

HEWLETT-PACKARD COMPANY

Non ISSU Upgrade

MAD BFD IRF upgrade procedure

Non ISSU Procedure to upgrade IRF stack using MAD BFD.

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Purpose

This document a procedure to upgrade a 2 switch IRF stack to achieve minimal service interruption. This is to cover any event that may require upgrading (or downgrading) an in-service IRF stack where ISSU commands are not available. The impact on user traffic is similar to an incompatible ISSU forced upgrade.

Note: ISSU where supported is the preferred method to upgrade

Method

Update member 1 (Master) while member 2 (Slave) remains online. When member 1 comes back online, reboot member 2. MAD will be used to ensure only one unit will be active during the upgrade.

1. It is critical to configure MAD first, and to start the update process on the member that would "win" the MAD process, the member with the lowest member ID, typically member 1
2. Note the 10G ports which are used by IRF (display irf configuration)
3. Copy firmware images to both units, configure the boot-loader to use the new images. Do not reboot yet.
4. Reboot member 1 (reboot slot 1), member 2 will resume the master role.

5. While member 1 reboots, connect to member 2 (use console if possible) and shutdown the 10G IRF interfaces (do not save the config). This will ensure that the member 1 will not discover member 2 during the reboot.¹
6. Member 1 will come online with the new version, once it comes online, MAD will come into action and member 2 will shutdown all its external interfaces. At this moment the link-aggregation failover has occurred (like the "switchover" command for the normal ISSU).
7. Reboot member 2 (reboot slot 2). It will boot in the new firmware and join the existing master.
8. It is possible to complete this upgrade remotely .After you reboot slot 1, immediately SSH into the switch again, shutdown the IRF ports on slot 2 and issue schedule "*reboot delay 5*". When member 1 comes back online Member 2 shuts all its interfaces down and sits there for a few minutes, then reboots itself with the new OS and joins the stack.

Note1: It is recommended to use MAD BFD for this procedure, which is using a standards based protocol for the MAD detection. The MAD LACP is proprietary, and requires HPN Comware switches upstream

¹ If it did it would either downgrade the firmware again to match the master or fail to join the stack, depending on your IRF firmware update policy configuration

