

Auspex NetServer System Software

Auspex markets a family of network servers using Functional Multi-Processing™ (FMP), a balanced architecture pioneered by Auspex to address the special requirements posed by the evolving roles of network servers. The FMP architecture distributes NFS™ workload to multiple, dedicated processors individually optimized for Ethernet™, file, storage, and Unix™ system functions. To fully utilize the

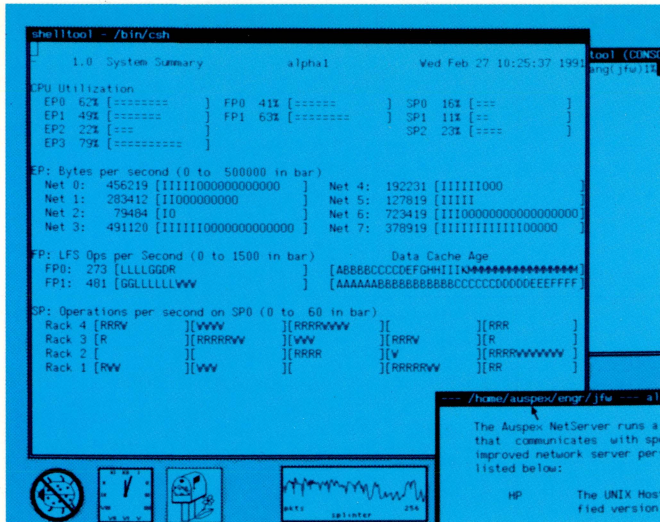


flexibility of FMP, Auspex provides a rich set of software and capabilities. Auspex's NetServer™ System Software provides an integrated, easy-to-use, standards-conformant environment that permits performance monitoring and optimization, centralized administration, increased data integrity and data availability, and graceful system growth. With Auspex's NetServer System Software and unique FMP architecture, the Auspex NetServer family offers greater system performance and user productivity at a dramatically reduced cost per network seat and lower total cost of ownership.

Virtual Partitions

Virtual Partitions are logical disk partitions made up of physical components spanning multiple disk drives. Disk utilization, data availability, and performance are significantly improved with virtual partitions. Three types of virtual partitions are supported: mirrored, striped, and concatenated. *Mirrored partitions* are consistent, duplicate copies of a particular disk partition. Data availability is

increased because data contained in a mirrored file or database partition remains accessible even in the event of a single disk failure. Mirroring boosts performance by allowing read requests to be serviced by either copy of the mirrored partition, through *smart queueing*—assigning the read request to the disk with the shorter queue, or if neither is busy, to the disk with the shortest seek distance. Write operations to mirrored partitions occur simultaneously.



Striped partitions eliminate response-time delays from queued requests by spreading high-use file systems across multiple drives. With *concatenated partitions*—or with combinations of striped, mirrored, or concatenated partitions—large file systems (up to the Unix maximum of 2 GB) can be constructed from *leftover* partitions from several disks.

Hot Pluggability

All Auspex disk, tape, and CD-ROM assemblies are *hot-pluggable*, i.e. installable and removable *without* service interruption. Auspex drive assemblies use trigger-release carriers so changes take seconds, not hours—maximizing data availability and server flexibility while reducing time demands on the system administrator.

Online Backup

System administrators can perform consistent online backups—reducing system interruptions and operator cost—using a technique based on mirrored virtual partitions. By creating a mirrored partition, two identical copies of the partition handle client requests. When a mirrored copy is detached, it no longer receives client requests and is a snapshot of the partition at detachment. The detached mirror can be backed up using standard Unix dump utilities. The other remaining copy of the mirrored partition continues to service client requests. Thus, a consistent, data-safe backup copy of the file partition is created without impacting data availability. With Auspex's parallel tape-streaming capability, a system administrator can backup up to 37 GB per 8-hour shift.

Virtual Partition Management

The Virtual Partition Manager provides users with a single, informative display of file system mapping, physical and virtual disk partitions, and disk utilization. With the insight that the Virtual Partition Manager and Performance Monitor provide, system managers can easily

identify and eliminate “hot disks” and ensure maximum performance for NFS clients. With a glance, the system administrator can monitor disk and partition utilization—centralizing and simplifying the task of effectively managing up to 81 GB of online disk storage.

Performance Optimization

The Auspex Performance Monitor provides both real-time display and fast-motion replays of performance data for each processor as well as statistics on I/O cache memory, disk subsystem, Write Accelerator, and virtual partition usage. For example, using the Performance Monitor, disk overloads are easy to spot and simple to correct—by striping high-demand file systems. No new equipment is required and existing resources are more efficiently utilized. For the first time in a Unix system, system managers can make configuration changes, confident that they will correctly address the performance problem observed—ending the guesswork in eliminating bottlenecks.

Automated Administration

A suite of simple, easy-to-use automated administration procedures augment the generic SunOS™ utilities. These tools make administrative tasks quick and simple to perform.

Online Documentation and X terminal Support

With Auspex's online documentation, the system administrator gains instant access to system documentation with hypertext links. With hypertext links, locating topically-related references is simple, fast, and complete. Auspex's online documentation is supported on X terminals and workstation displays. Full printed documentation is also provided.

Software Compatibility

Auspex NetServers are fully SunOS™ and ONC compatible.

- Full binary compatibility with Sun-3 and SPARC platforms.
- Direct implementation of a Sun-licensed but optimized version of NFS.
- Remaining services via SunOS-licensed Host Processor software with primarily driver-level modifications.

Application Layer

- SunOS operating system, version 4.1.
- Sun ONC services, version 4.1.
- Network File System (NFS), protocol version 2.
- Simple Network Management Protocol (SNMP).
- X Display Manager Control Protocol with X11R4 XDM.
- Sun NIS service.
- DES Key Authentication service.
- Lock Manager service.
- Automount service.
- Port Mapper service.
- Remote Login program (RLOGIN).
- Remote Shell program (RSH).
- Electronic mail (SMTP, UUCP).
- Telnet (TCP/IP terminal emulation).
- FTP (TCP/IP file transfer program).

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