bytes total (1049296896 bytes free)
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B#
```

（2）设备状态备份

收集设备运行状态，便于升级前后进行设备、业务状态对比。

```
ter len 0\r
show install active sum\r
show install commit sum\r
admin\r
show platform\r
show env fan\r
show env power-supply\r
show env temperatures\r
exit\r
show redundancy\r
dir disk0:\r
show isis nei\r
show bgp sum\r
show l2vpn xconnect\r
show l2vpn bridge-domain brief\r
show mpls int\r
show pim neighbor\r
show mpls ldp nei\r
show int br\r
show int des\r
show bgp table vpnv4 un\r
show bgp table vpnv6 un\r
show ipv4 vrf all interface brief\r
show ipv6 vrf all interface brief\r
show bfd session\r
show arp\r
admin\r
show run\r
exit\r
show run\r
show inter\r
show log\r
```

（3）License 备份

ASR9K 升级完成后，需要重新安装 License。此种方法简单，不需安装，直接 Backup/Restore 即可。

```
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B(admin)#license backup
compactflash:20150210-license-Backup
Tue Feb 10 15:44:40.106 GMT

License command "license backup
compactflash:20150210-license-Backup" completed successfully.
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B(admin)#exit
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B#dir compactflash:
Tue Feb 10 15:44:53.675 GMT

Directory of compactflash:

65568      -rw-  9216       Sat Jan  1 23:55:59 2000  Test
3          drwx  16384      Sun Jan  2 15:47:54 2000  LOST.DIR
```

```
65728       -rw-  5066       Tue Feb 10 15:44:40 2015
20150210-license-Backup
65920       -rw-  49624      Wed Feb 11 18:47:35 2015  20150211-config
66016       -rw-  179        Wed Feb 11 18:48:27 2015
20150211-admin-config


1049427968 bytes total (1049378816 bytes free)
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B#
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B(admin)#show license backup
compactflash:20150210-license-Backup
Tue Feb 10 15:45:19.950 GMT

Local Chassis UDI Information:
S/N        : FOX1537G87A
Operation ID:   1

FeatureID: A9K-AIP-LIC-E (Slot based, Permanent)
Total licenses  2
Pool: Owner  2
   Allocated Node(s):
     0/6/CPU0 1 [Owner]

RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B(admin)#
```

二、 格式化 DISK 1

格式化主引擎上的 DISK 1。

```
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B#format disk1:
Wed Feb 11 22:52:14.828 GMT

Format will destroy all data on "disk1:". Continue? [confirm]

Device partition disk1: is now formated and is available for use.
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B#
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B#dir disk1:
Wed Feb 11 22:52:26.895 GMT

Directory of disk1:

6298        -r--  401404      Wed Feb 11 22:52:18 2015  .bitmap
17          -r--  8192        Wed Feb 11 22:52:18 2015  .inodes
18          -rw-  0           Wed Feb 11 22:52:18 2015  .boot
19          -rw-  0           Wed Feb 11 22:52:18 2015  .altboot
6303        drwx 4096         Wed Feb 11 22:52:19 2015  LOST.DIR
6304        -r--  0           Wed Feb 11 22:52:18 2015  .longfilenames

1644150784 bytes total (1643723776 bytes free)
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B#
```

三、 复制 TAR 文件到 harddisk:

注意：执行复制和解压 tar 文件的过程中均不能中断 session，可通过调整 timeout 参数防止 session 中断：

```
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B(config)#Line default
exec-timeout 35000
```

```
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B(config)#Line default
session-timeout 35000
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B(config)#Line console
exec-timeout 35000
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B(config)#Line console
session-timeout 35000
```

拷贝前需在设备上执行 ftp client source-interface loopback 0 来开启设备的 ftp client 功能。复制完成后注意检查文件大小。

```
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B#copy
ftp://ftph:QaZwSxQWE123@59.43.53.39/OS/CISCO/ASR9K/tar/asr9k-iosxr
-5.2.4-sp1-rsp4g8g.tar harddisk:
Wed Feb 11 22:52:58.279 GMT
Destination filename
[/harddisk:/asr9k-iosxr-5.2.4-sp1-rsp4g8g.tar]?
Accessing
ftp://ftph:*@59.43.53.39/OS/CISCO/ASR9K/tar/asr9k-iosxr-5.2.4-sp1-
rsp4g8g.tar
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
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C
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
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C
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C
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
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C
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
C
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
1210498560 bytes copied in   1029 sec (  1176139)bytes/sec
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B#
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B#dir harddisk:
Wed Nov 25 16:30:04.108 GMT

Directory of harddisk:

282583     -rwx  95688      Sun Nov 22 07:05:10 2015  config20151122
282584     -rwx  95688      Mon Nov 23 07:05:30 2015  config20151123
282585     -rwx  95688      Tue Nov 24 07:05:28 2015  config20151124
282586     -rwx  95688      Wed Nov 25 07:05:21 2015  config20151125
282194     -rwx  1210498560  Wed Nov 25 16:26:21 2015
asr9k-iosxr-5.2.4-sp1-rsp4g8g.tar

71422705664 bytes total (69849301504 bytes free)
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B#
```

四、 解压 TAR 文件到 DISK 1

解压：建议采用 telnet 登陆后执行此解压操作，tar 执行时间约 25 分钟。若使用 Console 解压时间太长，解压后注意文件大小。

