McIDAS-V Technical Issues

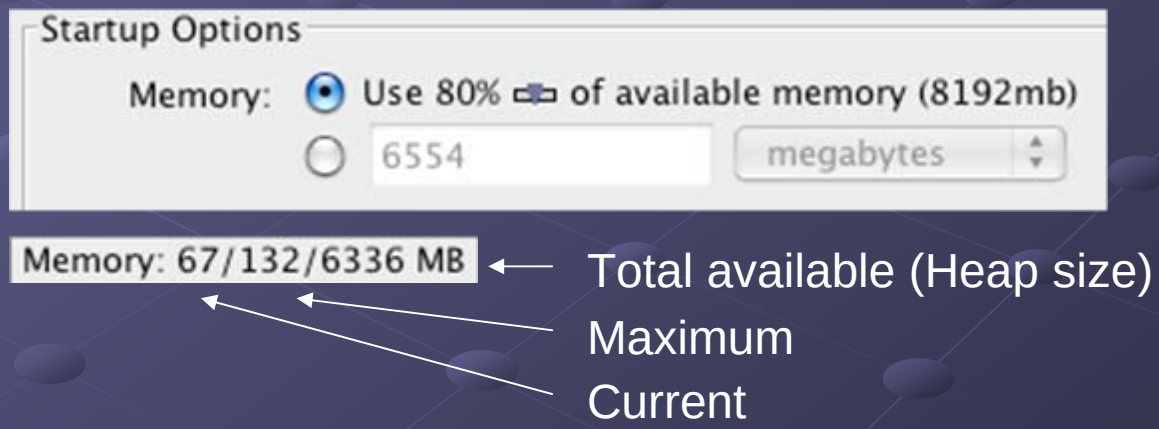
- Memory use
- Java3D / Graphics drivers
- Remote display
- Background processing

McIDAS-V Memory Use

- Data is normally represented as 32bits per data point (work is being done to represent ADDE imagery as 8bit)
- Ancillary information is propagated with data objects
    - Units
    - Error estimates
    - Navigation
- Java Virtual Machine controls memory garbage collection

Java Memory Use

- McIDAS-V will use 80% of available memory by default (heap size)
    - 32bit Java can address a maximum of 1536mb RAM
    - 64bit Java can address all available system RAM
- Garbage collection is controlled by the Java Virtual Machine
    - Many factors affect garbage collection timing
    - Aggressive memory use is *good* for performance

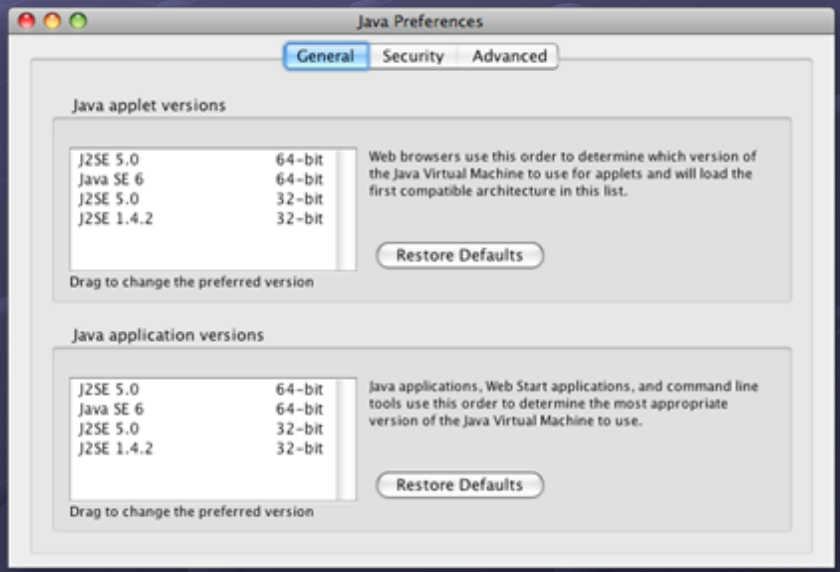


Java3D / Graphics drivers

- McIDAS-V uses cutting-edge 3D features
- Java Runtime Environment version 5 and Java3D 1.5 are included as part of the installers
- Many runtime errors can be fixed by updating your graphics card drivers
  - McIDAS-V fails to launch
  - Excessive CPU usage (100%)
  - “Torn” or gray images
  - Java3D error messages

Setting the JRE on OS X

- Core 2 Duo Macs running OS X 10.5 Leopard include Java 5 (32 and 64bit) and Java 6 (64bit) JREs
- Apple does not provide Java 6 or Java 5 64bit for PowerPC or older Intel Macs
- The “Java Preferences” utility is used to specify the current JRE



Remote Display

- "export DISPLAY" does not work with McIDAS-V
  - Java3D does not use the X11 window system
  - A local OpenGL graphics resource is required
    - Accelerated graphics card
    - 3D library (e.g., Mesa)
- Java3D and OpenGL enable the powerful visualization capabilities of McIDAS-V

Background Processing

- Running McIDAS-V without creating a graphical user interface
  - Offscreen rendering with the “offscreen” option
    - Requires an active window manager
    - User must be logged in
  - Xvfb provides a virtual display resource for Java3D
    - Installed by default on newer Red Hat 5 systems
    - Freely available for most UNIX-like OSs
      - Binary packages
      - Source

Running McIDAS-V using Xvfb

1. Create a virtual Xvfb display on screen :1.0

   Xvfb :1 -screen 0 1024x768x24 &

2. Set your display for McIDAS-V to :1.0

   export DISPLAY=:1.0

3. Start McIDAS-V with a bundle or ISL file to process

   runMcV <bundle>