

Paper 1010

How To Choose The Right HP-UX Patches For My System

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Executive Summary

Software patching is always necessary, especially in today's pursuit of system high availability. Patching does not have to be a stressful event. Provided the system administrator plan a patch install and install the patches according to the plan, patch selection should be the only unknown.

This paper is an attempt to expand the knowledge base of those who wish to patch HP UNIX systems. HP patches come out frequently. Further, in deciding which patches to load and why can be a very time consuming event unless you become "patch literate" and "patch tool literate". Hewlett-Packard has developed several patching tools to assist in the selection of patches. Additionally, Extension Software is automatically sent to customers with HP support contracts. Extension Software is a set of Hardware Enablement and Software patches, fully tested together, and shipped on CDRom. These patches are selected by HP patching experts and are sent out on a bi-monthly schedule.

ESC - Electronic Support Center

This web site, located at "<http://us-support.external.hp.com>" is the starting point for patching. A patch browser and Custom Patch Manager (CPM) are accessed via this web site.

The patch browser can list the details about an individual patch or search for patches related to certain topics such as: LVM, MC/Service Guard, etc. Custom Patch Manager is the patching tool for "custom" or "system specific" patch analyses. If you have an HP Support Contract, you can use this patch tool. You will need to register upon first entering the tool. You will need two pieces of information to register: a valid HP Support System Handle and the associated Contract number. An example:

System Handle = 7000HP
Contract number = 2601q1234

Again, within this paper, a review of patch basics will be covered. Common questions like: What types of patches exist? How are they different? How are they tested? Is there a logic to the patch numbers? When and Why are patches recalled or superseded? Also, a few different patching scenarios will be presented and the decisions to "why" a patch is selected will be offered and the decisions to "why" a patch is selected will be shown. Included in these examples will be "patch conflicts" and how to deal with them. So, let's get busy learning about HP-UX Patching.

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Patch Naming Conventions

The above is the standard naming conventions HP has adopted. These standard patches are created by the HP Divisions and are available through the HP Electronic Support Center Web site. (Formerly HPSL - HP Support Line)

Types Of Patches

GR = General Release - Latest patch available

GS = General Superseded - This patch has been superseded by another patch

SP = Special - This patch is a special release patch and most are only available through HP Support Personnel.

GB = General Bad - This is the status when a patch is recalled/bad.

Why are patches recalled?

HP-UX patches are generally recalled because of one of the following reasons:

1. After the patch is released, it is discovered that the patch introduces a new problem or defect.
2. After the patch is released, it is discovered that the patch does not fix all the problems for which it was created.

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NOTE: In both of these cases, the benefits and drawbacks of the patch are evaluated before HP decides to recall the patch.

Why are patches superseded?

HP-UX patches are generally superseded because of one of the following reasons:

1. An additional defect in the original software is discovered and fixed.
2. An additional enhancement is added.
3. A new patch is released to correct a defective (recalled) patch.

How Are Patches Tested?

HP-UX Patch Bundles, also known as Extension Software, undergo various tests including installation/deinstallation, system reliability, kernel regression, kernel functionality, and standards regression. The system stress testing requires 48 hour CHO, or Continuous Hours of Operation, before the Patch Bundle is released.

Individual patches are tested by the HP Lab that created them and submitted to HP Patch experts within the World Wide Technology Expert Center. These HP Expert Center Engineers check over the patches and determine when to make them available to customers as well as which of these patches to add to future "bundles" and "extension software CD's". A "bundle" is the same patches that are available via "extension software" and are available within the HP Response Center to send to customers with HP Response Center type Support Contracts on DDS tape upon request.

Where Can I Get More Information On Patching?

Within the **Electronic Support Center** Web site, there are another couple tools:

1) Support Information Digests

These digests allow for viewing of Security Bulletins, Technical Tips and Patch Information. The patch information part of these digests enables a customer to receive weekly updates on all the patches that have become available since the last weekly digest.

2) Technical Knowledge Database

HP's Technical Knowledge Database allows you to search or browse a rich set of technical support documents, including patch related documents.

Again, the url is: **<http://us-support.external.hp.com>**

When Is The Best Application Of Each Of These Tools?

