HP Auto Port Aggregation Quick Install

Beginning with the December 2001 release, HP Auto Port Aggregation (HP APA) is shipped with the default port-configuration mode set to `MANUAL`. The value in the **/etc/rc.config.d/hp_apaconf** file is `HP_APA_DEFAULT_PORT_MODE=MANUAL`. This allows you to then specify any of the four port-configuration modes before activating the product. For release-specific information, refer to the release notes on your system in **/opt/networkdocs** or on the worldwide web at: http://www.docs.hp.com. For general product information including instructions on using the system admin manager (SAM) for configuration, see the online manual *Using HP APA* either on the Instant Information CDROM or on http://www.docs.hp.com.

Step 1: Prepare to install the software

- ❏ Log in to HP-UX server as root.
- ❏ Verify that the **/usr/bin**, **/usr/sbin** and **/sbin** directories are in your PATH using the command: **`echo $PATH`**
- ❏ Use the **`swlist`** command to verify the HP-UX version.
- ❏ Install any required patches for your system as described in the "Required Patches" section of the release notes. Use the same steps for patch installation as you do for product installation shown next.

Step 2: Install the HP APA software (skip this step if you ordered product option 0D1--preinstallation)

- ❏ To install the software from the installation media, run the *swinstall* program using the command: **`swinstall`**.
- ❏ Select the appropriate **Source Depot Type** (for example, Local CD, Local tape, Local Directory, Network Directory/CDROM).
- ❏ Select **Source Host Name**.
- ❏ Select **Source Depot Path**. If you do not know the exact path you can click the **Source Depot Path** button and a list of valid choices will be displayed.
- ❏ Highlight the HP APA software: **J4240AA** (HP-UX 11.0 or 11i) or **J5080AA** (HP-UX 10.20).
- ❏ Choose **Mark for Install** from the "Actions" menu to choose the product to be installed.
- ❏ Choose **Install** from the "Actions" menu to begin product installation and display the Install Analysis Window.
- ❏ Activate the **OK** button in the Install Analysis Window when the Status field displays a "Ready" message.
- ❏ Activate the **YES** button at the Confirmation Window to confirm that you want to install the software. *swinstall* loads the fileset, runs the control scripts for the filesets, and builds the kernel. Estimated time for processing: 3 to 5 minutes. When the status field indicates "Ready," a Note Window opens. Activate the **OK** button on the Note Window to reboot the system.

Step 3: Choose Configuration Method: SAM or edit

- ❏ Choose one of two configuration methods that will permanently save your configurations. You can either:
  - use the GUI-based system admin manager (SAM).
    To use SAM, type `sam` at the HP-UX system prompt then double-click Networking and Communications, and then Auto Port Aggregation--see *Using HP APA* for details, and then do the steps for verifying link aggregates; *or*
  - edit the configuration files described in this document using an editor such as "vi":
    /etc/rc.config.d/hp_apaconf and **/etc/rc.config.d/hp_apaportconf** for APA.
    LAN Monitor on HP-UX 11.0 and 11i requires those 2 plus **/etc/rc.config.d/netconf** and **/etc/lanmon/lanconfig.ascii**.
- ❏ If you are configuring more than one of the four, port-configuration modes described here, minimize the number of stops (which can interrupt traffic on existing link aggregates) by editing all configuration files first. You will then only need to run one series of **hplm stop** (optional); **hpapa stop**; **hpapa start**; **hplm start** (optional) to activate the link aggregates and (optionally) failover groups.

Step 4: Edit files for MANUAL, FEC, LACP, or LAN Monitor modes

- ❏ Ensure that the *switch ports* and the *HP LAN card ports* are set to the same APA mode (MANUAL or AUTO), speed, and duplexity.
- ❏ Run `lanadmin` interactively if you need to verify that all HP LAN card ports intended for aggregation are connected to the LAN.
- ❏ Use the following number as the starting PPA number: for HP-UX 11i, it is 900; for HP-UX 11.0, it is 100; and for HP-UX 10.20, it is 90.