```
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B#run
Wed Nov 25 16:32:37.087 GMT
# pwd
/disk0a:/usr
# cd /disk1:
# pws
ksh: pws: not found
# pwd
/disk1:
# tar -xvf /harddisk:/asr9k-iosxr-5.2.4-sp1-rsp4g8g.tar
Tar: blocksize = 20
x aaa/  admin  /  root admin%%, 345 bytes, 1 tape blocks
x
asr9K-doc-supp-5.2.4/0x100000/man/10-Gigabit-Ethernet-WAN-PHY-Cont
roller.info, 6007 bytes, 12 tape blocks
x asr9K-doc-supp-5.2.4/0x100000/man/BNG-AAA.info, 14402 bytes, 29
tape blocks
x asr9K-doc-supp-5.2.4/0x100000/man/Watchdog.info, 13494 bytes, 27
tape blocks
x asr9K-doc-supp-5.2.4/0x100000/man/BNG-DHCP.info, 17212 bytes, 34
tape blocks
x asr9K-doc-supp-5.2.4/0x100000/man/BNG-PPP.info, 9668 bytes, 19 tape
blocks
x asr9K-doc-supp-5.2.4/0x100000/man/Boot.info, 16661 bytes, 33 tape
blocks
x asr9K-doc-supp-5.2.4/0x100000/man/Border-Gateway-Protocol.info,
185692 bytes, 363 tape blocks
x
asr9K-doc-supp-5.2.4/0x100000/man/Bulk-Content-Downloader-BCDL.inf
o, 3852 bytes, 8 tape blocks
x asr9K-doc-supp-5.2.4/0x100000/man/CDP.info, 9043 bytes, 18 tape
blocks
x asr9K-doc-supp-5.2.4/0x100000/man/Call-Home.info, 10455 bytes, 21
tape blocks
x asr9K-doc-supp-5.2.4/0x100000/man/Carrier-Grade-NAT.info, 60872
bytes, 119 tape blocks
x asr9K-doc-supp-5.2.4/0x100000/man/Cisco-Express-Forwarding.info,
33464 bytes, 66 tape blocks
x asr9K-doc-supp-5.2.4/0x100000/man/ANCP.info, 14889 bytes, 30 tape
blocks
x asr9K-doc-supp-5.2.4/0x100000/man/Clock.info, 5997 bytes, 12 tape
blocks
x asr9K-doc-supp-5.2.4/0x100000/man/Configuration-Management.info,
43166 bytes, 85 tape blocks
#
# exit
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B#dir disk1:
Wed Nov 25 17:53:20.751 GMT

Directory of disk1:

6298        -r--  401404     Wed Nov 25 17:05:31 2015  .bitmap
17          -r--  647168     Wed Nov 25 17:05:31 2015  .inodes
```

```
18          -rw-  0          Wed Nov 25 17:05:31 2015  .boot
19          -rw-  0          Wed Nov 25 17:05:31 2015  .altboot
6303        drwx  4096       Wed Nov 25 17:05:32 2015  LOST.DIR
6304        -r--  32768      Wed Nov 25 17:05:31 2015  .longfilenames
6305        drwx  4096       Wed Nov 25 17:12:01 2015  aaa
6361        drwx  4096       Wed Nov 25 17:12:06 2015
asr9K-doc-supp-5.2.4
6446        drwx  4096       Wed Nov 25 17:12:06 2015
asr9k-adv-video-supp-5.2.4
6308        drwx  4096       Wed Nov 25 17:13:23 2015  asr9k-base-5.2.4
6309        drwx  4096       Wed Nov 25 17:13:24 2015  asr9k-bng-5.2.4
673281      drwx  4096       Wed Nov 25 17:13:24 2015
asr9k-bng-px-5.2.4
6311        drwx  4096       Wed Nov 25 17:13:26 2015  asr9k-ce-5.2.4
6312        drwx  4096       Wed Nov 25 17:13:43 2015  asr9k-cpp-5.2.4
897329      drwx  4096       Wed Nov 25 17:13:44 2015
asr9k-diags-supp-5.2.4
897338      drwx  4096       Wed Nov 25 17:13:44 2015
asr9k-doc-px-5.2.4
6315        drwx  4096       Wed Nov 25 17:18:06 2015  asr9k-fpd-5.2.4
897457      drwx  4096       Wed Nov 25 17:18:06 2015
asr9k-fpd-px-5.2.4
897458      drwx  4096       Wed Nov 25 17:19:12 2015
asr9k-fwding-5.2.4
6013928     drwx  4096       Wed Nov 25 17:19:17 2015
asr9k-fwding-5.2.4.sp1-1.0.0
6013982     drwx  4096       Wed Nov 25 17:19:17 2015
asr9k-k9sec-px-5.2.4
6013983     drwx  4096       Wed Nov 25 17:19:19 2015
asr9k-k9sec-supp-5.2.4
6013990     drwx  4096       Wed Nov 25 17:19:19 2015
asr9k-mcast-px-5.2.4
6013991     drwx  4096       Wed Nov 25 17:19:20 2015
asr9k-mcast-supp-5.2.4
6258290     drwx  4096       Wed Nov 25 17:19:21 2015
asr9k-mgbl-px-5.2.4
6258291     drwx  4096       Wed Nov 25 17:19:25 2015
asr9k-mgbl-supp-5.2.4
6258299     drwx  4096       Wed Nov 25 17:19:25 2015
asr9k-mini-px-5.2.4
6258300     drwx  4096       Wed Nov 25 17:19:25 2015
asr9k-mpls-px-5.2.4
6258301     drwx  4096       Wed Nov 25 17:19:58 2015
asr9k-os-mbi-5.2.4
6258305     drwx  4096       Wed Nov 25 17:19:58 2015
asr9k-px-5.2.4.sp1-1.0.0
6258306     drwx  4096       Wed Nov 25 17:19:59 2015
asr9k-scfclient-5.2.4
6258309     drwx  4096       Wed Nov 25 17:20:02 2015
asr9k-service-supp-5.2.4
6258363     drwx  4096       Wed Nov 25 17:28:14 2015
asr9k-services-infra-5.2.4
6258368     drwx  4096       Wed Nov 25 17:29:13 2015
asr9k-services-infra-5.2.4.sp1-1.0.0
6258371     drwx  4096       Wed Nov 25 17:29:13 2015
asr9k-services-px-5.2.4
6258372     drwx  4096       Wed Nov 25 17:29:13 2015
asr9k-video-px-5.2.4
```

