

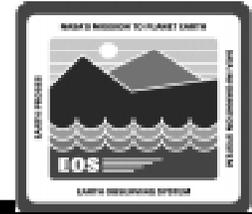
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# SYSTEM TROUBLESHOOTING

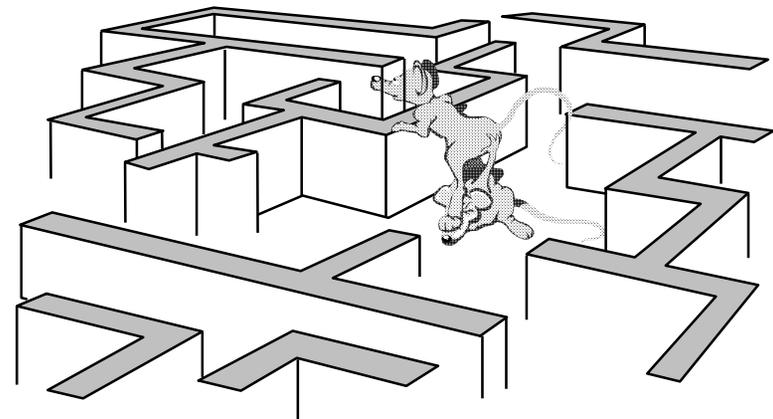
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**ECS Release 4 Training**

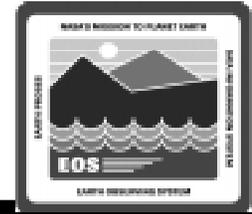
# Overview of Lesson



- Introduction
- System Troubleshooting Topics
  - System Performance Monitoring
  - Problem Analysis/Troubleshooting
  - Trouble Ticket (TT)
  - Diagnosing Network Communications Problems
- Practical Exercise

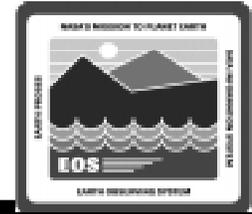


# Objectives



- **Overall: Proficiency in methodology and procedures for system troubleshooting for ECS**
  - **Conduct system performance monitoring**
  - **Perform problem analysis and troubleshooting**
  - **Set up trouble ticket users and configuration**
  - **Diagnose network communications problems**

# Importance

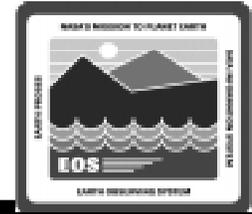


**Lesson helps prepare several ECS roles for effective system troubleshooting, maintenance, and problem resolution:**

- **DAAC Computer Operator, System Administrator, and Maintenance Coordinator**
- **SEO System Administrator, System Engineer, System Test Engineer, and Software Maintenance Engineer**
- **DAAC System Engineers, System Test Engineers, Maintenance Engineers**

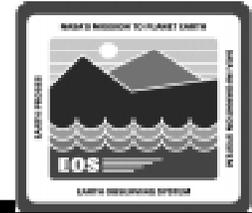


# System Performance Monitoring



- **Maintaining Operational Readiness**
  - **System operators -- close monitoring of progress and status**
    - **Notice any serious degradation of system performance**
  - **System administrators and system maintenance personnel -- monitor overall system functions and performance**
    - **Administrative and maintenance oversight of system**
    - **Watch for system problem alerts**
    - **Use monitoring tools to create special monitoring capabilities**
    - **Check for notification of system events**

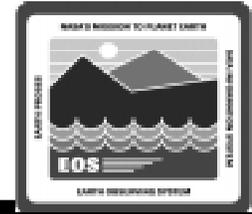
# Checking Network Health & Status



- **HP Open View system management tool**
  - Site-wide view of network and system resources
  - Status information on resources
  - Event notifications and background information
  - Operator interface for starting servers and managing resources
- **HP Open View monitoring capabilities**
  - Network map showing elements and services with color alerts to indicate problems
  - Indication of network and server status and changes
  - Creation of submaps for special monitoring
  - Event notifications