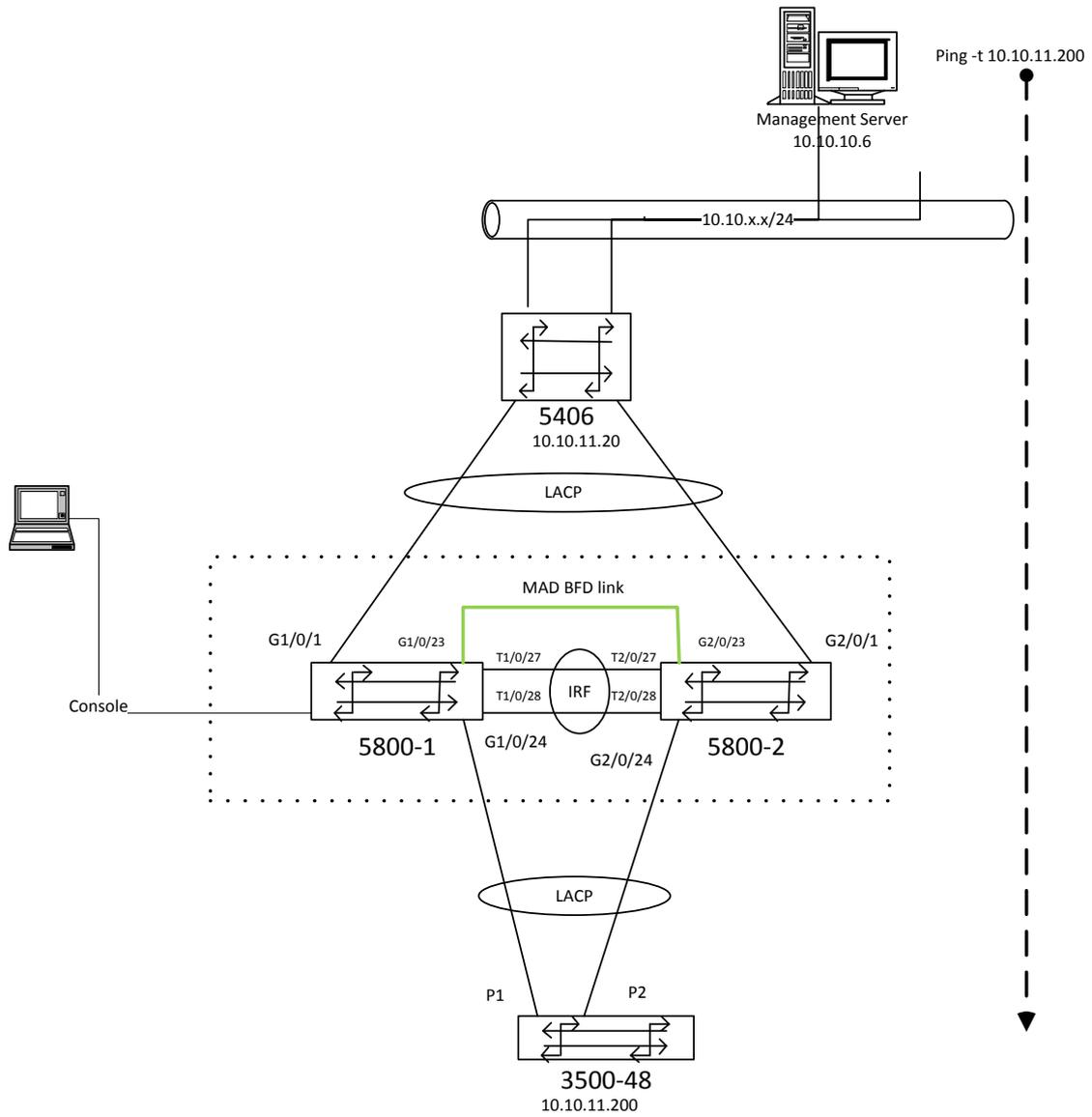


Figure 1: Test Network

 5820 IRF config with BFD MAD.txt
  5400.txt
  3500.txt

What impact to expect

The impact on this simple layer 2 was similar to an ISSU incompatible (forced) upgrade. This procedure dropped a single ping for each reboot in the process. This is that same behaviour that was seen for LACP failover. (ie Remove Trunk Links)

Enable FTP server on IRF stack and add ftp user

```
ftp server enable
```

```
#
```

```
local-user ftp
```

```
password simple ftp
```

```
authorization-attribute level 3
```

```
service-type ftp
```

```
#
```

```
Return
```

Use FTP client to copy image file to master flash directory

```
<5800-byod>dir
```

```
Directory of flash:/
```

```
0  -rw-   7550 Apr 30 2000 12:45:24  config.cfg
1  -rw-    287 Apr 30 2000 12:45:21  system.xml
2  -rw-  15607 Apr 30 2000 12:45:21  config.cwmp
3  -rw- 27443204 Apr 30 2000 12:17:27  a5800_5820x-cmw520-r1211p09.bin
4  -rw- 31473664 Apr 30 2000 12:10:36  a5800_5820x-cmw520-r1808p06.bin
5  -rw-  794068 Apr 30 2000 12:00:59  logfile.log
6  -rw- 27394716 Apr 26 2000 17:23:58  a5800_5820x-cmw520-r1211p04.bin
7  drw-    - Apr 26 2000 12:00:35  seclog
```

```
515712 KB total (429048 KB free)
```

```
<5800-byod>
```

Use copy cmd on master to copy to slot2#flash:\

Update boot-loader

<5800-byod>dis boot-loader

Slot 1

The current boot app is: flash:/a5800_5820x-cmw520-r1211p04.bin

The main boot app is: flash:/a5800_5820x-cmw520-r1211p04.bin

The backup boot app is: flash:/

Slot 2

The current boot app is: flash:/a5800_5820x-cmw520-r1211p04.bin

The main boot app is: flash:/a5800_5820x-cmw520-r1211p04.bin

The backup boot app is: flash:/

<5800-byod>

<5800-byod>boot-loader file a5800_5820x-cmw520-r1211p09.bin slot all main

This command will set the boot file of the specified board. Continue? [Y/N]:y

The specified file will be used as the main boot file at the next reboot on slot 1!

The specified file will be used as the main boot file at the next reboot on slot 2!

