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## PROJECT ATHENA SYSTEM ENGINEERING MEMO

### ASEM #3

## Athena System Release 4.0 (Test Release)

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### 1. Introduction

This document describes the software changes in Athena System Release 4.0. Changes are listed in the following categories:

- Major User-Visible Changes -- Important changes that affect everyday work by Athena users.
- Major System Changes -- Important changes that are not generally visible to users.
- Minor Changes -- Various minor enhancements and bug fixes.
- Changes to the VAXstation System -- Changes that affect only VAXstation systems.
- Changes to the RT/PC System -- Changes that affect only IBM RT/PC systems.
- VAXstation 2000 Support -- A discussion of support for the VAXstation 200 system
- Changes Not in this Release -- Changes that may have been expected for this system but are not yet available.

### 2. Major User-Visible Changes

#### 2.1. NFS

The Network Filesystem (NFS), originally developed by Sun Microsystems, is now available. While it still requires some work to fully integrate it into the Athena environment, evaluation of its abilities can begin. Documentation and a more detailed description of the implementation on the VAXstation and RT/PC will be available shortly.

#### 2.2. GNU Emacs 18.41

This is the official public release of Emacs Version 18. A description of the changes from Version 17 can be found in the Emacs News system (use "C-h n" to get it).

### 2.3. Xterm

The standard X10, release 4, *xterm* is now the default as */etc/xterm*. */usr/new* contains a symbolic link to this. (Note: currently, this link is reversed on the RT/PC.) There are also some bug fixes:

- If "ActiveIcon" is true and the title is changed while iconified, the width of the titlebar was incorrectly calculated from the icon width.
- If "ActiveIcon" is false and the title is changed to a shorter string while iconified and the icon is near the left edge of the screen, the icon may shrink entirely off-screen.
- If a new *xterm* window is created with its center off-screen, the icon (of any variety) was being positioned off-screen.

A login window will not allow the mouse cursor to leave its boundaries.

### 2.4. Toehold

Authentication of a user at login time now follows the following algorithm:

If there is no entry in */etc/passwd*:

- if */etc/nocreate* exists, deny access (this allows privatization).
- otherwise, get Kerberos tickets and verify the password.  
If a null ticket is returned, register the user with Kerberos using */etc/athena/go\_register*. Deny access if any other errors occur.
- If the password is valid, allocate a user ID, add a line to */etc/passwd* with a password field of \*, and create a home directory in */tmp*. Other fields for the passwd entry are provided by Hesiod. Then complete the login process.  
Note that since any remote accesses will be kerberos-authenticated, the UID is no longer required to be the same from session to session.

If there is an entry for the user in */etc/passwd*, consider 3 cases:

- 1) If there is no password, log the user in, but do not obtain Kerberos tickets. Do not create a home directory or modify */etc/passwd*.
  - 2) If there is a normal encrypted password, prompt for a password as usual. Attempt to get Kerberos tickets. If successful, proceed with login, otherwise compare to the password in the file. Do not create a home directory or modify */etc/passwd*.
  - 3) If the password is '\*', prompt for a password and attempt to get Kerberos tickets. If successful, continue with the login. Otherwise, attempt to register the user with Kerberos using *go\_register*. If that fails, deny access.
- If a user is logging in and Kerberos tickets are not obtained, a warning to this effect is printed.
  - When the Zephyr Notification Service becomes available, send it a message about the login.

At logout time, notify Zephyr, if appropriate, and remove the home directory and password file entries if they were created.

The workstation deactivates itself two minutes after the last user logs out. At that time, it removes everything in */tmp* to keep things clean. This means that a user who forgets to

save his files has two minutes to login again before they are deleted. It also kills the X server and restores the passwd file from */etc/passwd.local*.

*/etc/toehold* is able to kill the X server more gracefully now.

With the advent of Hesiod, */etc/pwserv* is no longer used.

Permanent home directories on a workstation should be placed directly in */site*. */mit* will be used for imported filesystems of all types.

*Manual pages for the toehold software need to be written.*

## 2.5. Remote Access Control

During an user's session, access to the workstation via the network is disabled by default. This is accomplished by adding a capability to */etc/inetd* that allows services to be switched on and off. Services that are now switchable include *ftp*, *telnet*, *shell*, *login*, *exec*, and *tftp*. The programs *access\_on* and *access\_off* control this access.

When a workstation is deactivated, remote access is permitted. This will change once some operational problems can be overcome.

## 2.6. Mail

All mail should be delivered to post office servers. MH and EMACS Rmail programs have been modified to use Kerberos for authentication and Hesiod for finding the post office for a given user. The environment variable MAILHOST can be used to override the Hesiod information for a post office. If Hesiod is not available, it falls back on the standard */site/mtstailor* file.

*Users have not been moved to post office servers yet. The software is now in place, however. Relevant manual pages still need to be updated.*

## 2.7. passwd

*passwd* is now Kerberos-authenticated and works from workstations. *chsh*, *chhome*, and *chfn* have also been updated.

## 2.8. BLOX

BLOX is no longer available on the standard user RVD packs. It is available through the Applications Development group.

## 2.9. Xwm

*xwm* is now a shell script that starts *uwm* with an initialization file designed to mimic *xwm*.

## 2.10. Games

Gamescontrol has been removed.

## 2.11. Turnin

*turnin* and *pickup* are now installed in */usr/athena*. Manual pages are available.

## 2.12. C Shell

The C shell is now *tcsh* with the line-editing features turned off by default. In this mode, it behaves exactly like */bin/csh*.

## 2.13. New Software

*/usr/unsupported/uemacs* and */usr/new/jove* are now available. They are two EMACS-style editors that are being evaluated for use on server machines where a full-blown EMACS is not required. *uemacs* is "micro-gnu-emacs".