MANUAL port configuration mode

- ❏ Edit the following values in the **/etc/rc.config.d/hp_apaconf** file. Example: to put lan1 and lan2 into link aggregate 900 with MAC-based load-balancing,
```
HP_APA_INTERFACE_NAME[0]=lan900
HP_APA_LOAD_BALANCE_MODE[0]=LB_MAC
HP_APA_MANUAL_LA[0]="1,2"
```
- ❏ Edit the following values in the **/etc/rc.config.d/hp_apaportconf** file. If this is the first-time configuration, the CONFIG_MODE is already set to the default of MANUAL:
```
HP_APAPORT_INTERFACE_NAME[0]=lan1
HP_APAPORT_CONFIG_MODE[0]=MANUAL
HP_APAPORT_INTERFACE_NAME[1]=lan2
HP_APAPORT_CONFIG_MODE[1]=MANUAL
```
- ❏ If you are done editing all configuration modes, activate the configuration by typing:
  /sbin/init.d/hplm stop {optional--for failover groups}
  /sbin/init.d/hpapa stop and then
  /sbin/init.d/hpapa start
  /sbin/init.d/hplm start {optional--for failover groups}

FEC[tm] port configuration mode

- ❏ Optional--set load balancing and group capability in the **/etc/rc.config.d/hp_apaconf** file. Example: to configure link aggregate 900 with MAC-based load-balancing and a group capability of 10, enter:
```
HP_APA_INTERFACE_NAME[0]=lan900
HP_APA_LOAD_BALANCE_MODE[0]=LB_MAC
HP_APA_GROUP_CAPABILITY[0]=10  {*see Note 1}
```
- ❏ Edit the following values in the **/etc/rc.config.d/hp_apaportconf** file. Example: to put lan1 and lan2 into link aggregate 900:
```
HP_APAPORT_INTERFACE_NAME[0]=lan1
HP_APAPORT_GROUP_CAPABILITY[0]=10 {*see Note 1}
HP_APAPORT_CONFIG_MODE[0]=FEC_AUTO
HP_APAPORT_INTERFACE_NAME[1]=lan2
HP_APAPORT_GROUP_CAPABILITY[1]=10 {*see Note 1}
HP_APAPORT_CONFIG_MODE[1]=FEC_AUTO
```
{**Note 1.** Set the group capability to be the same as that of the link aggregate to which it belongs. Ports going to different link aggregates should have different group capabilities.}

❏ If you are done editing all configuration modes, activate the configuration by typing:
/sbin/init.d/hplm stop {optional--for failover groups}
/sbin/init.d/hpapa stop and then
/sbin/init.d/hpapa start
/sbin/init.d/hplm start {optional--for failover groups}

LACP port configuration mode

❏ Optional--set load balancing and apaport key in the **/etc/rc.config.d/hp_apaconf** file. Example: to configure link aggregate 900 with MAC-based load-balancing and a key of 10, enter:
```
HP_APA_INTERFACE_NAME[0]=lan900
HP_APA_LOAD_BALANCE_MODE[0]=LB_MAC
HP_APA_KEY[0]=10  {*see Note 2}
```

❏ Edit the link aggregate, the apaport key, and the configuration mode in the **/etc/rc.config.d/hp_apaportconf** file. Example: to put lan1 and lan2 into link aggregate 900:
```
HP_APAPORT_INTERFACE_NAME[0]=lan1
HP_APAPORT_KEY[0]=10   {*see Note 2}
HP_APAPORT_CONFIG_MODE[0]=LACP_AUTO
HP_APAPORT_INTERFACE_NAME[1]=lan2
HP_APAPORT_KEY[1]=10   {*see Note 2}
HP_APAPORT_CONFIG_MODE[1]=LACP_AUTO
```
{**Note 2.** Set the LACP key to be the same as that of the link aggregate to which it belongs. Ports going to different link aggregates should have different keys.}

❏ If you are done editing all configuration modes, activate the configuration by typing:
/sbin/init.d/hplm stop {optional--for failover groups}
/sbin/init.d/hpapa stop and then
/sbin/init.d/hpapa start
/sbin/init.d/hplm start {optional--for failover groups}

LAN_MONITOR port configuration mode

❏ Assign an IP address to the primary link by typing, for example:
ifconfig lan1 192.5.5.138

❏ To preserve the IP address across reboots, you need to add the IP address for the primary port to **/etc/rc.config.d/netconf**.