```
6335       drwx  4096       Wed Nov 25 17:29:13 2015  cepki
6336       drwx  4096       Wed Nov 25 17:29:17 2015  config
6337       drwx  4096       Wed Nov 25 17:29:17 2015  eem rdsfs
6338       drwx  4096       Wed Nov 25 17:29:34 2015  instdb
15937757    drwx  4096       Wed Nov 25 17:29:37 2015
iosxr-adv-video-5.2.4
6340       drwx  4096       Wed Nov 25 17:29:49 2015  iosxr-bng-5.2.4
16035608    drwx  4096       Wed Nov 25 17:29:56 2015
iosxr-bng-5.2.4.sp1-1.0.0
6342       drwx  4096       Wed Nov 25 17:30:09 2015  iosxr-ce-5.2.4
16166208    drwx  4096       Wed Nov 25 17:30:10 2015
iosxr-diags-5.2.4
16166228    drwx  4096       Wed Nov 25 17:32:21 2015
iosxr-fwding-5.2.4
16907606    drwx  4096       Wed Nov 25 17:32:35 2015
iosxr-fwding-5.2.4.sp1-1.0.0
17096672    drwx  4096       Wed Nov 25 17:34:45 2015
iosxr-infra-5.2.4
17835921    drwx  4096       Wed Nov 25 17:34:52 2015
iosxr-infra-5.2.4.sp1-1.0.0
18116239    drwx  4096       Wed Nov 25 17:35:09 2015
iosxr-mcast-5.2.4
6349       drwx  4096       Wed Nov 25 17:35:18 2015  iosxr-mgbl-5.2.4
6350       drwx  4096       Wed Nov 25 17:35:33 2015  iosxr-mpls-5.2.4
18501466    drwx  4096       Wed Nov 25 17:35:37 2015
iosxr-mpls-5.2.4.sp1-1.0.0
18501526    drwx  4096       Wed Nov 25 17:35:59 2015
iosxr-routing-5.2.4
18723134    drwx  4096       Wed Nov 25 17:36:04 2015
iosxr-routing-5.2.4.sp1-1.0.0
18723207    drwx  4096       Wed Nov 25 17:36:12 2015
iosxr-security-5.2.4
18857665    drwx  4096       Wed Nov 25 17:36:18 2015
iosxr-service-5.2.4
6356       drwx  4096       Wed Nov 25 17:36:18 2015  license
6357       drwx  4096       Wed Nov 25 17:36:18 2015  np
6358       drwx  4096       Wed Nov 25 17:36:18 2015  onepk cli rdsfs
6359       -rw-  8141       Tue Sep 29 18:02:16 2015  sam certdb
18886128    -rw-  126        Tue Sep 29 18:02:16 2015  sam crldb
18886129    drwx  4096       Wed Nov 25 17:36:18 2015  sla
18886130    drwx  4096       Wed Nov 25 17:36:18 2015  sm rdsfs
18886131    drwx  4096       Wed Nov 25 17:36:18 2015  snmp
18886132    drwx  4096       Wed Nov 25 17:36:18 2015  var
18886133    drwx  4096       Wed Nov 25 17:36:18 2015
virtual-instance

1644150784 bytes total (435405824 bytes free)
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B#
```

升级步骤

一、 关闭 3G/4G/软交换/DCN 业务端口，通知省公司配合人测试业务是否受影响，若业务正常，则开始升级操作。

二、 拔出备用引擎

此引擎的文件及配置均为升级前信息，一旦主引擎升级失败，可使用此备用引擎做回退。

```
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B#sh platform
Thu Feb 12 00:06:08.008 GMT
Node          Type                  State          Config State
-------------------------------------------------------------------
-----------
0/RSP1/CPU0    A9K-RSP-4G(Active)       IOS XR RUN
PWR,NSHUT,MON
0/0/CPU0       A9K-SIP-700              IOS XR RUN
PWR,NSHUT,MON
0/0/0          SPA-OC192POS-XFP         OK
PWR,NSHUT,MON
0/1/CPU0       A9K-SIP-700              IOS XR RUN
PWR,NSHUT,MON
0/1/0          SPA-OC192POS-XFP         OK
PWR,NSHUT,MON
0/6/CPU0       A9K-40GE-E               IOS XR RUN
PWR,NSHUT,MON
0/7/CPU0       A9K-40GE-E               IOS XR RUN
PWR,NSHUT,MON
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B#
```

三、 格式化 BootFlash

