

3.2 Release Notes: NetInfo

New Features

The following features have been added to NetInfo since Release 2.0.

Performance improvements

A number of performance improvements have been made to ensure that NetInfo scales efficiently to networks containing hundreds or thousands of computers.

- The protocol between NetInfo master and clone servers has been improved to eliminate excessive data transfers, and the distribution of NetInfo changes has been streamlined. When a number of NetInfo changes are made in succession, as often occurs when high-level applications are used, **netinfod** will coalesce the individual changes into a single composite update. Since only one transaction with each clone server is needed to distribute the composite update, the overhead associated with updating clones is reduced.

In addition, the distribution of updates is now multi-threaded. Modifications made to the master database are distributed immediately to clones; an update need not wait for prior

updates to finish before it is handled. Update threads operate independently, except that updates are guaranteed to arrive at each individual clone in the correct order.

- The disk format for NetInfo databases has changed to increase the default record size. In most cases, this reduces the number of files in a database by about 90 percent and decreases the cost of large searches by about 25 percent. Release 3 NetInfo is compatible with both new and old database formats, and all versions of NetInfo can be used together on a network, regardless of the revision level or database format of the individual servers. All configurations, including master and clone servers which use different versions of software and different database formats, are supported.
- In order to deter NetInfo servers from binding to inappropriate parent servers over a slow network link, NetInfo servers now check for the existence of a local clone of the parent domain before broadcasting to find a suitable parent server. Since clients typically inherit the bindings of their NetInfo servers, this can help reduce the frequency with which NetInfo clients bind to relatively distant servers.
- Two sources of excess network traffic have been quashed: the automatic reload of **lookupd**'s user information cache every half hour, and the execution of **atrun** by **cron** every fifteen minutes. The user information cache in Release 3 is not reloaded unless actively used, and **cron** has been modified to avoid using library routines which access NetInfo when possible.
- Several caches have been added to **lookupd**, the NetInfo daemon which accesses NetInfo, NIS, and DNS information on behalf of the UNIX libraries. The most frequent requests seek information about the current host, the currently logged-in user, and the **root** account. In Release 3, **lookupd** answers these requests from caches, avoiding use of the network completely. The logged-in user and **root** caches persist for at most twenty minutes; they are explicitly reset when a user logs in or out, or when a password change is made. Local host information is never reset, and the computer must be restarted if its

Internet address is changed.

- UNIX groups, mount points, printer database entries, and password file entries are also cached, but **lookupd** checks NetInfo to be sure the cached information is valid before these caches are used. In Release 3, about 80 percent of **lookupd** requests are satisfied from a cache.
- If NetInfo is the only source for user and group information on your network, some additional optimizations are possible due to the database-like nature of NetInfo. To determine which UNIX groups a user belongs to, for example, it is no longer necessary to enumerate all groups across the network. This helps to speed up logging in and the UNIX **su** command.

Other changes and enhancements

- **lookupd** supports three ways of handling the **getpwent** family of library routines. By default, **lookupd** maintains a cache of user data which is checked for accuracy only after servicing a client request. If the data have become outdated and a certain amount of time has passed since the last update (thirty minutes by default, settable with the **-m** option), the cache is reloaded. Since the client request is answered before the cache is reloaded, it is possible for a second enumeration of user data to yield different results. The **-f** option forces the cache to be reloaded on a regular schedule, and **-m 0** turns it off completely.
- **lookupd** may be passed a **-L filename** argument to ask that all lookup requests be logged to the specified file. Cache hits are marked with an asterisk. The **lookupd** log can become quite large over time.
- **niload** now allows the use of a tagged domain specification.

- The interface between the UNIX libraries and **lookupd** is considered private API, and the header files which define it have been removed.
- The file **/etc/exports** is obsolete, and export information is now stored in NetInfo. The **niload** and **nidump** commands can be used to load or dump export files in the standard UNIX format.
- Each user record in NetInfo now has a user-writable subdirectory called "info", which may be used by applications to store configuration information. **niload** will create these info subdirectories when a UNIX passwd file is loaded.
- To force **lookupd** to rebind its connections to NetInfo servers, it can be restarted by sending it a SIGHUP (signal number 1). To restart all NetInfo servers on a computer, kill **nibindd** with a SIGTERM and restart it by running **/usr/etc/nibindd** from a shell.
- Release 3 includes several security enhancements which may be enabled through NetInfo. To turn on security features, create a security_options property in the **root** directory of a NetInfo domain and add one or more of the following values:

login_auditing	Asks that all successful logins, including those to the workspace, be recorded in the standard UNIX files, and that unsuccessful logins be reported through syslog.
secure_passwords	Raises the standards of obscurity which passwords must meet in order to be accepted by the Preferences application and the passwd command. With secure_passwords on, all passwords must be at least six characters long and contain non-alpha characters.
lockout	When a login attempt fails, progressively increases the delay enforced between login attempts.

all Selects all current and future options.

There is no way to turn off a security option. A computer uses all the security options enabled in its local domain and all of its parent domains.

Known problem

- You can't directly copy a Release 3 database to a Release 2 NetInfo server. Use the **nidomain -c** command on the Release 2 server to clone the database over the network, instead.