❏ (HP-UX 11.0 and 11i only) Edit the failover group and configuration mode in the **/etc/rc.config.d/hp_apaportconf** file. Example, to put lan1 and lan2 into a failover group:
```
HP_APAPORT_INTERFACE_NAME[0]=lan1
HP_APAPORT_CONFIG_MODE[0]=LAN_MONITOR
HP_APAPORT_INTERFACE_NAME[1]=lan2
HP_APAPORT_CONFIG_MODE[1]=LAN_MONITOR
```

❏ Ensure there is a physical connection between the interfaces (lan1, lan2); then, to activate the configuration, type:
/sbin/init.d/hplm stop
/sbin/init.d/hpapa stop and then
/sbin/init.d/hpapa start
/sbin/init.d/hplm start

❏ To query which link aggregates are possible, type:
`lanqueryconf -s`

CAUTION: Running `lanqueryconf -s` will overwrite the original **/etc/lanmon/lanconfig.ascii.**

This command will query the system and network for all possible link aggregates. The results of the query will be placed in the configuration file **/etc/lanmon/lanconfig.ascii**. This file should contain data similar to:

```
NODE_NAME                       hpxyz6e
POLLING_INTERVAL                10000000
DEAD_COUNT                      3
FAILOVER_GROUP                  lan900
       STATIONARY_IP    192.5.5.138
              PRIMARY           lan1     5
              STANDBY           lan2     3
```

You can manually edit this file and change the number of ports in the failover groups, the dead count, or the poll interval.

❏ To verify that the configuration in **/etc/lanmon/lanconfig.ascii** is still valid, type:

`lancheckconf`

❏ To create the link aggregates specified in the configuration file, type:

`lanapplyconf`

This command will create the specified link aggregates in the binary configuration file **/etc/lanmon/lanconfig**.

Note: if you later want to delete all the link aggregates specified in the **/etc/lanmon/lanconfig.ascii** configuration file, type:

`landeleteconf`

Step 5: Verify status of the link aggregates

❏ Configuration doesn't require a reboot to take effect. HP APA configuration is complete when you can verify which link aggregates have been formed. Depending on your configuration, there may be 0 or more link aggregates configured.
To verify which link aggregates have been configured, type:

`lanscan`
or
`lanscan -v` for a long listing

The column heading titled **Hardware Path** will contain the value **LinkAgg** for logical link aggregates. The column heading **Hdw State** will show the state of the link aggregates. The state should be **UP** or **DOWN**. **U**P indicates that the link aggregation is operational. **DOWN** indicates that the link aggregate has been initialized by the product but not configured.

❏ (HP-UX 11.0 and 11i only) To verify that a link aggregate was formed correctly, find the ***linkaggPPA*** by doing a *lanscan* and using one of the values in the column titled **Crd In#** which corresponds to a link aggregate. Then, type:

`lanadmin -x -v linkaggPPA`

NOTE: When using the lanadmin commands, please be aware that the -x and - X are case sensitive. Options used with lower case -x are used to show status, while those used with upper case -X are used to set configuration parameters or modes.

For example, to verify the physical ports associated with ***linkaggPPA*** 101, type:

`lanadmin -x -v 101`

❏ To verify all the physical ports in all configured link aggregates, type:

`lanscan -q`

This will list the Card Instance number for each physical port as well as the link aggregates. Data similar to the following will be displayed (the example below is for HP-UX 11.0):

```
100         5 6 8 7
101
102
103
```

This output says that there are 4 ports in link aggregate 100. The 4 ports are lan5, lan6, lan8, and lan7.

If no link aggregates are formed, refer to the Troubleshooting section of the online *Using HP APA* guide.

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Step 6: Verify status of a physical port

(HP-UX 11.0 and 11i Only)

❑ To verify the status of a specific physical port, type:.

```
lanadmin -x -p PortPPA linkaggPPA
```

Where ***PortPPA*** can be found by doing a *lanscan* and using one of the values in the column titled **Crd In#** which corresponds to a physical port (physical ports are denoted by a value similar to, but not necessarily the same as, **8/0/1/0** in the **Hardware Path** field).

For example, to verify that the port with PPA number 2 has successfully completed FEC negotiation, type:

```
lanadmin -x -p 2 100
```

The output from this command should show a field called **Port State**. The value of the field should be **UP**. If not, then you may have a configuration problem, and you need to refer to *Using HP Auto-Port Aggregation*.

❑ To verify that a link aggregate was formed correctly, type:

```
lanadmin -x -v linkaggPPA
```

For example, to verify that ports with PPA numbers 2, 3, 8, and 9 were successfully added to link aggregate with PPA number 101 type:

```
lanadmin -x -v 101
```

CAUTION: If you change some link aggregate variables using the `lanadmin` command, those changes are not preserved after reboots. If you use `lanadmin`, you also need to edit the 2 config files: **hp_apaconf** and **hp_apaportconf**

Online Help

❑ To obtain additional information on options for the *lanadmin* command, type:

```
lanadmin -X -H linkaggPPA
```

where ***linkaggPPA*** can be any valid link aggregate PPA value.

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