Extension Software	Use this CD on "unpatched" systems to create a good base of patches. Install with "match_target=true".
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- Custom Patch Manager** Use this tool to do "custom" or "updated" analyses for all the systems in your enterprise.
- Electronic Support Center Patch Browser** Use this tool to search for HP-UX patches or to download a specific patch.
- Software Distributor** The SD-UX toolset on HP-UX 10.X releases maintains information on all installed software. This information is stored in the house patches for installation or in essence create a software hub which is called a "depot".
- HP PSS/PAS/CSS/BCS patch analysis** For those customers who have a Software Support Agreement/Contract, that is PSS or above, an HP trained patching professional will perform an analysis on your system(s) under the appropriate contract.

NOTE: PSS - Personalized System Support
PAS - Premier Account Support
CSS - Critical System Support
BCS - Business Continuity Support

Custom Patch Manager Overview

Custom Patch Manager, CPM, is a configuration based patch selection and delivery tool. This means CPM utilizes a configuration file, generated on a target system, that contains a list of the patches and filesets installed on the target system to determine what patches are added to the Candidate Patch List. The Candidate Patch List is the list of patches the user selects from for subsequent download and install. Following, I will explain the steps involved in generating and completing a patch analysis using CPM.

The Candidate Patch List: What Are Its Contents?

For 9.X systems: All the patches that match the target HW platform, the OS Revision and/or each patch all the filesets the patch affects are installed on the target system.

For 10.X systems: All the patches that match the target HW platform, the OS Revision and for each patch at least one of the filesets the patch affects is installed on the target system.

The Candidate Patch List: How Is It Generated?

CPM uses the target HW platform, the OS Revision and the installed filesets to determine which patches to add to the candidate list. The HW platform falls into two categories, s700 or s800. Hence a 715 would fall into the s700 category. OS Revision must match the Major.Minor number, eg. 10.01 or 9.04. The installed filesets are matched using two specific algorithms, one for 9.X and one for 10.X.

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The Candidate Patch Algorithm Used For Patch Selection:

For 9.X systems: All the filesets that the patch affects must be installed on the target system. (If specific fileset versions are specified in the patch, then the specific version of the fileset must be installed on the target system. If the patch does not specify any particular version of the fileset, then the patch matches any version of the fileset.)

For 10.X systems: At least one of the filesets that the patch affects must be installed on the target system. (If specific versions are specified in the patch, then the specific version must be installed on the target system. If the patch does not specify any particular version of the fileset, then the patch matches any version of the fileset.)

Therefore, in order for a 9.X patch to make it on the Candidate Patch List, it must match the following condition:

H/W Platform AND OS Revision AND ALL filesets affected by the patch are installed on the target system.

And similarly for the 10.X patch to make it onto the Candidate Patch List, it must match the following condition:

HW Platform AND OS Revision AND at least ONE of the filesets affected by the patch is installed on the target system.

The Candidate Patch List: What To Watch Out For?

Why did this patch show up on my list?

Example: Why is this patch a candidate, I don't have C++ on my system?

Patch	PHSS_9855
HW/OS	s700: 10.01 10.10 10.20 s800: 10.01 10.10 10.20
Description	s700_800 10.X HP C++ (A.10.24) with a correct eh/lib++.a
Affected Filesets:	Auxiliary-Opt. LANG-AUX C-Plus-Plus CODELIBS C-Plus-Plus HPCXX C-Plus-Plus.HPCXX-MAN

Target System: 715 / 10.20

Installed Filesets:

(There are many filesets, but of the four affected by the patch, ONLY *Auxillary-Opt.LANG-AUX* is installed on this system.) Even though this system does NOT have C++ installed, the patch is added to the Candidate Patch List because of the filesets match.

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Why did this patch show up on my list? (another example)

Example: I have OTS version C.04.03, why am I given this patch to choose from?

Patch	PHNE_4243
HW/OS	715 / 9.00 9.01 9.03 9.05
Fixed	OTS C.04.03 (DART20)
Affected Filesets:	OTS-KRN

In this situation, OTS is installed on the system but it is a version C.04.03. This patch was intended for versions C.04.00 and C.04.01 not for C.04.03. Because the affected fileset does not specify a version, it matches all versions.