```
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B#dir bootflash:
Thu Feb 12 00:06:36.937 GMT

Directory of bootflash:

13369350   drwx  64         Tue Jan  8 17:26:46 2013  disk0
6881313    -rw-  0          Tue Jan  8 17:27:38 2013  mbi image

44695552 bytes total (23022816 bytes free)
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B#
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B#format bootflash:
Thu Feb 12 00:06:48.549 GMT

Format operation may take a while. Continue? [confirm]

Format will destroy all data on "bootflash:". Continue? [confirm]

Formatting sector 1
bootflash on node0 RSP1 CPU0 formatted successfully.
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B#
```

四、 复制 boot.tar 到 BootFlash

复制后注意文件大小。

```
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B#copy
ftp://ftph:QaZwSxQWE123@59.43.53.39/OS/CISCO/ASR9K/tar/asr9k-5.2.4
-bootflash-rsp4g8g.tar bootflash:
Wed Nov 25 23:48:30.810 GMT
Destination filename
[/bootflash:/asr9k-5.2.4-bootflash-rsp4g8g.tar]?
```

```
Accessing
ftp://ftph:*@59.43.53.39/OS/CISCO/ASR9K/tar/asr9k-5.2.4-bootflash-rsp
4g8g.tar
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
20150272 bytes copied in     49 sec (   409841)bytes/sec
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B#dir bootflash:
Thu Feb 12 00:11:50.234 GMT

Directory of bootflash:

2883586     -rwx  18608640    Thu Feb 12 00:10:11 2015  boot.tar

44695552 bytes total (25905744 bytes free)
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B#
```

五、 解压 boot.tar 到 BootFlash

解压后注意文件大小。

```
RP/0/RSP0/CPU0:HA-ZZ-ZD-S-3.CN2.B#cd bootflash:
RP/0/RSP0/CPU0:HA-ZZ-ZD-S-3.CN2.B#pwd
Wed Nov 25 23:52:05.112 GMT
bootflash:
RP/0/RSP0/CPU0:HA-ZZ-ZD-S-3.CN2.B#run
Wed Nov 25 23:52:22.117 GMT
# ls
asr9k-5.2.4-bootflash-rsp4g8g.tar
# tar -xvf asr9k-5.2.4-bootflash-rsp4g8g.tar
Tar: blocksize = 20
x disk1/asr9k-os-mbi-5.2.4/0x100000/mbiasr9k-rp.vm, 20146648 bytes,
39349 tape blocks
x mbi image, 0 bytes, 0 tape blocks

# exit
RP/0/RSP0/CPU0:HA-ZZ-ZD-S-3.CN2.B#dir
bootflash:disk1/asr9k-os-mbi-5.2.4/0x100000
Wed Nov 25 23:56:23.115 GMT

Directory of bootflash:/disk1/asr9k-os-mbi-5.2.4/0x100000

12058657    -rwx  20146648    Wed Sep 30 22:57:18 2015  mbiasr9k-rp.vm

44695552 bytes total (4015792 bytes free)
RP/0/RSP0/CPU0:HA-ZZ-ZD-S-3.CN2.B#
```

六、 重启设备，进入 rommon 修改 BOOT 参数后，再进行重启

注意：做这一步时需要用 Console 登陆设备并 reload。重启时，注意屏幕上的提示“HIT CTRL-C to abort”，果断按下进入 rommon 模式设置 BOOT 启动项。

```
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B#admin
Thu Feb 12 00:19:51.666 GMT
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B(admin)#reload location all
Thu Feb 12 00:19:56.588 GMT

Preparing system for backup. This may take a few minutes especially
for large configurations.
```

```
       Status report: node0 RSP1 CPU0: START TO BACKUP
       Status report: node0 RSP1 CPU0: BACKUP HAS COMPLETED
SUCCESSFULLY
[Done]
Proceed with reload? [confirm]
RP/0/RSP1/CPU0::This node received reload command. Reloading in 5 secs
……
MBI validation sending request.
HIT CTRL-C to abort
 [CTRL-C]
 MBI Validation aborted
Serial ID: FOX1537G87A
rommon B1 > unset BOOT
rommon B2 > sync
rommon B3 > BOOT=disk1:asr9k-os-mbi-5.2.4/0x100000/mbiasr9k-rp.vm,1;
rommon B4 > sync
rommon B5 > set
PS1=rommon ! >
IOX ADMIN CONFIG FILE=
ACTIVE FCD=1
BSI=0
CLUSTER NO BOOT=
BOOT DEV SEQ CONF=
BOOT DEV SEQ OPER=
BOOT=disk1:asr9k-os-mbi-4.3.4.sp5-1.0.0/0x100000/mbiasr9k-rp.vm,1
?=0
rommon B6 > reset
```

七、 重启后，用默认账户 zyongfu/zyongfu 登陆设备

```
Selecting ROMMON Image... B
DDR in Interleaved mode
POST 1 : PASSED : code 0 : DDR2 Memory Quick Test

CPU Reset Reason = 0x000d
POST 2 : PASSED : code 0 : FPGA Flash Image CRC Checks

Loading Field Programmable Devices:
FPGA 0-B PROGRAMMED  : image: 0xff500028 - 0xff576cca, et: 117ms
FPGA 1-B PROGRAMMED  : image: 0xff400028 - 0xff4d1034, et: 206ms
FPGA 2-B PROGRAMMED  : image: 0xff100028 - 0xff276358, et: 369ms
FPGA 3-B PROGRAMMED  : image: 0xff000028 - 0xff0454a8, et: 69ms