*/usr/unsupported/bison* is the Free Software Foundation version of *yacc*.

Saber C is now available as */usr/athena/saber*.

## 2.14. Miscellaneous

Note that running *finger @workstation* will simply print the remote hostname if the workstation is deactivated.

## 3. Major System Changes

### 3.1. RVD Release 3.1

- *spindown* supports *-f* (force) option.
- Access control lists for operational and pack access.
- More control over physical disks (*/etc/athena/rvduse*).
- Load statistics (*/etc/athena/rvdload*).
- Allow/disallow spinups (*/etc/athena/rvdallow*).
- Change to server scheduling (control packets vs. RVD packets) to ease problems with a heavily loaded server.

### 3.2. Kerberos

Multiple Kerberos servers are fully supported. They will be created and managed by MIT Telecommunications. Root access to server machines should now be managed using Kerberos as well. Where possible, Kerberos services should use *knetd* rather than having a separate port allocated for them.

### 3.3. Hesiod

The Hesiod name service is available. Many services have been modified to use it. A library of functions for accessing it is installed as `/usr/athena/lib/libhesiod.a` (accessible with `-lhesiod`).

### 3.4. System Update

Is now based on the *track* software. More information will be available later.

### 3.5. Reconfiguration of Root Filesystem

Files on the root filesystem not necessary for maintenance in single-user mode have been symbolically linked to the system RVD (`/srvd`). For more information, see the document *Project Athena Technical Plan: The Athena Workstation* (Section F.2.1).

### 3.6. Revised `/etc/rc` Configuration

The files executed at boot time have been reorganized. Details of the new system can be found in the section on "Boot-Time Configuration" in *Project Athena Technical Plan: The Athena Workstation*. In particular, `/etc/rc.local` is now reserved for local additions to the startup sequence.

### 3.7. `/etc/athena`

The directory `/etc/athena` has been cleaned up for use on workstations, since many programs there were of use only on timesharing systems and special servers.

### 3.8. Crontab

The *crontab* file on public workstations has been stripped even further. Private workstation owners may wish to add to it to restore some commands not necessary on public workstations.

### 3.9. OLC

The OLC system now uses Hesiod to find the OLC daemon. If Hesiod is not available for some reason, it reverts to the current `clustertab`.

## 4. Minor Changes

### 4.1. Penplot

There are miscellaneous bug fixes for 4.3 and RT systems.

## 4.2. Name Service

The file */etc/named.boot* now contains a cache entry for */etc/named.local* for local modifications. It also contains an entry for */etc/named.hes* for pre-loading the cache with information about Hesiod.

## 4.3. Miscellaneous

- */etc/printcap* and */etc/athena/lib/clustertab* are now symbolic links into */srvd*.
- Printer spool directories for *lpd* are now created at boot time as specified in */etc/printcap*.
- There is only one version of *talk*.
- *telnet* now handles multiple addresses properly.
- There is now a manual page for *xsetroot*.
- RCS programs now allow usernames to begin with digits.
- The manual page for *scribe* has been updated.
- *finger* now prints the time of last logout rather than last login.
- A minor bug with *yacc* was fixed.
- */usr/local* is now a symbolic link to */site/usr/local* for locally installed software.
- */usr/(StaffTools,beta,rtingres)* are now symbolic links into */mit*, since they are all imported filesystems. They are here only for compatibility, and may be removed in a later release.
- */usr/mit* no longer exists. There is only */usr/athena*.
- */usr/potluck* no longer exists.
- */usr/prototype\_project* no longer exists.
- The standard login window on public workstations now has 64 lines rather than 65 to accommodate the new *xterm* titlebar.

## 5. Changes to the VAXstation System

The VAXstation system is now based on Ultrix<sup>1</sup> 2.0. Documentation on this system will be available shortly. The major change visible at Athena is the addition of NFS. More information about these changes can be found in *Project Athena Technical Plan: Athena Changes to Digital 2.0 Ultrix* (Section G.1.2).

### 5.1. List of Changes

This section contains a partial list of the changes on the workstation from Ultrix 2.0:

- The UNIX kernel

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<sup>1</sup>Ultrix is a trademark of Digital Equipment Corporation

- The boot programs *ultrixboot* and *vmb.exe*].
- The boot programs in */usr/mdec*.

## 6. Changes to the RT/PC System

A version of ACIS 4.2A with NFS support added at Brown University is available. The tools for managing NFS are somewhat different from those on the VAXstation system.

*The RT/PC version of NFS will be available in an update to this release.*

## 7. VAXstation 2000 Support

This release supports the VAXstation 2000 workstation. It requires a different kernel, but utilities should work on both machines. The installation procedure is also somewhat different.

## 8. Changes Not In This Release

This section describes expected changes that are not in this release. Most of them should be in later releases, however.

### 8.1. NFS

Running NFS systems in the Athena environment is not fully understood yet. In particular, we are not able to handle the following at this time:

- Authentication
- Access control
- Management tools
- *attach/detach*

### 8.2. MDQS

The MDQS system does not currently support the full functionality of the Berkeley line printer system. The following issues remain to be addressed:

- Authentication
- Access control (both for users and operators)
- Accounting
- Notification
- Support for *lpr* options
- Transition plan
- Error reporting to users
- Sophisticated printer naming.

### 8.3. Scheme

In an update to this release, the *scheme* interpreter will be replaced by the most recent version. A compiler will no longer be available.

### 8.4. */usr/prototype\_user*

A group has decided to work on the prototype files; they will be included in an update to this release.

### 8.5. Miscellaneous

For various reasons, the following are not contained in this release. Many of them will be available in updates soon.

- *Attach/detach* for RVD.
- *rlogin* with environment passing
- Read-only root filesystem.
- MDQS software