Why didn't a patch I know show up on my List? (another example)

Example:

Patch	PHSS_9447
HW/OS	s700: 10.01 10.10 10.20 s800: 10.01 10.10 10.20
Description	s700_800 10.X ANSI C compiler cumulative patch
Affected Filesets:	C-ANSI-C.C, B.10.03, B.10.03.10 C-Dev-Tools.C-AUX,B.10.03,B.10.03.10 Auxiliary-Opt.LANG-AUX,B.10.01,B.10.03.10 Auxiliary-Opt.LANG-SMP,B.10.01,B.10.03.10

Target System	715 / 10.20 C-ANSI-C.C, B.10.20.00
Installed	C-Dev-Tools.C-AUX, B.10.20.00
Filesets:	Auxiliary-Opt.LANG-AUX, B.10.20.02 Auxiliary-Opt.LANG-SMP, B.10.10.02

In this scenario, even though we had the correct filesets, the specific versions of the filesets do not match the target.

SUMMARY

The Candidate Patch List is NOT a Recommended Patch List. It is simply a list of patches that are possibly appropriate for the target system. It would be prudent to evaluate the patches for the particular fix the patch was intended for. Check the one line description and other documentation within the patch for your final decision.

Upon selecting patches from a Candidate Patch List, CPM displays the patches chosen in a Selected Patch List. The next step in the process of this patch analysis is to check the patches for conflicts. By having the CPM Tool "analyze" the Selected Patch List, any conflicts will be displayed.

In general, if you have conflicts you should consider the following:

- 1) ID number of the patch.**
- 2) When was the patch released?**
- 3) "What" output of the patch?**

Also,

When two patches have Behavioral Conflicts, you should choose between them. When two patches have Structural Conflicts, you should verify the revisions and install one or both of the patches as needed. It is possible to select and install a patch that has both a Behavior and Structural Conflict.

The following examples were at one time "real" conflicts and should be handled accordingly:

10.20 Example

In the following example, the two FDDI patches for 10.20 have a Structural Conflict with each other. They share a common file:

`/usr/conf/lib/libfddi.a`

One way to make a decision on this kind of issue is to determine what version of the fileset is being patched. When you look at the "what" output string on the common file by typing:

`"what /usr/conf/lib/libfddi.a"`

The output revision data shows the fileset revision for each patch. Notice the following:

PHNE_8196 is revision B.10.20.00
PHNE_9912 is revision B.10.20.01

Therefore, you would ONLY load the appropriate patch for the version of FDDI software which you have installed.

The "text" file for the patch shows:

```
hp-ux_patches/s800/10.X/PHNE_8196 :FDDI:
Target:      10.20
lLiner:      s800 10.20 FDDI cumulative patch CDate: 96/08/28
PDate:       96/09/17
HW-OS:       s800: 10.20
Fixed:       J2157A_APZ B.10.30.00
Fset:        FDDI-HPPB-KRN.FDDI6-KRN FDDI-HPPB-RUN.FDDI6-RUN
              FDDI-INIT-COM.FDDI-INIT FDDI-MASTER-COM.FDDI-MASTER
Prod:        FDDI B.10.20.00
Reboot:      Yes
Status:      General Release
Crit:        Yes
```

What Output:

what(1) Output:

```
/usr/conf/lib/libfddi.a:
lan6.c $Revision: 1.4 $ $Date: 96/08/16 14:00:00 10.
      20.00 PHNE_8196$
FILESET FDDI: lib libfddi:  Version: B.10.20.00
lanc_fddi.c $Revision: 1.4 $ $Date: 96/08/16 14:00:0
      0 10.20.00 PHNE_8196$
```