……

Cisco IOS XR Software for the Cisco XR ASR9K, Version 4.3.4
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 This (D)RP Node is not ready or active for login /configuration
Feb 11 16:25:12.031: Install Setup: Booting with committed software
FPD ltrace file name => fpd-agent/fiarsp
FPD ltrace file name => fpd-agent/tempo
RP/0/RSP1/CPU0:Feb 11 16:26:11.417 : [144]: Invalid /bootflash: entry
=> boot.tar
RP/0/RSP1/CPU0:Feb 11 16:26:11.418 : [144]: Do not initiate further
install or mirror operations without removing this invalid /bootflash:
entry
```

```
RP/0/RSP1/CPU0:Feb 11 16:26:44.481 :
licmgr[313]: %LICENSE-LICMGR-3-CHASSIS MISMATCH : License database
and this chassis do not match. If licenses were installed, restore from
a backup or contact Cisco TAC.
FPD ltrace file name => fpd-agent/longbeach
RP/0/RSP1/CPU0:Feb 11 16:27:04.187 :
wdsysmon[456]: %HA-HA WD-4-DISK ALARM : A monitored device alarm set
by  /disk1:
RP/0/RSP1/CPU0:Feb 11 16:27:04.189 :
wdsysmon[456]: %HA-HA WD-4-DISK WARN : A monitored device /disk1: is
above 80% utilization. Current utilization = 92. Please remove unwanted
user files and configuration rollback points.
RP/0/RSP1/CPU0:Feb 11 16:27:04.191 :
wdsysmon[456]: %HA-HA WD-4-DISK WARN : A monitored device /bootflash:
is above 80% utilization. Current utilization = 85. Please remove
unwanted user files and configuration rollback points.


ios con0/RSP1/CPU0 is now available




Press RETURN to get started.

RP/0/RSP1/CPU0:Feb 11 16:27:44.708 :
shelfmgr[403]: %PLATFORM-SHELFMGR-3-MIXED MEMORY POWERED : Node
0/6/CPU0 is powered, system running mixed line card memory mode
RP/0/RSP1/CPU0:Feb 11 16:27:44.708 :
shelfmgr[403]: %PLATFORM-SHELFMGR-3-MIXED MEMORY ALARM : System
enters mixed line card memory mode
RP/0/RSP1/CPU0:Feb 11 16:27:44.821 :
shelfmgr[403]: %PLATFORM-SHELFMGR-3-MIXED MEMORY POWERED : Node
0/7/CPU0 is powered, system running mixed line card memory mode
RP/0/RSP1/CPU0:Feb 11 16:27:44.821 :
shelfmgr[403]: %PLATFORM-SHELFMGR-3-MIXED MEMORY ALARM : System
enters mixed line card memory mode


SYSTEM CONFIGURATION IN PROCESS


The startup configuration for this device is presently loading.
This may take a few minutes. You will be notified upon completion.

Please do not attempt to reconfigure the device until this process is
complete.

User Access Verification

Username:zyongfu
Password:zyongfu
RP/0/RSP1/CPU0:ios#
```

八、 升级 FPD

用 admin upgrade hw-module fpd all location all 命令升级所有需要升级的 FPD，升级完成后请

再次确认都已升级完毕。

升级时间主要取决于设备上的板卡数量、类型以及 FPD 版本，升级完成后需要重启设备。

```
RP/0/RSP1/CPU0:ios#show hw-module fpd location all
Wed Feb 11 16:33:36.971 UTC

=====================================
=========================================
                                  Existing Field Programmable Devices

=========================================
                                        HW                    Current
SW Upg/
Location    Card Type              Version Type Subtype Inst
Version   Dng?
============ ======================== ======= ==== ======= ====
=========== ====
0/RSP1/CPU0  A9K-RSP-4G               1.0   lc   fpga3   0      1.23
No
                                          lc   fpga1   0      1.05
No
                                          lc   fpga2   0      1.15
No
                                          lc   cbc     0      1.03
No
                                          lc   fpga4   0      3.08
No
                                          lc   rommon  0      1.06
No
-------------------------------------------------------------------------
--------------
0/FT0/SP    ASR-9010-FAN              1.0   ft   cbc     7      4.01
Yes
-------------------------------------------------------------------------
--------------
0/FT1/SP    ASR-9010-FAN              1.0   ft   cbc     8      4.01
Yes
-------------------------------------------------------------------------
--------------
0/0/CPU0    A9K-SIP-700               1.0   lc   fpga1   0      0.23
No
                                          lc   cbc     0      3.06
No
                                          lc   rommon  0      1.04
No
                                          lc   fpga2   0      5.14
No
                                          lc   cpld1   0      0.15
No
-------------------------------------------------------------------------
--------------
0/0/0       SPA-OC192POS-XFP          2.5   spa  fpga1   0      1.02
No
-------------------------------------------------------------------------
--------------
0/1/CPU0    A9K-SIP-700               1.0   lc   fpga1   0      0.23
No
```