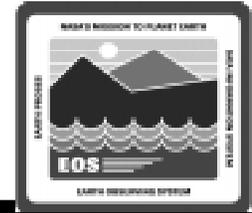


# Network Discovery and Status



- **HP OpenView discovers and maps network and its elements**
  - Configured to display status
  - Network maps set for read-write
  - IP Map application enabled
- **HP OpenView Network Node Manager start-up**
  - Network management processes must be running
    - ovwdb, trapd, ovtopmd, ovactiond, snmpCollect, netmon
  - Check using command: `ovstatus`
- **Status categories**
  - Administrative: Not propagated
  - Operational: Propagated from child to parent
- **Compound Status: How status is propagated**

# HP OpenView Default Status Colors

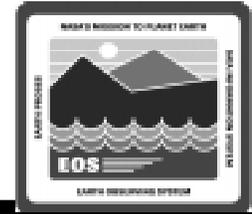


Status Condition	Symbol Color	Connection Color
Unmanaged <sup>(a)</sup>	Off-white	Black
Testing <sup>(a)</sup>	Salmon	Salmon
Restricted <sup>(a)</sup>	Tan	Tan
Disabled <sup>(a)</sup>	Dark Brown	Dark Brown
Unknown <sup>(o)</sup>	Blue	Black
Normal <sup>(o)</sup>	Green	Green
Warning <sup>(o)</sup>	Cyan	Cyan
Minor/Marginal <sup>(o)</sup>	Yellow	Yellow
Major <sup>(o)</sup>	Orange	Orange
Critical <sup>(o)</sup>	Red	Red

(a) Administrative Status

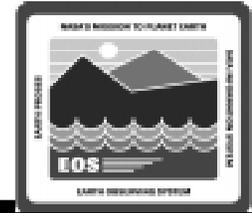
(o) Operational Status

# Monitoring: Check for Color Alerts



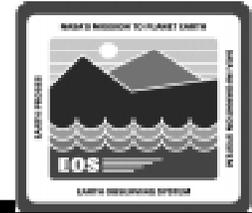
- **Open a map**
- **Compound Status set to default**
- **Color indicates operational status**
- **Follow color indication for abnormal status to isolate problem**

# Monitoring: Check for New Nodes



- **IP Map application enabled**
  - Automatic discovery of IP-addressable nodes
  - Creation of object for each node
  - Creation and display of symbols
  - Creation of hierarchy of submaps
    - Internet submap
    - Network submaps
    - Segment submaps
    - Node submaps
- **Autolayout**
  - Enabled: Symbols on map
  - Disabled: Symbols in New Object Holding Area

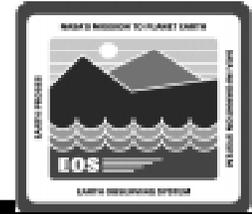
# Monitoring: Special Submaps



- **Logical vs. physical organization**
- **Create map tailored for special monitoring purpose**
- **Two types and access options**
  - **Independent of hierarchy, opened by menu and dialog**
  - **Child of a parent object, accessible through symbol on parent**

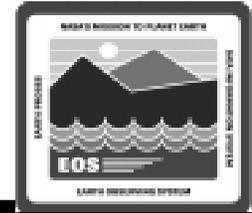


# Accessing the EBnet Web Page



- **EBnet is a WAN for ECS connectivity**
  - DAACs, EDOS, and other EOSDIS sites
  - Interface to NASA Science Internet (NSI)
  - Transports spacecraft command, control, and science data
  - Transports mission critical data
  - Transports science instrument data and processed data
  - Supports internal EOSDIS communications
  - Interface to Exchange LANs
- **EBnet home page URL**
  - <http://bernoulli.gsfc.nasa.gov/EBnet/>

# EBnet Home Page



EBnet Home Page - Netscape

File Edit View Go Communicator Help

Back Forward Reload Home Search Guide Print Security Stop

Bookmarks Location: <http://bernoulli.gsfc.nasa.gov/EBnet/>

Internet Lookup New&Cool Netcaster

## Welcome to the EOSDIS Backbone Network (EBnet) Web Site

Schedules Costs Traffic Requirements

Contacts

Design & Implementation

Open Issues

Related Sites

Documentation

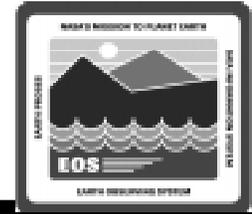
What's New?