The "text" file for the patch shows:

```
hp-ux_patches/s800/10.X/PHNE_9912 :FDDI:B.10.20.01:
Target:      10.20
lLiner:      s800 10.20 FDDI B.10.20.01 cumulative patch CDate: 97/02/06
PDate:       97/03/17
HW-OS:       s800: 10.20
Fixed:       FDDI B.10.30.00
Fset:        FDDI-HPPB-KRN.FDDI6-KRN FDDI-HPPB-RUN.FDDI6-RUN
FDDI-        FORMAT-RUN.FDDI-FORMAT
Prod:        FDDI B.10.20.01
Reboot:      Yes
Status:      General Release
Crit:        Yes
```

What(1) Output:

```
/usr/conf/lib/libfddi.a:
lan6.c $Revision: 1.4 $ $Date: 97/02/11 16:00:00 B.1
0.20.01 DART 31 PHNE_9912$
FILESET FDDI: lib libfddi:  Version: B.10.20.01 DAR
T 31
lanc_fddi.c $Revision: 1.4 $ $Date: 97/01/01 11:00:0
0 B.10.20.01 DART 31$
```

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9.04 Example

The following two patches have both Behavioral and Structural conflicts with each other. Notice they both change the same fileset to different versions:

They share a common module "/usr/bin/lpalt"

<u>patch</u>	<u>fileset</u>	<u>version</u>
PHCO_4076	/usr/bin/lpalt	72.8.1.16
PHCO_4303	/usr/bin/lpalt	72.8.1.20

In this scenario, the later patch PHCO_4303 should only be installed if you are experiencing the problems mentioned in the patch PHCO_4303 because of the different versions of the "lpalt" fileset. Or ensure PHCO_4303 is installed after PHCO_4076.

The "text" file for the patch shows:

```
hp-ux_patches/s800/9.X/PHCO_4076    lp:
    Target:      9.00 9.04
    Files:       PHCO_4076.text PHCO_4076.updt Fset:  LP-SPOOL
    Date:        04/19/94
    OS:          9.00 9.04
    Fixed:       HP-UX: s800: 10.00
    Reboot:      No
```

"What" Output

"what" string/timestamp:

```
./usr/bin/lpalt:      $Revision: 72.8.1.16 $          PATCH_9_0: hpux_rel.o
lpalt.o 94/04/19
```

The "text" file for the patch shows:

```
hp-ux_patches/s700_800/9.X/PHCO_4303    :lpalt:
    Target:      9.00 9.01 9.03 9.04 9.05 9.07
    Files:       PHCO_4303.text PHCO_4303.updt
    Fset:        LP-SPOOL
    CDate:       06/01/94
    Repost:      95/07/21
                  The patch was modified to allow installation on HP-UX 9.07.
    OS:          9.00 9.01 9.03 9.04 9.05 9.07
    Fixed:       HP-UX: s700: 10.00; s800: 10.00 Reboot: No
    Desc:        This patch fixes the lpalt defect which prevented users from modifying
```

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"What" output

"what" string/timestamp:

```
./usr/bin/lpalt:      $Revision: 72.8.1.20 $          PATCH_9_0: hpux_rel.o
lpalt.o 94/06/01
```

9.X Example

The following two patches have a Structural Conflict because they share three (3) common modules:
PHSS_8704 and PHSS_9355.

You will notice the filesets for both patches are the same revision; therefore, you can load both patches without concern.

The "**text**" file shows:

hp-ux_patches/s700_800/9.X/PHSS_9355 :X11R5/Motif1.2:Runtime:
Target: 9.00 9.01 9.03 9.04 9.05 9.07

To see Patch Details, select the Patch Name.

To select a patch, select the checkbox next to the Patch Name.

To add selected patches to your **Selected Patch List**, press the *Add* button at the bottom of the list

lLiner:	s700_800 9.X X11R5/Motif1.2 Runtime NovPP-D point patch
CDa	96/11/30
PDate:	96/12/02
HW-OS:	s700: 9.01 9.03 9.05 9.07
s800:	9.00 9.04
Fixed:	Unknown
Fset:	X11R5-SHLIBS X11-RUN
Prod:	N/A

Reboot: No
Status: General Release
Crit: Yes

What(1) Output:

/usr/lib/X11R5/libXt.sl:
X Window System, Version 11 R5+ HP-UX A.09.*.00 Nov
1996 D Point Patch Release
(build date: Mon Nov 25 14:40:38 PST 1996)