```
                                          lc   cbc     0       3.06
No
                                          lc   rommon  0       1.04
No
                                          lc   fpga2   0       5.14
No
                                          lc   cpld1   0       0.15
No
--------------------------------------------------------------------
--------------
0/1/0       SPA-OC192POS-XFP          2.5   spa  fpga1   0       1.02
No
--------------------------------------------------------------------
--------------
0/6/CPU0    A9K-40GE-E              1.0   lc   fpga1   0       0.44
No
                                          lc   fpga2   0       0.10
No
                                          lc   cbc     0       2.03
No
                                          lc   cpld1   0       1.00
No
                                          lc   rommon  0       1.05
No
--------------------------------------------------------------------
--------------
0/6/CPU0    A9K-40GE-E              1.0   lc   fpga1   1       0.44
No
--------------------------------------------------------------------
--------------
0/7/CPU0    A9K-40GE-E              1.0   lc   fpga1   0       0.44
No
                                          lc   fpga2   0       0.10
No
                                          lc   cbc     0       2.03
No
                                          lc   cpld1   0       1.00
No
                                          lc   rommon  0       1.05
No
--------------------------------------------------------------------
--------------
0/7/CPU0    A9K-40GE-E              1.0   lc   fpga1   1       0.44
No
--------------------------------------------------------------------
--------------
NOTES:
1.  One or more FPD needs an upgrade or a downgrade.  This can be
accomplished
   using the "admin> upgrade hw-module fpd <fpd> location <loc>" CLI.
RP/0/RSP1/CPU0:ios#
RP/0/RSP1/CPU0:ios#admin upgrade hw-module fpd all location all
Wed Feb 11 16:34:01.031 UTC

***** UPGRADE WARNING MESSAGE: *****
  *  This upgrade operation has a maximum timout of 160 minutes.  *
  *  If you are executing the cmd for one specific location and   *
  *  card in that location reloads or goes down for some reason   *
```

```
  *  you can press CTRL-C to get back the RP's prompt.           *
  *  If you are executing the cmd for  all  locations and a node  *
  *  reloads or is down please allow other nodes to finish the    *
  *  upgrade process before pressing CTRL-C.                      *

% RELOAD REMINDER:
  - The upgrade operation of the target module will not interrupt its
normal
    operation. However, for the changes to take effect, the target
module
    will need to be manually reloaded after the upgrade operation. This
can
    be accomplished with the use of "hw-module <target> reload" command.
  - If automatic reload operation is desired after the upgrade, please
use
    the "reload" option at the end of the upgrade command.
  - The output of "show hw-module fpd location" command will not display
    correct version information after the upgrade if the target module
is
    not reloaded.
NOTE: Chassis CLI will not be accessible while upgrade is in progress.
Continue? [confirm]
This can take some time for a full chassis.
Ensure that system is not power cycled during the upgrades.
Please consult the documentation for more information.
Continue ? [no]: y


FPD upgrade in progress on some hardware, reload/configuration change
on those is not recommended as it might cause HW programming failure
and result in RMA of the hardware.


Starting the upgrade/download of following FPDs:
=========== ==== ======= ======= =========== =========
                                  Current    Upg/Dng
Location    Type Subtype Upg/Dng   Version    Version
=========== ==== ======= ======= =========== =========
0/FT0/SP    ft   cbc     upg        4.01       4.02
0/FT1/SP    ft   cbc     upg        4.01       4.02
-----------------------------------------------------
No fpd on location 0/0/CPU0 need upgrade at this time.
No fpd on location 0/1/CPU0 need upgrade at this time.
No fpd on location 0/6/CPU0 need upgrade at this time.
No fpd on location 0/7/CPU0 need upgrade at this time.
FPD upgrade in progress. Max timeout remaining 89 min.
FPD upgrade in progress. Max timeout remaining 88 min.
FPD upgrade in progress. Max timeout remaining 87 min.
FPD upgrade in progress. Max timeout remaining 86 min.
FPD upgrade in progress. Max timeout remaining 85 min.
FPD upgrade in progress. Max timeout remaining 84 min.
FPD upgrade in progress. Max timeout remaining 83 min.
FPD upgrade in progress. Max timeout remaining 82 min.
Successfully upgraded      cbc for       ASR-9010-FAN on location
0/FT0/SP from  4.01 to  4.02
Successfully upgraded      cbc for       ASR-9010-FAN on location
0/FT1/SP from  4.01 to  4.02
```

```
FPD upgrade has ended.

RP/0/RSP1/CPU0:ios#
```

九、 删除原始的 TAR 文件

删除 DISK1 和 BOOTFLASH 中的 TAR 文件。

```
RP/0/RSP0/CPU0:HA-ZZ-ZD-S-3.CN2.B#delete
harddisk:asr9k-iosxr-5.2.4-sp1-rsp4g8g.tar
Thu Nov 26 01:39:25.402 GMT
Delete harddisk:/asr9k-iosxr-5.2.4-sp1-rsp4g8g.tar[confirm]
RP/0/RSP0/CPU0:HA-ZZ-ZD-S-3.CN2.B#
RP/0/RSP0/CPU0:HA-ZZ-ZD-S-3.CN2.B#delete
bootflash:asr9k-5.2.4-bootflash-rsp4g8g.tar
Thu Nov 26 01:42:18.910 GMT
Delete bootflash:/asr9k-5.2.4-bootflash-rsp4g8g.tar[confirm]
RP/0/RSP0/CPU0:HA-ZZ-ZD-S-3.CN2.B#
```

十、 重启设备

重启后查看 FPD 和 platform，确认 FPD 都已升级 OK。

```
RP/0/RSP1/CPU0:ios#admin reload location all
RP/0/RSP1/CPU0:ios#admin show hw-module fpd location all
Wed Feb 11 16:54:16.725 UTC