Send mail to [tearman\\_sherri@bah.com](mailto:tearman_sherri@bah.com) with questions or comments about this site.  
Last modified: July 29, 1998

Document Done

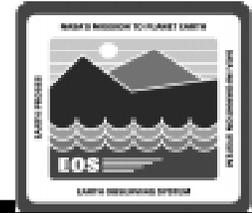
# Analysis/Troubleshooting: System

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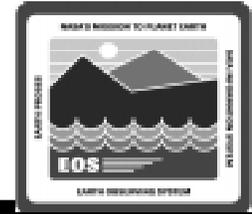
- **COTS product alerts and warnings**  
(e.g., HP OpenView, AutoSys/Xpert, Tivoli)
- **COTS product error messages and event logs**  
(e.g., HP OpenView, Tivoli, ClearCase®)
- **ECS Custom Software Error Messages**

# Systematic Troubleshooting



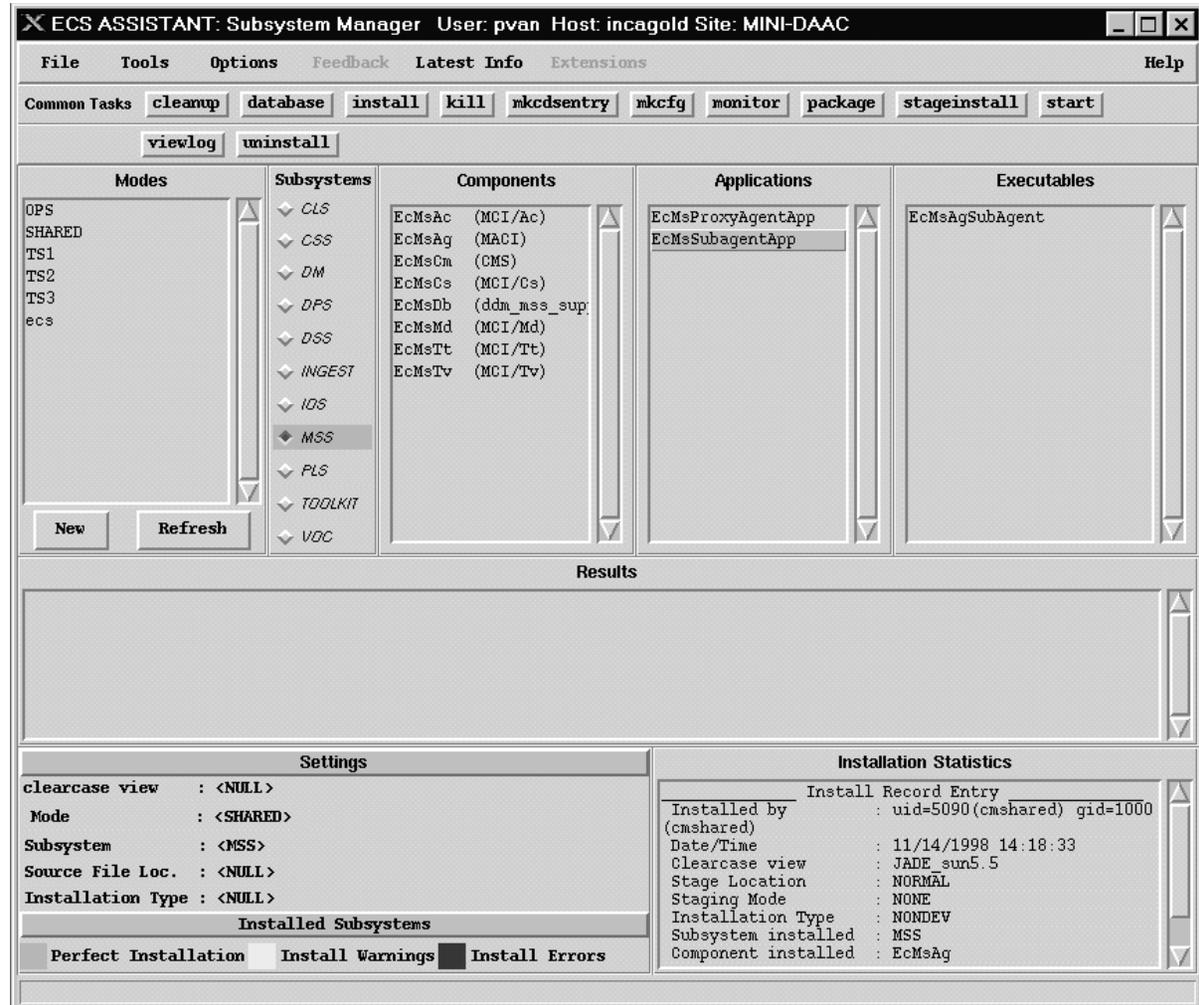
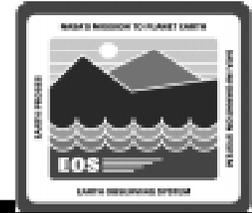
- **Thorough documentation of the problem**
  - Date/time of problem occurrence
  - Hardware/software
  - Initiating conditions
  - Symptoms
- **Verification**
  - Identify/review relevant publications (e.g., COTS product manuals, ECS tools and procedures manuals)
  - Replicate problem
- **Identification**
  - Review product/subsystem logs
  - Review ECS error messages
- **Analysis**
  - Detailed event review (e.g., HP OpenView Event Browser)
  - Determination of cause/action

