



Sun Ray Controlled Access Mode

Sun Ray Users Wiki

Craig Bender

Staff Engineer

Sun Microsystems



Learning Objectives

- As a result of this class, you should be able to:
 - > Articulate what is Controlled Access Mode
 - > List possible use cases for Controlled Access Mode
 - > Describe the key components of Controlled Access Mode
 - > Add/remove Controlled Access Mode Applications
 - > Describe the CAM startup processes
 - > Explain how to troubleshoot a CAM application

What is Controlled Access Mode?

- A “patented” Feature of Sun Ray Server Software that bypasses the login process of Unix System to allow a user to interact with the applications
 - > United States Patent 7069275
- Basically a Kiosk
- Processes start up as root, then “su” over to a CAM user to run applications
- CAM users are “locked” in /etc/passwd
- CAM users home directories are built up and torn down for each session

Uses for Controlled Access Mode

- Full screen windows
 - > Most common use
- Internet kiosks
- Billboards
- Information displays
 - > Airports
 - > Hotels
- Use your imagination
 - > And common sense!

Key Components of CAM

- Sun Ray Server configuration (utconfig)
- Sun Ray Policy (utpolicy)
- Sun Ray CAM users
- Sun Ray “Black Box” Scripts
- CAM Applications
- Prototypes
- CAM Attributes

Sun Ray Server Configuration

- /opt/SUNWut/sbin/utconfig
 - > Configures the Sun Ray Server Data Store, web interface, CAM use, and preparation for creating a FOG
 - > CAM Users get configured during this process
 - > Can add more later if needed
 - http://blogs.sun.com/ThinkThin/entry/adding_additional_cam_users
 - > Must be run on every server in the FOG

Sun Ray Server Policy

- `/opt/SUNWut/sbin/utpolicy`
 - > CAM is either on or off depending on card use
 - > Policy can be configured via the web interface or via command line
 - > Sun Ray policies are FOG wide

CAM Session Startup

utxinit

Xsun (display)

utxexec kiosk.start

kiosk.start

utslaunch (server:display)

bbrootsession

bbcontrol

bbstartd

utstartkiosk

Your CAM Scripts

Sub processes

dtsession

dtwm

utaction (Clean up in kiosk.conf)

waitany (PID of Critical Apps)

} **Normal Sun Ray – Session type defined by policy**

} **Black Box Scripts – “The Hand off”**

} **Trouble Happens Here**

CAM Application Basics

- At least one Application must be set to Critical
 - > Dtsession usually fills this role
 - > Sun Rays will cycle otherwise
- CAM Applications should always call scripts
 - > KISS Principle Always Applies
- Understand your application before using it in CAM
 - > Required variables, configuration files, etc
- CAM Scripts and associated applications must be copied to and installed on each server in the FOG
 - > Can use a central NFS mount point if desired
 - > CAM Configuration stored in the Sun Ray Data Store

CAM Application Basics

- CAM User home directories are created in:
`/var/opt/SUNWbb/root/home/$USER`
- Default umask for CAM users is 077
 - > Only CAM user can read or write to their directories and files
 - > Be careful with “log files” in your CAM script
 - > Name them so the next “\$USER” can write to them or make them unique (\$\$)
 - > Don't name them `log.$DISPLAY` or SR Token since the next CAM user that has that display or token ID probably won't be the same as the owner of the file.
- CAM Environment != CDE/Gnome from a variables perspective
 - > May have to augment the PATH Statement in your CAM Script
 - > Other Variables too: `LD_LIBRARY_PATH`, `XSEARCHFILES`, etc

Defining CAM Applications

- Configured via Web Interface
 - > Command line possible
 - > http://blogs.sun.com/ThinkThin/entry/configuring_a_cam_application_without
- Applications have 3 attributes
 - > Critical (Launch at start. If application exits, end CAM Session)
 - > Menu (Only launch via workspace menu)
 - > Default (Launch at start, relaunch via workspace menu)
- Profile Name is also your Prototype Directory Name
 - > Case Sensitive
 - > No Spaces
- Spaces Allowed in Menu Label
- Path to application should be your CAM Script
 - > Check Permissions on your script!!!!

Prototype Directories

- Reside in `/var/opt/SUNWut/kiosk/prototypes`
 - > Subdirectories must **exactly** match your CAM Application Profile Name
 - > Under each subdirectory live the files that your applications require
 - > i.e. `.ICAClient` for Citrix
 - `/var/opt/SUNWut/kiosk/prototypes/Citrix/.ICAClient`
- Prototypes must be copied to every server in the FOG
- As each CAM session starts, the prototypes get copied to `$HOME` for each user
 - > Ownership is changed to CAM User, permissions stay the same
 - > Happens before your CAM Scripts start, so you **can** edit these files on the fly if need be

CAM Troubleshooting

- Make sure “set -x” is in all your CAM Scripts
- Create CAM Application that just launches a terminal
 - > Run your Script from that terminal
- Turn debug mode on in kiosk.start (advanced)
 - > Log files will be dumped in /var/tmp
 - > Good way to watch the CAM startup process too!

CAM Troubleshooting - Advanced

- Edit /etc/opt/SUNWut/kiosk.start

- > Change:

```
# exec 2>/var/tmp/bbkiosk.$DISPLAY.$$ 1>&2 # Debug
#     set -x
#     set -u
exec 2>/dev/null 1>&2
```

- > To This:

```
exec 2>/var/tmp/bbkiosk.$DISPLAY.$$ 1>&2 # Debug
set -x
#     set -u
#exec 2>/dev/null 1>&2
```

CAM Troubleshooting - Advanced

- View log files in /var/tmp
 - > Named bbkiosk.:display.\$\$
 - > Errors typically happen near the end
 - > Unless Solaris is broken!
- One typo is all it takes to break CAM
 - > CAM debug file (find the problem!):

```
+ /usr/lib/ICAclient/wfica -username craig -domain boatdrinks -desc Desktop
  UID  PID  PPID  C   STIME TTY      TIME CMD
  utcu0 3252 3230  0 08:23:42 ?        0:00 /bin/sh /opt/Citrix/testme
+ /opt/SUNWut/bin/utaction -i -d /opt/Citrix/winlock
/opt/Citrix/testme: /usr/lib/ICAclient/wfica: not found
3256
  UID  PID  PPID  C   STIME TTY      TIME CMD
  utcu0 3256 3230  0 08:23:42 ?        0:00 /bin/ksh -p /opt/SUNWut/kiosk
/bin/utstartkiosk /var/opt/SUNWbb/root/home/utcu0
/opt/SUNWut/kiosk/bin/utstartkiosk[338]: /var/opt/SUNWut/session/kiosk/4: cannot
create
/proc/3252/status: No such file or directory
bbkillproc 0 - 0 - bbstartd - utcu0
kill: 3271: no such process
```

Key Resources

- ThinkThin Blog
 - > <http://blogs.sun.com/ThinkThin>
- Sun Ray Wiki
 - > <http://blogs.sun.com/ThinkThin>
- Sun Ray User Group
 - > <http://www.sun-rays.org>
 - > Join the mailing list!