/usr/lib/X11R5/libX11.sl:
X Window System, Version 11 R5+ HP-UX A.09.*.00 Nov
1996 D Point Patch Release
(build date: Mon Nov 25 14:34:46 PST 1996)

/usr/lib/Motif1.2/libXm.sl:
OSF/Motif Version 1.2.6
X Window System, Version 11 R5+ HP-UX A.09.*.00 Nov
1996 D Point Patch Release
(build date: Mon Nov 25 15:21:02 PST 1996)

REMOVE

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ANALYZE

The "text" file shows:

hp-ux_patches/s700_800/9.X/PHSS_8704 :X11R5:Motif1.2:Development:
Target: 9.00 9.01 9.03 9.04 9.05 9.07
lLiner: s700_800 9.X X11R5/Motif1.2 Development Nov96 Patch CDate:
PDate: 96/11/11
HW-OS: s700: 9.01 9.03 9.05 9.07
s800: 9.00 9.04
Fixed: Unknown
Fset: X11R5-PRG X11R5-SHLIBS X11-RUN
Prod: HP-UX Developer's Toolkit
Reboot: No
Status: General Release
Crit: Yes

what(1) Output:

/usr/lib/X11R5/libXt.sl:
X Window System, Version 11 R5+ HP-UX A.09.*.00 Nov
1996 Patch Release
(build date: Fri Sep 27 12:27:28 PDT 1996)

/usr/lib/X11R5/libX11.sl:
X Window System, Version 11 R5+ HP-UX A.09.*.00 Aug
1996 Patch Release
(build date: Tue Aug 13 17:53:50 PDT 1996)

/usr/lib/Motif1.2/libXm.sl:
OSF/Motif Version 1.2.6
X Window System, Version 11 R5+ HP-UX A.09.*.00 Aug
1996 Patch Release (build date: Tue Jul 16 15:55:53 PDT 1996)

CUSTOM PATCH MANAGER

The following is an example of a Candidate Patch list with CPM. Within the CPM tool you may click on the patch name field and the patch text file will be displayed. By selecting the button to the left of the patch, the patch will be added to the "selected patch list" upon selecting the "add" button at the bottom of the page.

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Candidate Patch List **avatar 9000/715 HP-UX A.09.07**

Current filters applied (modify filters): Critical Command Kernel.

There are **10** patches applicable to your configuration which are currently not installed. Read About the **Candidate Patch List** if you have questions on which patches are included (or not included) in your list.

Add selected patches to the **Selected Patch List**.

CUSTOM PATCH MANAGER

Patch Delivery (after conflict checking)

avatar 9000/715 HP-UX A.09.07

The **Selected Patch List** below shows the patches you have selected for downloading.

To add additional patches, press the **Candidate Patch List** button at either the top or bottom of the screen (patches already selected will be retained).

To remove a patch, de-select it and press the **Remove** button.

To Check for conflicts with selected patches, press the **Analyze** button.

To prepare your patches for download, press the **Package** button.

Patch	Reboot Required	Dependency Info	Size (kbytes)	Date Posted
PHCO_7033	No	No	225.00	960,415
PHCO_7172	No	Yes	82.00	960,403

de-select patches from the **Selected Patch List**.

the **Selected Patch List** for possible conflicts.

Behavioral Conflicts:

PHCO_7033 (Selected) should not be installed with PHCO_4077 (Installed), check the patch details.

Dependency Conflicts:

PHCO_7172 (Selected)

depends on PHCO_7155, which is replaced by PHCO_7747

depends on PHCO_7173

Structural Conflicts:

PHCO_7033 (Selected) and PHCO_4077 (Installed) have a common module, /usr/lib/divpage.

In Conclusion...

There are many different strategies to patching. A system administrator should consider each one for the benefits and associated risks. Accordingly, Hewlett-Packard will continue to make HP-UX Patching more available to customers. Extension Software should be utilized in every opportunity as

a "foundation" for patches. Custom Patch Manager, by the time of this meeting will have the "new" and "improved" version available to customers which will further your success within the patching arena. I hope this discussion has provided you with valuable information relating to HP-UX patching.

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