# ECS Assistant vs. HP OpenView

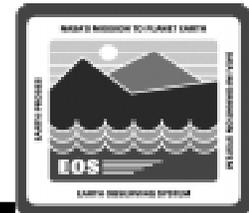


- **HP OpenView**
  - Dynamic
  - Real-time
  - SNMP
  - Only one instance at a time can be used to manage system, and current ECS implementation is incomplete
- **ECS Assistant**
  - Permits viewing server logs
    - *<Server>.ALOG*
    - *<Server>Debug.log*
    - Located in */usr/ecs/mode/CUSTOM/logs*
  - Independently available at each host
  - Log Viewing and Limited Monitoring

# ECS Assistant Manager Windows



# ECS Assistant Monitor Windows



**ECS Monitor**

Mode: **SHARED** Hostname: **incagold**  
 Subsystem: **MSS** User Id: **pvan**  
 Component: **EcMsAg**

Tue Feb 2 09:14:10 EST 1999

Exit Update Now cdsping all servers...  Auto Update

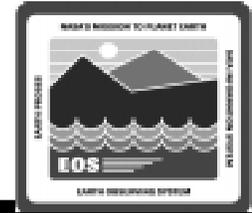
SERVER	STATUS	PID	USERID	START TIME
EcMsAgGenProxy	DOWN			
EcMsAgSubAgent	DOWN			

