

Title: Migrating from HP-UX 10.20 to 11.x Case Studies, Best Practices

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If you have to manage and plan the migration of a large number of users from HP-UX 10.20 to 11.x., this session will provide you with real life examples of how to move your customers in phases, how to identify issues and utilize best practices. Case studies will include EDA users and software developers. Some of your users may want to just run existing HP-UX 10.20 applications on 11.x, and some of your users will want a new version of the applications (e.g. 64 bit). This presentation provides the background information needed to address the needs of different users and disciplines through case studies. Note that when HP-UX 11 is referenced, this is referring to the current shipping version HP-UX 11.ACE 9911.

Before we discuss some case studies, let's review why the HP-UX 10.20 to 11 transition will be much easier than the HP-UX 9.x to 10.20 transition. Here are some comparisons between the transitions:

| | HP-UX 9.x to 10.20 | HP-UX 10.20 to 11 |
|--|---|-----------------------------|
| File System | Wholesale directory changes and file location changes. | No change. |
| Desktop Manager | VUE, added CDE | CDE (dropped VUE) |
| Software Installation and Packaging | Changed from install/update/fwpkg to swinstall/swpackage | Keeps swinstall commands. |
| Kernel and Device Files | Changed workstation kernel building commands and device file creation commands. | Does not change either one. |

Case Studies:

1) EDA Users

Typical EDA users have a variety of interactive (e.g. Schematic Entry, HDL Entry) and batch (e.g. Simulation) software from Independent Software Vendors (ISVs). In addition, many companies involved in developing ASICs and customer ICs have in-house developed software tools. These software tools run on both workstations and servers.

The EDA ISVs have either qualified their existing 10.20 binary on HP-UX 11 or have re-compiled their application on HP-UX 11 to take advantage of threads and/or 64-bit capabilities. Contact your ISV for the details on which version of their application is supported on HP-UX 11. In-house developed software tools that were developed on 10.20 should run on HP-UX 11. Note that linking 10.20 object files and HP-UX 11 object files is not supported.

One of the key issues for migration of EDA users from HP-UX 10.20 to HP-UX 11 is to understand where each IC development project is in their life cycle. Projects that are just starting up or that have just tape released are ideal candidates for transitioning to HP-UX 11.

Besides having workstations on desktops for the engineers doing interactive development, many EDA customers also have a "compute ranch" that consists of a large (> 100) number of workstations and servers. Since HP's server products have been on HP-UX 11 for several years, migrating the workstations to HP-UX 11 represents an opportunity to support one operating system in the "compute ranch". A new HP-UX 11 workstation can easily be added to the "compute ranch".

In talking to several EDA customers, one technique that they use in the workstation migration to HP-UX 11 is to start with two identical hardware platforms (e.g. HP J5000) with the same application software loaded on each. One system runs HP-UX 10.20 and the other runs HP-UX 11. Note that you should use the HP-UX 11 re-compiled application software on the HP-UX 11 system if it exists to take advantage of additional performance and features (e.g. threads, 64-bit). This head to head comparison of HP-UX 10.20 and HP-UX 11 will enable you to test your complete software environment and compare performance. Customers typically run an identical batch job in parallel on both systems to compare the results and performance.

For interactive usage, a common tactic for EDA customers is to start with a "pilot" program with a small number of users. In some cases, customers have purchased an extra disc to put in the workstation so they can dual boot either HP-UX 10.20 or HP-UX 11.

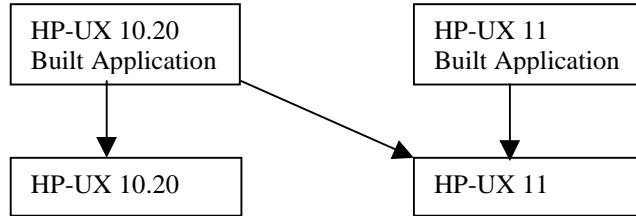
Here are the steps for setting typical HP-UX 11 kernel parameter for EDA:

- 1) Get "SAM Kernel Tunable Parameter Sets" patch PHSS_20149 with 11.ACE 9911.
- 2) Take values from SAM "Kernel Configuration" -> "Apply Tuned Parameter Set".
- 3) It includes parameter sets for "EE Engineering Workstation 32-bit Kernel" and "EE Engineering Workstation 64-bit Kernel".

After this trial period with some HP-UX 11 workstation deployment in the "compute ranch" and a small number of interactive users, many companies will create a "golden image" which has HP-UX 11, ISV software, and in-house tools. This "golden image" is then installed over the network to each workstation using Ignite/UX.