<5800-byod>dis boot-loader

Slot 1

The current boot app is: flash:/a5800_5820x-cmw520-r1211p04.bin

The main boot app is: flash:/a5800_5820x-cmw520-r1211p09.bin

The backup boot app is: flash:/

Slot 2

The current boot app is: flash:/a5800_5820x-cmw520-r1211p04.bin

The main boot app is: flash:/a5800_5820x-cmw520-r1211p09.bin

The backup boot app is: flash:/

Check IRF config so we know which ports to shut

<5800-byod>dis irf configuration

MemberID	NewID	IRF-Port1	IRF-Port2
1	1	Ten-GigabitEthernet1/0/27	disable
		Ten-GigabitEthernet1/0/28	
2	2	disable	Ten-GigabitEthernet2/0/27
			Ten-GigabitEthernet2/0/28

<5800-byod>

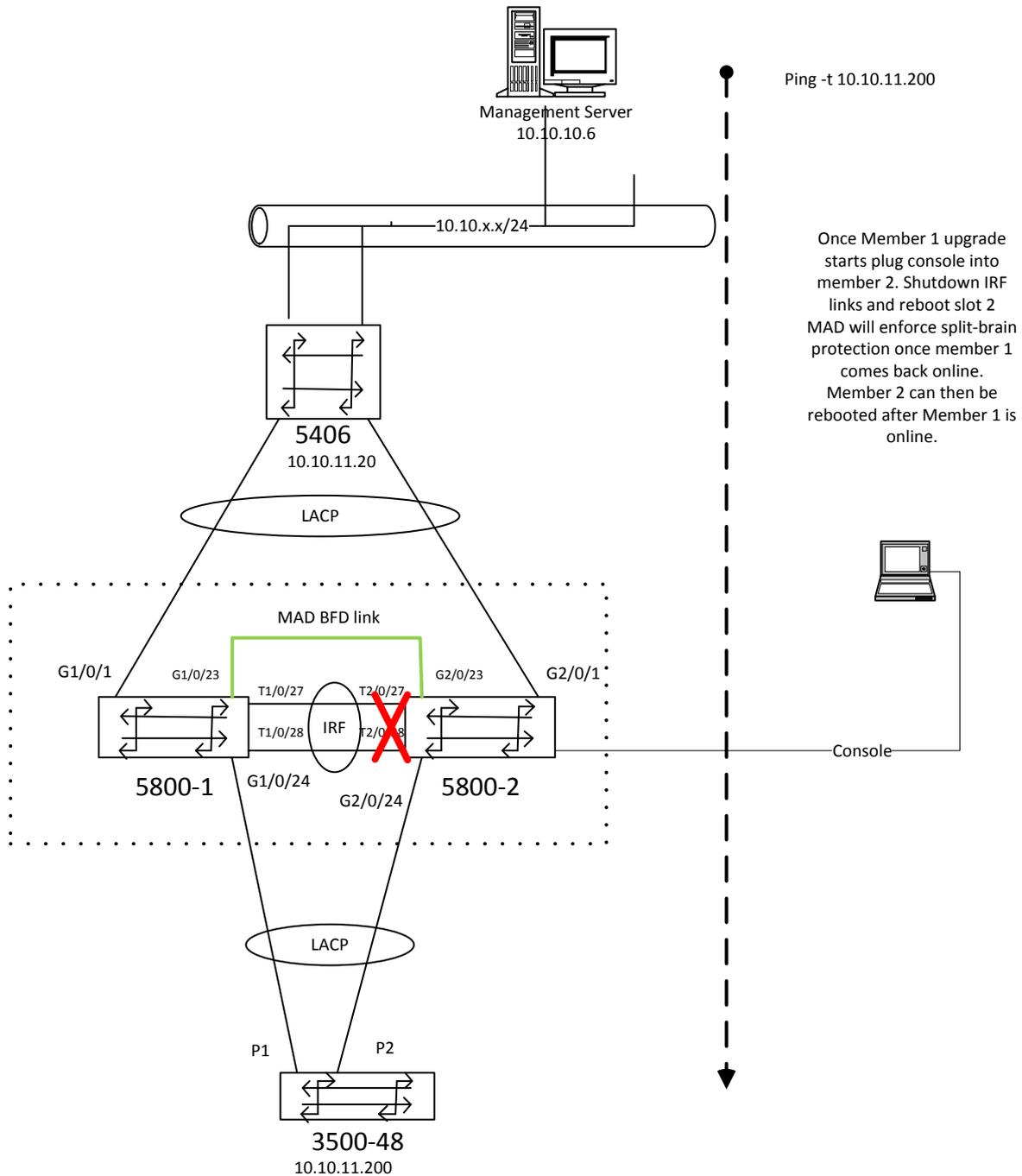


Figure 2: Reboot process

Plug into member 2 console and Reboot slot 1

```
<5800-byod>reboot slot 1
```

This command will reboot the specified board, Continue? [Y/N]:y

```
%Apr 26 12:23:11:057 2000 5800-byod DEVM/5/BOARD_REBOOT: Board is rebooting on Chassis 0 Slot 1.
```

```
<5800-byod>
```

System is busy with VIU configuration recovery, please wait a moment...