**ECS Monitor (cdsping)**

Server	On	Status
EcMsAgDeputy_g0wsh00	g0wsh00	is listening
EcMsAgDeputyGate_g0acg01_g0fcb	g0acg01	is listening
EcMsAgDeputyGate_g0acg03_g0fcb	g0acg03	is listening
EcMsAgDeputyGate_g0d1a02_g0fcb	g0d1a02	is listening
EcMsAgDeputyGate_g0dng01_g0fcb	g0dng01	is listening
EcMsAgDeputyGate_g0icg01_g0fcb	g0icg01	is listening
EcMsAgDeputyGate_g0icg02_g0fcb	g0icg02	is not listening
EcMsAgDeputyGate_g0ins01_g0fcb	g0ins01	is listening
EcMsAgDeputyGate_g0ins02_g0fcb	g0ins02	is listening
EcMsAgDeputyGate_g0was21_g0fcb	g0was21	is listening
EcMsAgDeputyGate_g0pla02_g0fcb	g0pla02	is listening
EcMsAgDeputyGate_g0sps06_g0fcb	g0sps06	is listening
EcMsAgDeputyGate_g0wkg01_g0fcb	g0wkg01	is listening
EcMsAgEventMgr_g0acg01_g0fcbue	g0acg01	is listening
EcMsAgEventMgr_g0acg03_g0fcbue	g0acg03	is listening
EcMsAgEventMgr_g0d1a02_g0fcbue	g0d1a02	is listening
EcMsAgEventMgr_g0dng01_g0fcbue	g0dng01	is listening
EcMsAgEventMgr_g0icg01_g0fcbue	g0icg01	is listening
EcMsAgEventMgr_g0icg02_g0fcbue	g0icg02	is not listening
EcMsAgEventMgr_g0ins01_g0fcbue	g0ins01	is listening
EcMsAgEventMgr_g0ins02_g0fcbue	g0ins02	is listening
EcMsAgEventMgr_g0was21_g0fcbue	g0was21	is listening
EcMsAgEventMgr_g0pla02_g0fcbue	g0pla02	is listening
EcMsAgEventMgr_g0sps06_g0fcbue	g0sps06	is listening
EcMsAgEventMgr_g0wkg01_g0fcbue	g0wkg01	is listening
EcMsAgRegistry_g0acg01_g0fcbue	g0acg01	is listening
EcMsAgRegistry_g0acg03_g0fcbue	g0acg03	is listening
EcMsAgRegistry_g0d1a02_g0fcbue	g0d1a02	is listening
EcMsAgRegistry_g0dng01_g0fcbue	g0dng01	is listening
EcMsAgRegistry_g0icg01_g0fcbue	g0icg01	is listening
EcMsAgRegistry_g0icg02_g0fcbue	g0icg02	is not listening
EcMsAgRegistry_g0ins01_g0fcbue	g0ins01	is listening
EcMsAgRegistry_g0ins02_g0fcbue	g0ins02	is listening
EcMsAgRegistry_g0was21_g0fcbue	g0was21	is listening
EcMsAgRegistry_g0pla02_g0fcbue	g0pla02	is listening
EcMsAgRegistry_g0sps06_g0fcbue	g0sps06	is listening
EcMsAgRegistry_g0wkg01_g0fcbue	g0wkg01	is listening

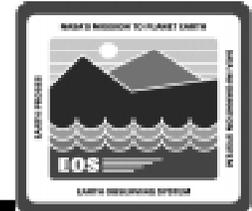
Exit Update

# Analysis/Troubleshooting: Hardware



- **ECS hardware is COTS**
- **System troubleshooting principles apply**
- **HP OpenView for quick assessment of status**
- **HP OpenView Event Log Browser for event sequence**
- **Initial troubleshooting**
  - Review error message against hardware operator manual
  - Verify connections (power, network, interface cables)
  - Run internal systems and/or network diagnostics
  - Review system logs for evidence of previous problems
  - Attempt system reboot
  - If problem is hardware, report it to the DAAC Maintenance Coordinator, who prepares a maintenance Work Order using ILM software

