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SPP-UX V2.1.1

Release Notice

This release notice describes the V2.1.1 release of the SPP-UX operating system. It highlights new features and changes to existing features, and supplements the permanent documentation with information developed too late for inclusion.

This document contains the following sections:

- Overview
- New features and fixed problems
- Known bugs
- Where to find more information

Overview

Historically, open and closed bugs against the operating system have been included in release notices. Due to the increased frequency of releases, individual bugs are no longer listed. Instead, they are accessible online; refer to "Where to find more information" section on page 7 for details.

Hardware requirements

The SPP-UX V2.1.1 release has the following hardware requirements:

- Convex Exemplar SPP-1000/CD systems
- Convex Exemplar SPP-1000/XA systems

The hardware must be installed according to the instructions in the following manuals:

- *Exemplar Site Preparation* (DHW-500)
- *Exemplar Installation Guide* (DHW-500)

Software prerequisites

The SPP-UX V2.1.1 release has the following prerequisites:

- Open Boot firmware V1.1.2
- Test station diagnostic software V2.1
- CST software V2.1

These corequisites must be installed on the Exemplar test station immediately prior to installing your Exemplar software upgrade.

For information about installing the products listed above, refer to the *Exemplar Software Distribution Notice* that accompanies your software distribution tape.

Associated documentation

The following Convex documents are applicable to the SPP-UX V2.1.1 release:

- *Exemplar Architecture*, First Edition (DHW-014)
- *Exemplar Site Preparation*, First Edition (DHW-500)
- *Exemplar Installation Guide*, First Edition (DHW-500)
- *SPP-UX System Administration Guide*, First Edition (DSW-853)

New features and fixed problems

The following features are new or fixed in the SPP-UX V2.1.1 release:

ABI upgrades	Added new versions of HP-UX system utilities to the ABI layer of SPP-UX. The new versions contain bug fixes and performance improvements.
crashdump utility	This new utility stores information about the state of the system to a raw disk partition in the event of a system crash. Refer to Appendix B of the <i>SPP-UX System Administration Guide</i> for more information. The ability to crashdump the mach kernel and server is available.
Disk stripe driver	A disk stripe driver is supported. This driver allows use of multiple controllers and multiple spindles.
mpa enhancements	Added several command-line options. Changed several existing options, some old

	options may not work. See the <code>mpa (1)</code> man page for more information.
New tunables	Added several system tunables; many for HP-UX compatibility. Refer to Appendix A of the <i>SPP-UX System Administration Guide</i> for more information.
Patch utility	This new utility allows customers to install Convex software patches. Information about using the patch utility will be provided by the Convex TAC along with patches.
scm enhancements	Made usability enhancements to the Subcomplex Manager (<code>scm</code>) graphical user interface. See Chapter 3 of the <i>SPP-UX System Administration Guide</i> for more information.
Signals	Redesigned SPP-UX signals code completely. As a result, system calls run faster and several signal-related problems have been fixed. Signals in SPP-UX 2.0.2 were continually being lost, the correction of this problem affected the operation within the operating system as well as user programs, operating system tools, utilities, and HP-UX ABI issues.
System accounting	Added support for system accounting utilities, but memory accounting does not work. See Chapter 8 of the <i>SPP-UX System Administration Guide</i> for more information.
Shared memory	Rewrote the System V shared memory portions of SPP-UX to correct design faults in the OSF base.
NFS	Corrected numerous NFS data corruption and file I/O problems. It is still recommended you run <code>udp checksumming</code> on all systems.
Automounter	Automounter now works.
HP-UX ABI bugs	Corrected numerous HP-UX ABI bugs.
Panics, asserts	Corrected a large number of panics, exceptions, and asserts.
Response time	Corrected slow interactive response time over the network.

SAM Modified the system administration tool-SAM-to only support actions that will work on SPP-UX.

Read performance enhancement

Fixed low read performance due to two or more processes accessing files. Multiple readers consumed each other's read-ahead.

System call performance

Improved system call performance since the last SPP-UX release.

In addition, a large number of performance enhancements have been made throughout the operating system.

Known problems

This section describes problems in this release of SPP-UX which are known at the time this document was printed. Work arounds for these problems are described, where applicable.

backup utilities

`/etc/fbackup` can hang while doing backups and also can run out of file descriptors. These are known problems on both HP-UX and SPP-UX. SPP-UX exploits some of the known `fbackup` problems due to the multi-processor environment.