2) Software Developers

Software Developers is a broad category that covers ISVs, in-house developers and third party "plug-ins". Migrating software developers from HP-UX 10.20 to HP-UX 11 involves testing, paying attention to the Build Environment and deciding on which workstations to dual boot. Note that software developers should be aware and use tools like the HP-UX 11 Software Transition Kit (<http://www.software.hp.com/STK/>) for HP-UX 11 development.



Applications built on HP-UX 10.20 should run on HP-UX 11 (either the 32-bit or 64-bit operating system), as long as the 10.20 executable has all the dependent shared libraries available on HP-UX 11. Note that if one object is re-compiled on HP-UX 11, all objects must be recompiled on HP-UX 11 (i.e. HP does not support linking 10.20 objects with 11.0 objects).

It is important to pay attention to the Build Environment so all the software developers are using the same versions of compilers, linkers and makefiles.

Many software developers will need to support their application on both HP-UX 10.20 and HP-UX 11. One solution is to buy extra 4G or 9G disc drives and to install them in the workstation so the developer can boot either operating system.

At a large Mechanical Design Automation (MDA) ISV company, they needed to move 60+ software developers to HP-UX 11 so they could qualify their 10.20 binary on HP-UX 11, and then re-compile their application on HP-UX 11. Here are their HP-UX 10.20 to HP-UX 11 migration results:

- Created a 32-bit HP-UX 11 Ignite Server
- Created a 64-bit HP-UX 11 Ignite Server
- During the week, tested a few systems with users to confirm all was well
- Installed over the net 60 workstations over the weekend (they setup/monitored for about 5 hours to ensure the process was working)
- Monday morning they discovered a few problems and finished up the few workstations that didn't completely install.

Best Practices: **Hardware**

Review your hardware in your installed base and compare it with a list of the HP-UX 11 supported workstations to see what is supported and whether you will need the 32-bit or 64-bit version of HP-UX 11. For a complete list of supported workstations on HP-UX 11, see the web site:

<http://hp.com/visualize/products/unix/os/support.html>

Here are some examples of supported SPU configurations:

| | HP-UX 11* (32-bit) | HP-UX 11* (64-bit) |
|---------|--------------------|--------------------|
| 710 | | |
| 712 | Supported | |
| 715/100 | Supported | |
| 735 | | |
| B180 | Supported | |
| C240 | | Supported |
| B2000 | | Supported |
| C3000 | | Supported |
| J5000 | | Supported |

*HP-UX 11.ACE 9911

If you have a 3D graphics card installed in your workstation, you may need to upgrade the graphics card. Note that if the SPU/graphics combination is several generations old, it may make more sense to upgrade the whole workstation.

| Supported on HP-UX 11* | Not Supported HP-UX 11* |
|-------------------------------|-------------------------|
| VISUALIZE-EG, 8, 24, 48, 48XP | All CRX graphics |
| VISUALIZE-FXe, FX2, FX4, FX6 | All HCRX graphics |

*HP-UX 11.ACE 9911

Software

Review your ISV software in your installed base (including version number) and contact your ISV to see if it is supported on HP-UX 11. Most ISVs either have their application on HP-UX 11 or plan to have it sometime in 2000. In some cases (e.g. EDA), you may need a newer version of an application to take advantage of the higher performance of native compiled HP-UX 11 applications.

For in-house developed software and scripts, you should assign an owner and develop a schedule for qualifying the HP-UX 10.20 built executable on HP-UX 11. A second step for some in-house software will be to re-compile with HP-UX 11 compilers, linkers and makefiles. HP-UX 10.20 built application will run on all three operating systems (see the table below). HP-UX 11 built 32-bit applications will run on the 32-bit HP-UX 11 and the 64-bit HP-UX 11 operating systems. HP-UX 11 built 64-bit applications will run only on the 64-bit HP-UX 11 operating system.

← Operating System →

| | HP-UX 10.20 | HP-UX 11 (32-bit) | HP-UX 11 (64-bit) |
|-------------------------|-------------|-------------------|-------------------|
| HP-UX 10.20 built | Yes | Yes | Yes |
| HP-UX 11 built (32-bit) | | Yes | Yes |
| HP-UX 11 built (64-bit) | | | Yes |

Test

- Select target workstation configurations (SPU, graphics) for testing.
- Load a “golden image” or representative software configurations on the test machines.
- Start with a small number of test machines, do batch, interactive and/or regression testing as appropriate for the target users.
- Measure performance and tune kernel parameters as appropriate.

Deploy

- Upgrade older SPU/graphics hardware as appropriate.
- Install second discs in dual boot workstations as appropriate.
- Create and load a “golden image” software configuration over the network using Ignite/UX. Note you should have Ignite/UX running on HP-UX 11 for serving both HP-UX 10.20 and 11 depots in a mixed environment of both HP-UX 10.20 and HP-UX 11 workstations.