# XRP-II Main Screen



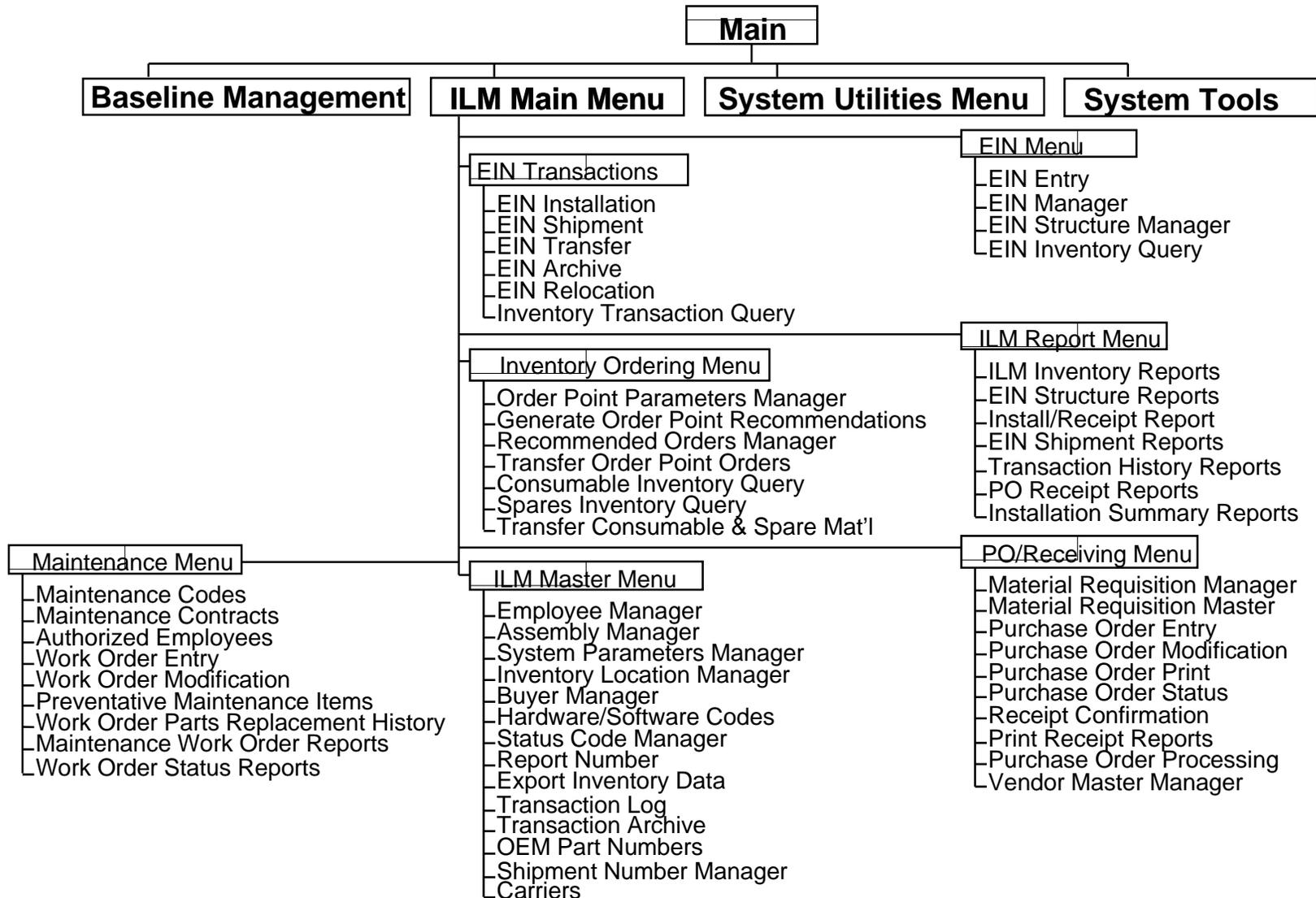
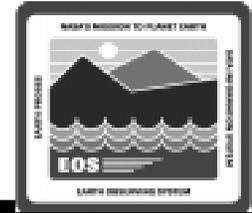
```
XRP-II - Baseline User
ECS Management System
Main Menu
mainm                                09/12/97 11:15

  1. Baseline Management
  2. ILM Main Menu
  3. System Utilities Menu
  4. System Tools

Please enter selection (1 - 4 or name): 

F1-help F3-prior menu F5-select F8-exit
```

# XRP-II ILM Hierarchical Menu Structure



# ILM Work Order Entry Screen



```
wordent Work Order Entry
[wordent] WORK ORDER ENTRY:

      WORK ORDER:
      PARENT EIN:
      Serial Number:
      Name:
      OEM Part:
      OEM Desc:
      Mod/Ver:
      Building:
      TROUBLE TICKET #:
      NOTIFICATION DATE:
      PRIORITY:
      FAILURE DATE:
      MFG/DEV:
      MAINT VENDOR:
      VENDOR CALL DATE:
      VENDOR CONTACT NAME:
      VENDOR REFERENCE:

      Location:
      Room:

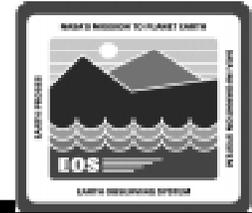
      NOTIFICATION TIME:
      SUBMITTER:
      FAILURE TIME:
      VENDOR:

      TIME:

      CODE:
      NOTE:
      TEXT:

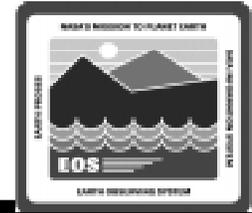
Next Prior View Find Go Select /Sort /Note Items Help More Quit
```