=====================================
=========================================
                                Existing Field Programmable Devices

=========================================
                                      HW                    Current
SW Upg/
Location    Card Type             Version Type Subtype Inst
Version   Dng?
============ ======================== ======= ==== ======= ====
=========== ====
0/RSP1/CPU0  A9K-RSP-4G              1.0   lc   fpga3   0      1.23
No
                                         lc   fpga1   0      1.05
No
                                         lc   fpga2   0      1.15
No
                                         lc   cbc     0      1.03
No
                                         lc   fpga4   0      3.08
No
                                         lc   rommon  0      1.06
No
-----------------------------------------------------------------
--------------
0/FT0/SP    ASR-9010-FAN             1.0   ft   cbc     7      4.02
No
-----------------------------------------------------------------
--------------
0/FT1/SP    ASR-9010-FAN             1.0   ft   cbc     8      4.02
No
```

```
--------------------------------------------------------------------------------
0/0/CPU0    A9K-SIP-700              1.0   lc   fpga1   0      0.23
No
                                          lc   cbc     0      3.06
No
                                          lc   rommon  0      1.04
No
                                          lc   fpga2   0      5.14
No
                                          lc   cpld1   0      0.15
No
--------------------------------------------------------------------------------
0/0/0       SPA-OC192POS-XFP         2.5   spa  fpga1   0      1.02
No
--------------------------------------------------------------------------------
0/1/CPU0    A9K-SIP-700              1.0   lc   fpga1   0      0.23
No
                                          lc   cbc     0      3.06
No
                                          lc   rommon  0      1.04
No
                                          lc   fpga2   0      5.14
No
                                          lc   cpld1   0      0.15
No
--------------------------------------------------------------------------------
0/1/0       SPA-OC192POS-XFP         2.5   spa  fpga1   0      1.02
No
--------------------------------------------------------------------------------
0/6/CPU0    A9K-40GE-E               1.0   lc   fpga1   0      0.44
No
                                          lc   fpga2   0      0.10
No
                                          lc   cbc     0      2.03
No
                                          lc   cpld1   0      1.00
No
                                          lc   rommon  0      1.05
No
--------------------------------------------------------------------------------
0/6/CPU0    A9K-40GE-E               1.0   lc   fpga1   1      0.44
No
--------------------------------------------------------------------------------
0/7/CPU0    A9K-40GE-E               1.0   lc   fpga1   0      0.44
No
                                          lc   fpga2   0      0.10
No
                                          lc   cbc     0      2.03
No
                                          lc   cpld1   0      1.00
No
```

```
                                          lc   rommon  0      1.05
No
-------------------------------------------------------------------------
--------------
0/7/CPU0    A9K-40GE-E              1.0   lc   fpga1   1      0.44
No
-------------------------------------------------------------------------
--------------
RP/0/RSP1/CPU0:ios#admin show platform
Wed Feb 11 16:54:36.650 UTC
Node          Type                    State          Config State
-------------------------------------------------------------------------
-----------
0/RSP1/CPU0    A9K-RSP-4G(Active)     IOS XR RUN      PWR,NSHUT,MON
0/FT0/SP       FAN TRAY               READY
0/FT1/SP       FAN TRAY               READY
0/0/CPU0       A9K-SIP-700            IOS XR RUN      PWR,NSHUT,MON
0/0/0          SPA-OC192POS-XFP       OK              PWR,NSHUT,MON
0/1/CPU0       A9K-SIP-700            IOS XR RUN      PWR,NSHUT,MON
0/1/0          SPA-OC192POS-XFP       OK              PWR,NSHUT,MON
0/6/CPU0       A9K-40GE-E             IOS XR RUN      PWR,NSHUT,MON
0/7/CPU0       A9K-40GE-E             IOS XR RUN      PWR,NSHUT,MON
0/PM0/SP       A9K-2KW-DC             READY           PWR,NSHUT,MON
0/PM1/SP       A9K-2KW-DC             READY           PWR,NSHUT,MON
0/PM3/SP       A9K-2KW-DC             READY           PWR,NSHUT,MON
0/PM4/SP       A9K-2KW-DC             READY           PWR,NSHUT,MON
RP/0/RSP1/CPU0:ios#
```

十一、恢复配置之前，删除多余的配置

1、 删除一条默认路由：

router static

address-family ipv4 unicast

0.0.0.0/0 10.75.44.254

2、删除垃圾配置：

interface preconfigure GigabitEthernet0/0/0/20

interface preconfigure GigabitEthernet0/0/0/21

interface preconfigure GigabitEthernet0/0/0/22

interface preconfigure GigabitEthernet0/0/0/23

interface preconfigure GigabitEthernet0/0/0/24

interface preconfigure GigabitEthernet0/0/0/25

interface preconfigure GigabitEthernet0/0/0/26

interface preconfigure GigabitEthernet0/0/0/27

interface preconfigure GigabitEthernet0/0/0/28

interface preconfigure GigabitEthernet0/0/0/29

interface preconfigure GigabitEthernet0/0/0/30

interface preconfigure GigabitEthernet0/0/0/31

interface preconfigure GigabitEthernet0/0/0/32

interface preconfigure GigabitEthernet0/0/0/33

interface preconfigure GigabitEthernet0/0/0/34

interface preconfigure GigabitEthernet0/0/0/35

interface preconfigure GigabitEthernet0/0/0/36

interface preconfigure GigabitEthernet0/0/0/37

interface preconfigure GigabitEthernet0/0/0/38

interface preconfigure GigabitEthernet0/0/0/39

3、删除管理口地址：

interface MgmtEth0/RSP0/CPU0/0

ipv4 address 1.1.1.1 255.0.0.0

shutdown

十二、Restore License

在 admin 模式下 restore compactflash 中的 20150210-license-Backup 来恢复 license