With SPP-UX's multi-processor environment, these bugs are much more visible because `fbackup` is a parallel program using communicating processes.

Workaround Follow these steps to help reduce hangs:

- Create a single CPU sub-complex using `/bin/scm`.
- Launch `/etc/fbackup` in the single CPU sub-complex using `/bin/mpa`.
- Backup one disk partition at a time, do not backup the complete system from `/`.
- Limit the number of files you backup to 100,000.
- When backing up `/` exclude all previously backed up partitions.
- Set the Server tunable, `maxfiles` to a maximum of 256. This maximum number—256—also applies to `setrlimit(2)`.
- `/etc/dump` is known to hang when dumping stripes, use `/etc/fbackup` as your primary backup program.

SAM

Some functions available within SAM are not implemented in SPP-UX—these functions will not work when selected.

SAS

Install `sas` version 6.09 for HP-UX on a local file system, *not* an NFS file system.

Additional alternatives include setting the `-filelocks none` option in either of the following instances:

- `sas` configuration file (`config.sas609`)
- `sas` command line

Network lock manager

Because SPP-UX is based on OSF mach, and the OSF base does not have a network lock manager in the kernel, SPP-UX does not have NFS file locking via the `lockf` or `fcntl` library functions

netls utility

Your Exemplar can not be used as a netls license server. Use another machine on the same network as the server.

NFS

When doing I/O to a file on a NFS partition, the operating system does not detect that the partition is full.

Disk quotas

Disk quotas do not exist.

Stripes

Do not create more than 15 stripes or create a stripe with a name of `stripe16` or above. This corrupts system information and gives indeterminate results.

Visual User Environment (VUE)

VUE is not available.

Accounting

Accounting does not collect memory usage information.

Growable stacks and paging space system panic

Because of an OSF design, SPP-UX does not have growable stacks. This means each process running on the system, even system daemons, will have a stack size set to the default stack size. Paging space is not actually allocated until a process is being paged, but when the space is allocated all of its stack is allocated space. So, if a system default of 8 Mbytes of stack and small programs are swapped, they each consume 8 Mbytes of swap space even though it is not needed. Because of this issue SPP-UX can run out of swap space if there are a large number of process being swapped. When this happens the system will panic.

Growable stacks

To help reduce the occurrence, set the default stack size on the system to something small, such as 512 Kbytes, and use the mpa utility to start programs that require a larger stack.

Paging space system panic

The system panics when paging space is exhausted. When the panic happens, several things occur

1. The system prints the message `PAGING SPACE EXHAUSTED` (to both the console and the `event_log`).
2. The system prints a list of all the currently existing processes and how much memory each is consuming, this goes only to the `event_log`.
3. The system prints the following message to the console:
`System failing due to inadequate paging space...`
Followed by a list of the top 10 memory-using processes on the system.

The information printed in 2 and 3 above is of the form:

process_name total_mem_size shared_mem_size unshared_mem_size

where:

<i>process_name</i>	Is the name of the process.
<i>total_mem_size</i>	Is the amount of memory that the process can access. This includes memory that was originally mapped by another process (and which this process is sharing with that and other processes), and memory that was originally mapped by this process (which may or may not be shared with other processes).
<i>shared_mem_size</i>	Is the amount of memory that this process can access that was originally mapped by other processes and which this process is sharing. This memory only exists in one place in memory, so the amount of paging space used is not affected by sharing another process' memory
<i>unshared_mem_size</i>	Is the amount of memory that this process has mapped for its own use. After the memory has been allocated other processes may or may not share this memory. All memory in use in the system is held as "unshared" by one process in the system. The amount of memory in use in the system can be calculated by summing up the amount of "unshared" memory in all of the processes in the system.
Workaround	You can reduce the likelihood of hitting the panic by reducing the default stack size (in the tunables file) and then using <code>mpa</code> to increase the stacks only for those processes that need it.

Where to find more information

More detailed information on bugs, both open and closed, and their associated problem reports is available online. This file is installed at the same time as your system upgrade and is located in `/usr/doc/bugs`

To view bug information use a file pager—such as `page`, `pg`, or `more`. The following example uses the file pager `more` to view bug information for SPP-UX V2.1.1:

```
more /usr/doc/bugs/sppux_2.1.1
```

If you are unfamiliar with file pager commands, read the online man page by entering

man *command_name*

where *command_name* is the file pager name.