# Hardware Problems: (Continued)



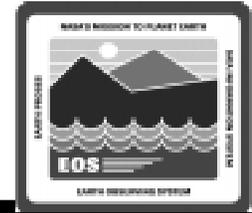
- **Difficult problems may require team attack by Maintenance Coordinator, System Administrator, and Network Administrator:**
  - **specific troubleshooting procedures described in COTS hardware manuals**
  - **non-replacement intervention (e.g., adjustment)**
  - **replace hardware with maintenance spare**
    - **locally purchased (non-stocked) item**
    - **installed spares (e.g., RAID storage, power supplies, network cards, tape drives)**

# Hardware Problems: (Continued)



- **If no resolution with local staff, maintenance support contractor may be called**
  - **Update ILM maintenance record with problem data, support provider data**
  - **Call technical support center**
  - **Facilitate site access by the technician**
  - **Update ILM record with data on the service call**
  - **If a part is replaced, additional data for ILM record**
    - **Part number of new item**
    - **Serial numbers (new and old)**
    - **Equipment Identification Number (EIN) of new item**
    - **Model number (Note: may require CCR)**
    - **Name of item replaced**

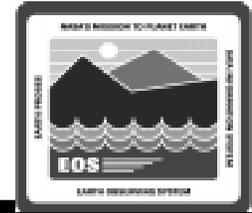
# ILM Work Order Modification



- **Completion of Work Order Entry copies active children of parent EIN into the work order**
- **Use Work Order Modification screen to enter down times, and vendor times and notes**
- **From Work Order Modification screen, Items Page is used to record details**
  - **Which item (or items) failed**
  - **New replacement items**
  - **Notes concerning the failure**

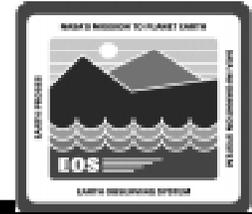


# Preventive Maintenance



- **Only elements that may require PM are the EMASS/STK robot and tape drives**
  - **Scheduled by local Maintenance Coordinator**
  - **Coordinated with maintenance organization and using organization**
    - **Scheduled to be performed by maintenance organization and to coincide with any corrective maintenance if possible**
    - **Scheduled to minimize operational impact**
  - **Documented using ILM Preventive Maintenance record**

# Troubleshooting COTS Software



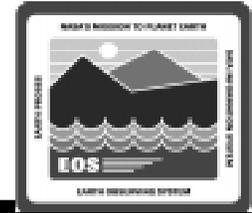
## Issues

- **Software use licenses**
- **Obtaining telephone assistance**
- **Obtaining software patches**
- **Obtaining software upgrades**

## Vendor support contracts

- **First year warranty**
- **Subsequent years contracts**
- **Database at ILS office**
- **Contact ILS Logistics Engineer**
  - **E-mail: [ilsmaint@ecs.hitc.com](mailto:ilsmaint@ecs.hitc.com)**
  - **Telephone: 1-800-ECS-DATA (327-3282)**

# COTS Software Licenses

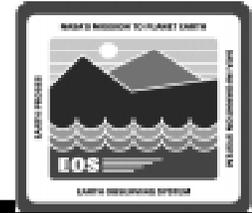


**Maintained in a property database by ECS Property Administrator**

## *Major COTS Software License Restrictions*

<b>Software</b>	<b>Restriction</b>
HP OpenView	One site license, unlimited users (viewers)
AutoSys	Only one instance at a time may be active
ClearCase®	Five users concurrently
DDTS	Virtually unlimited (10,000 users)

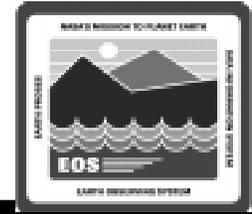
# COTS Software Installation



- **COTS software is installed with any appropriate ECS customization**
- **Final Version Description Document (VDD) available**
- **Any residual media and commercial documentation should be protected (e.g., stored in locked cabinet, with access controlled by on-duty Operations Coordinator)**