```
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B#admin license restore
compactflash:20150210-license-Backup
Thu Feb 12 01:01:51.441 GMT

License command "license restore
compactflash:20150210-license-Backup" completed successfully.
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B#
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B#
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B#show license
Thu Feb 12 01:02:01.159 GMT

FeatureID: A9K-AIP-LIC-E (Slot based, Permanent)
  Total licenses 2
  Available for use        1
  Allocated to location    0
  Active                 1
  Store name           Permanent
  Store index            1
    Pool: Owner
      Total licenses in pool: 2
      Status: Available    1   Operational:    1
      Locations with licenses: (Active/Allocated) [SDR]
             0/6/CPU0       (1/0) [Owner]


RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B#
```

十三、加载配置

加载配置前，先将业务端口全部打开。

1.首先恢复 admin-config 模式下的配置，这里分为两种情况：

【1】如果之前给 license 分配的槽位有 location all 的，本次要按照设备上板卡的槽位给 license 配置正确的槽位号。同时配置 groupnoc 本地账号，删除其他多余本地账号。

```
RP/0/RSP1/CPU0:ios(admin-config)#license A9K-AIP-LIC-E type
permanent location 0/6/CPU0
RP/0/RSP1/CPU0:ios(admin-config)#license A9K-AIP-LIC-E type
permanent location 0/7/CPU0

username groupnoc
 group root-system
 group cisco-support
 secret 5 $1$BWC/$ZohKe4T5l9LNyucAOne9i.
!
```

【2】如果之前已经按照槽位号分配了 license，本次直接加载即可，并删除其他多余的本地账号，只需要创建一个 groupnoc 的即可。

```
RP/0/RSP1/CPU0:ios(admin-config)#load
compactflash:20150211-admin-config
```

2.在 configure 模式下加载 compactflash 中的 20150211-config（由于备用引擎被拔出，因此 load 时无法加载备用引擎的 Mg0/RSP0/CPU0/0 和 Mg0/RSP0/CPU0/1 端口，会报错，忽略就可以了）

同时要注意：configure 模式和 admin-config 模式下不能同时存在两个相同的 groupnoc 账号，如果 configure 模式下有，需要删掉。

即：Load 完 configure 下的配置后，先不要 commit，先要 show 下，如果发现 configure 模式下有 groupnoc 账号，先用命令 no 掉 configure 下的 groupnoc，防止报冲突

```
RP/0/RSP1/CPU0:ios(config)#load compactflash:20150211-config
```

十四、升级完毕，插入备用引擎进行同步

此时进行大客户状态的确认，设备软硬件、配置、路由等是否与升级前一致，并通知省公司配合人测试业务。

十五、待同步完成后，检查主备引擎状态是否正常

```
RP/0/RSP1/CPU0:SD-JN-SNL-S-3.CN2.B#show redundancy
Mon Mar  2 16:01:01.782 GMT
Redundancy information for node 0/RSP1/CPU0:
==========================================
Node 0/RSP1/CPU0 is in ACTIVE role
Node Redundancy Partner (0/RSP0/CPU0) is in STANDBY role
```

```
Standby node in 0/RSP0/CPU0 is ready
Standby node in 0/RSP0/CPU0 is NSR-ready
Node 0/RSP1/CPU0 is in process group PRIMARY role
Process Redundancy Partner (0/RSP0/CPU0) is in BACKUP role
Backup node in 0/RSP0/CPU0 is ready
Backup node in 0/RSP0/CPU0 is NSR-ready

Group           Primary        Backup         Status
---------       ---------      ---------      ---------
dsc             0/RSP1/CPU0    0/RSP0/CPU0    Ready
dlrsc           0/RSP1/CPU0    0/RSP0/CPU0    Ready
central-services 0/RSP1/CPU0    0/RSP0/CPU0    Ready
v4-routing      0/RSP1/CPU0    0/RSP0/CPU0    Ready
netmgmt         0/RSP1/CPU0    0/RSP0/CPU0    Ready
mcast-routing   0/RSP1/CPU0    0/RSP0/CPU0    Ready
v6-routing      0/RSP1/CPU0    0/RSP0/CPU0    Ready

Reload and boot info
----------------------
A9K-RSP-4G reloaded Thu Feb 12 00:46:44 2015: 2 weeks, 4 days, 15 hours,
14 minutes ago
Active node booted Thu Feb 12 00:46:44 2015: 2 weeks, 4 days, 15 hours,
14 minutes ago
Standby node boot Thu Feb 12 01:40:40 2015: 2 weeks, 4 days, 14 hours,
20 minutes ago
Standby node last went not ready Thu Feb 12 01:45:58 2015: 2 weeks,
4 days, 14 hours, 15 minutes ago
Standby node last went ready Thu Feb 12 01:45:58 2015: 2 weeks, 4 days,
14 hours, 15 minutes ago
There have been 0 switch-overs since reload

Active node reload "Cause: User initiated forced reload all"
Standby node reload "Cause: self-reset to use new boot image"
```