#Apr 26 12:23:24:314 2000 5800-byod SHELL/4/LOGIN:

Trap 1.3.6.1.4.1.25506.2.2.1.1.3.0.1: login from Console

System is busy with VIU configuration recovery, please wait a moment...

%Apr 26 12:23:24:750 2000 5800-byod SHELL/5/SHELL_LOGIN: Console logged in from aux1.

System is busy with VIU configuration recovery, please wait a moment...

System is busy with VIU configuration recovery, please wait a moment...

System is busy with VIU configuration recovery, please wait a moment...

System is busy with VIU configuration recovery, please wait a moment...

System is busy with VIU configuration recovery, please wait a moment...

System is busy with VIU configuration recovery, please wait a moment...

System is busy with VIU configuration recovery, please wait a moment...

System is busy with VIU configuration recovery, please wait a moment...

System is busy with VIU configuration recovery, please wait a moment...

System is busy with VIU configuration recovery, please wait a moment...

Shut IRF ports

There is no console access for a few moments, presumably while member 2 is assuming master role

Once console recovers

[5800-byod]INT Ten-GigabitEthernet 2/0/27

[5800-byod-Ten-GigabitEthernet2/0/27]SHUT

[5800-byod-Ten-GigabitEthernet2/0/27]INT Ten-GigabitEthernet 2/0/28

[5800-byod-Ten-GigabitEthernet2/0/28]SHUT

[5800-byod-Ten-GigabitEthernet2/0/28]

Do not save configuration

Once member 1 has booted

Plug into member 1 console

<5800-byod>

#Apr 26 12:02:09:731 2000 5800-byod IFNET/4/INTERFACE UPDOWN:

Trap 1.3.6.1.6.3.1.1.5.3: Interface 9437206 is Down, ifAdminStatus is 1, ifOperStatus is 2

<5800-byod>

#Apr 26 12:02:09:936 2000 5800-byod IFNET/4/INTERFACE UPDOWN:

Trap 1.3.6.1.6.3.1.1.5.3: Interface 96076275 is Down, ifAdminStatus is 1, ifOperStatus is 2

%Apr 26 12:02:10:165 2000 5800-byod IFNET/3/LINK_UPDOWN: GigabitEthernet1/0/23 link status is DOWN.

%Apr 26 12:02:10:285 2000 5800-byod IFNET/3/LINK_UPDOWN: Vlan-interface500 link status is DOWN.

%Apr 26 12:02:10:406 2000 5800-byod IFNET/5/LINEPROTO_UPDOWN: Line protocol on the interface Vlan-interface500 is DOWN.

%Apr 26 12:02:13:401 2000 5800-byod BFD/5/BFD_CHANGE_FSM:

Sess[192.168.254.1/192.168.254.2,33/33,Vlan500,Ctrl], Sta: UP->DOWN, Diag: 5

<5800-byod>

<5800-byod>dis version

HP Comware Platform Software

Comware Software, **Version 5.20.105, Release 1808P06**

Copyright (c) 2010-2013 Hewlett-Packard Development Company, L.P.

HP A5800-24G Switch uptime is 0 week, 0 day, 0 hour, 2 minutes

HP A5800-24G Switch with 2 Processors

1024M bytes SDRAM

4M bytes Nor Flash Memory

512M bytes Nand Flash Memory

Config Register points to Nand Flash

Hardware Version is Ver.B

CPLD Version is 003

BootRom Version is 220

[SubSlot 0] 24GE+4SFP Plus Hardware Version is Ver.B

[SubSlot 1] No Module

Plug into member 2 console

Confirm it is still running old software

<5800-byod>dis version

HP Comware Platform Software

Comware Software, Version 5.20, Release 1211P09

Copyright (c) 2010-2012 Hewlett-Packard Development Company, L.P.

HP A5800-24G Switch uptime is 0 week, 0 day, 0 hour, 9 minutes

HP A5800-24G Switch with 2 Processors

1024M bytes SDRAM

4M bytes Nor Flash Memory

512M bytes Nand Flash Memory

Config Register points to Nand Flash

Hardware Version is Ver.B

CPLD Version is 003

BootRom Version is 215

[SubSlot 0] 24GE+4SFP Plus Hardware Version is Ver.B

[SubSlot 1] No Module

<5800-byod>

MAD state after member 1 upgraded

After Member 1 reboots with new software, member 1 will become Master and because IRF links are down MAD will enforce split brain behaviour and shutdown the interfaces on member 2

[5800-byod-Ten-GigabitEthernet2/0/28]dis int brie

The brief information of interface(s) under route mode:

