

Supported File and File System Sizes for HFS and JFS



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Executive Summary

Beginning with HP-UX 10.01, the supported sizes for files and file systems on HP-UX have gradually increased. The following white paper summarizes the supported sizes for HP-UX 10.01 through HP-UX 11i Version 2 (B.11.23).

HFS Supported Sizes

The following table lists the maximum file and file system sizes that HFS supports.

Note: Although it may be possible to create files or file systems larger than these documented limits, HP does not support such files and file systems, and the results of using them may be unpredictable.

| HP-UX Release | Maximum Supported File Size | Maximum Supported File System Size |
|---------------|-----------------------------|------------------------------------|
| 10.01 | 2 GB | 4 GB |
| 10.10 | 2 GB | 128 GB |
| 10.20* | 128 GB | 128 GB |
| 11.00* | 128 GB | 128 GB |
| 11i V1* | 128 GB | 128 GB |
| 11i V1.6 | 128 GB | 128 GB |
| 11i V2 | 128 GB | 128 GB |

Table1: HFS Supported File and File System Sizes

* On the HP-UX 10.20, 11.00, and 11i V1 releases, you can exceed the 128 GB limit to 256 GB, but HP does not support it.

JFS (VxFS) Supported Sizes

The following table lists the maximum file and file system sizes that the Journaled File System (JFS) supports. JFS is also known as the VERITAS File System (VxFS).

Note: Although it may be possible to create files or file systems larger than these documented limits, HP does not support such files and file systems, and the results of using them may be unpredictable. HP supports large file systems that can be as big as 32 TB.

| HP-UX Release | JFS Version | Disk Layout Version | Maximum Supported File Size | Maximum Supported File System Size |
|-----------------------|-------------|------------------------|-----------------------------|------------------------------------|
| 10.01 | JFS 2.0 | Version 2 ¹ | 2 GB | 4 GB |
| 10.10 | JFS 2.0 | Version 2 ¹ | 2 GB | 128 GB |
| 10.20 | JFS 3.0 | Version 2 | 2 GB | 128 GB |
| 10.20 | JFS 3.0 | Version 3 ¹ | 128 GB | 128 GB |
| 11.00 | JFS 3.1 | Version 2 | 2 GB | 128 GB |
| 11.00 ² | JFS 3.1 | Version 3 ¹ | 1 TB | 1 TB |
| 11.00 | JFS 3.3 | Version 2 | 2 GB | 128 GB |
| 11.00 | JFS 3.3 | Version 3 ¹ | 1 TB | 1 TB |
| 11.00 | JFS 3.3 | Version 4 | 1 TB | 1 TB |
| 11i V1 | JFS 3.3 | Version 2 | 2 GB | 128 GB |
| 11i V1 | JFS 3.3 | Version 3 | 2 TB | 2 TB |
| 11i V1 | JFS 3.3 | Version 4 ¹ | 2 TB | 2 TB |
| 11i V1.5 | JFS 3.3 | Version 4 ¹ | 2 TB | 2 TB |
| 11i V1 | JFS 3.5 | Version 4 ¹ | 2 TB | 2 TB |
| 11i V1.6 | JFS 3.5 | Version 4 | 2 TB | 2 TB |
| 11i V2 | JFS 3.5 | Version 4 ¹ | 2 TB | 2 TB |
| 11i V2 ^{3,4} | JFS 3.5 | Version 5 | 2 TB | 32 TB |

Table 2: JFS (VxFS) Supported File and File System Sizes

¹ This version includes default disk layouts for particular HP-UX releases.

² If you are extending or creating file systems beyond 128 GB, then you need PHKL_22719 to avoid mount problems.

³ With VxVM 3.5 only (not LVM) and OnLineJFS license for greater than 2 TB file system.

⁴ The HP-UX 11i V2 (B.11.23) September 2004 release is required to use file systems greater than 16 TB.

Large File System (> 2 TB) Compatibility Issue

- The `ustat` system call returns information about a mounted file system.
- The `statfs` function returns status information for a mounted file system.
- The `statvfs` function returns information about a mounted file system.

There is a compatibility issue involving old binaries that still use `ustat`, the various forms of `statfs` (`fstatfs`, `statfsdev`, `fstatfsdev`), and the various forms of the 32-bit flavor of `statvfs` (`fstatvfs`, `statvfsdev`, `fstatfsdev`).

When these old binaries are exposed to a truly large file system, these calls will return an `E_OVERFLOW` error that the binaries have never seen before. In some cases, this may be interpreted as a file being absent (some libraries and commands look at the `-1` result, but not the `u.error`) or draw other incorrect conclusions. HP-provided command and library code has been updated to use the 64-bit flavor of `statvfs`, so rebuilt binaries should not have this problem. The bottom line is that administrators need to be aware of this when setting up their file systems. These older binaries need to be run against data that resides on smaller file systems, rather than new, huge ones that will overflow the various 32-bit status fields.

Large Files with Memory Mapping

Use of large files in conjunction with memory mapping (via the `mmap` system call) requires large amounts of swap space to be configured in the system to make it perform. For example, if a 1 TB file is memory mapped by an application, the system should have between 8- to 16 GB of swap space.

Large File System (> 4 TB) File System Block Size Issues

Large file systems (> 4 TB) require certain block size requirements. For example, in order to create a file system that is larger than 16 TB, a file system block size of 8 kb is necessary. You can obtain more information on the file system block size requirements through the `mkfs_vxfs(1m)` manpage.

Related JFS Patches

Beginning with HP-UX 10.20, HP has introduced several patches to prevent the creation or extension of JFS file systems beyond the supported maximum size.

For HP-UX 10.20, these patches follow:

- PHCO_23035 s700_800 10.20 extendfs_vxfs(1M) cumulative patch
- PHCO_23036 s700_800 10.20 fsadm_vxfs(1M) cumulative patch
- PHCO_23037 s700_800 10.20 mkfs_vxfs(1M) cumulative patch

For the latest information about available patches, see the IT Resource Center:

1. Go to the ITRC Web site: <http://itrc.hp.com>.

You must register with the ITRC to search the patch database. It is free.

2. Click Patch Database to search for patches. Select the OS version and enter the keyword JFS to get a list of JFS patches.

For more information

docs.hp.com

HP Technical Documentation Web site

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HP-UX Release 10.20 and later and HP-UX Release 11.00 and later (in both 32 and 64-bit configurations) on all HP 9000 computers are Open Group UNIX 95 branded products.

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