Link: ADM - administratively down; Stby - standby

Protocol: (s) - spoofing

Interface	Link	Protocol	Main IP	Description
M-GE0/0/0	DOWN	DOWN	--	
NULL0	DOWN	UP(s)	--	
Vlan1	DOWN	DOWN	10.10.11.25	
Vlan16	DOWN	DOWN	10.16.1.1	
Vlan500	DOWN	DOWN	--	

The brief information of interface(s) under bridge mode:

Link: ADM - administratively down; Stby - standby

Speed or Duplex: (a)/A - auto; H - half; F - full

Type: A - access; T - trunk; H - hybrid

Interface	Link	Speed	Duplex	Type	PVID	Description
BAGG1	DOWN	auto	A	A	1	link to 3500 access switch
BAGG2	DOWN	auto	A	A	1	link to 5400 top
GE2/0/1	DOWN	auto	A	A	1	to 5400top a14
GE2/0/2	DOWN	auto	A	A	1	
GE2/0/3	DOWN	auto	A	A	1	
GE2/0/4	DOWN	auto	A	A	1	
GE2/0/5	DOWN	auto	A	A	1	
GE2/0/6	DOWN	auto	A	A	1	

%Apr 26 12:30:07:160 2000 5800-byod LLDP/5/LLDP_NEIGHBOUR_AGE_OUT: Neighbor aged out on Port GigabitEthernet2/0/23 (IfIndex 17825814), Chassis ID is 0024-730a-d9f6, Port ID is GigabitEthernet1/0/23.

GE2/0/7	DOWN auto	A	A	1
GE2/0/8	DOWN auto	A	A	1
GE2/0/9	DOWN auto	A	A	1
GE2/0/10	DOWN auto	A	A	1
GE2/0/11	DOWN auto	A	A	1
GE2/0/12	DOWN auto	A	A	1
GE2/0/13	DOWN auto	A	A	1
GE2/0/14	DOWN auto	A	A	1
GE2/0/15	DOWN auto	A	A	1
GE2/0/16	DOWN auto	A	A	1
GE2/0/17	DOWN auto	A	A	1
GE2/0/18	DOWN auto	A	A	1
GE2/0/19	DOWN auto	A	A	1
GE2/0/20	DOWN auto	A	A	1
GE2/0/21	DOWN auto	A	A	1
GE2/0/22	DOWN auto	A	A	1
GE2/0/23	DOWN auto	A	A	500
GE2/0/24	DOWN auto	A	A	1
XGE2/0/25	DOWN auto	A	A	1
XGE2/0/26	DOWN auto	A	A	1
XGE2/0/27	ADM --	--	--	--
XGE2/0/28	ADM --	--	--	--

[5800-byod-Ten-GigabitEthernet2/0/28]

Reboot slot 2

Plug back into member 2 console and reboot unit. When member 2 comes online IRF will attempt to join and the Master will force an upgrade of member 2 (IRF ports now unshut)

.....

.....Done!

This upgrade required a bootrom update this will happen automatically after timeout

Extend BootWare Version is not equal,updating? (Y/N):

Updating extended BootRom.....Done!

Basic BootWare Version is not equal,updating? (Y/N):

Updating Basic BootRom.....Done!

BootWare updated,System is rebooting now.

Starting.....

Press Ctrl+D to access BASIC BOOT MENU

Press Ctrl+T to start heavy memory test

Once member 2 has rebooted the job is done

<5800-byod>dis version

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Comware Software, Version 5.20.105, Release 1808P06

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HP A5800-24G Switch uptime is 0 week, 0 day, 0 hour, 10 minutes

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Hardware Version is Ver.B

CPLD Version is 003

BootRom Version is 220

[SubSlot 0] 24GE+4SFP Plus Hardware Version is Ver.B

[SubSlot 1] No Module

<5800-byod>dis irf

<i>MemberID</i>	<i>Role</i>	<i>Priority</i>	<i>CPU-Mac</i>	<i>Description</i>
-----------------	-------------	-----------------	----------------	--------------------

<i>*1</i>	<i>Master</i>	<i>32</i>	<i>0024-730a-d9f7</i>	<i>-----</i>
-----------	---------------	-----------	-----------------------	--------------

<i>+2</i>	<i>Slave</i>	<i>1</i>	<i>0024-730a-e18f</i>	<i>-----</i>
-----------	--------------	----------	-----------------------	--------------

** indicates the device is the master.*

+ indicates the device through which the user logs in.

The Bridge MAC of the IRF is: 0024-730a-d9f6

Auto upgrade : yes

Mac persistent : 6 min

Domain ID : 0

<5800-byod>