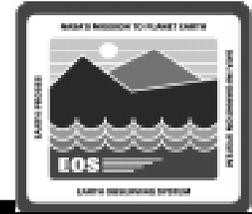
# COTS Software Support

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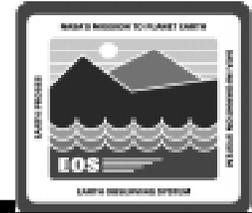
- **Systematic initial troubleshooting**
  - **Software Event Browser (e.g., HP OpenView Event Browser) to review event sequence**
  - **Review error messages, prepare Trouble Ticket (TT)**
  - **Review system logs for previous occurrences**
  - **Attempt software reload**
  - **Report to Maintenance Coordinator (forward TT)**
- **Additional troubleshooting**
  - **Procedures in COTS manuals**
  - **Vendor site on World Wide Web**
  - **Software diagnostics**
  - **Local procedures**
  - **Adjustment of tunable parameters**

# COTS Software Support (Cont.)



- **Organize available data, update TT**
  - Locate contact information for software vendor technical support center/help desk (telephone number, name, authorization code)
- **Contact technical support center/help desk**
  - Provide background data
  - Obtain case reference number
  - Update TT
  - Notify originator of the problem that help is initiated
- **Coordinate with vendor and CM, update TT**
  - Work with technical support center/help desk (e.g., troubleshooting, patch, work-around)
  - CCB authorization required for patch

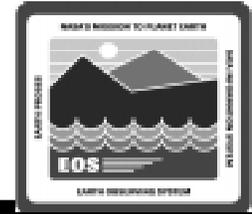
# COTS Software Support (Cont.)



- **Escalation may be required, e.g., if there is:**
  - Lack of timely solution
  - Unsatisfactory performance of technical support center/help desk
- **Notify System Operations Support (SOS)/SEO**
  - Senior Systems Engineers
  - ILS Logistics Engineer coordination for escalation within vendor organization

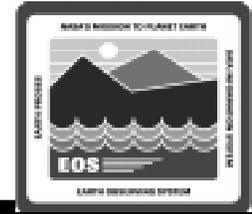
# Troubleshooting of Custom Software

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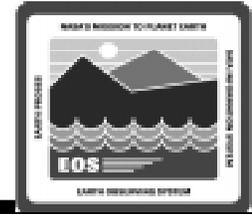
- **Code maintained at ECS Development Facility**
- **ClearCase® for library storage and maintenance**
- **Sources of maintenance changes**
  - **ESDIS CCB directives**
  - **Site-level CCB directives**
  - **Developer modifications or upgrades**
  - **Trouble Tickets**

# Implementation of Modifications



- **Responsible Engineer (RE) selected by each ECS organization**
- **SOS RE establishes set of CCRs for build**
- **Site/Center RE determines site-unique extensions**
- **System and center REs establish schedules for implementation, integration, and test**
- **SOS RE maintains CCR lists and schedule**
- **SOS RE maintains VDD**
- **RE or team for CCR obtains source code/files, implements change, performs programmer testing, updates documentation**

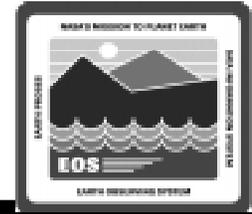
# Custom Software Support



- **Science software maintenance not responsibility of ECS on-site maintenance engineers**
- **Sources of Trouble Tickets for custom software**
  - **Anomalies**
  - **Apparent incorrect execution by software**
  - **Inefficiencies**
  - **Sub-optimal use of system resources**
  - **TTs may be submitted by users, operators, customers, analysts, maintenance personnel, management**
  - **TTs capture supporting information and data on problem**

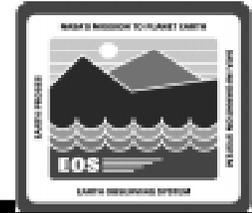
# Custom Software Support (Cont.)

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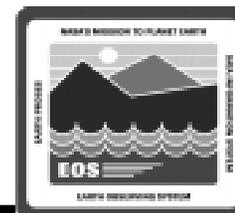
- Troubleshooting is ad hoc, but systematic
- For problem caused by non-ECS element, TT and data are provided to maintainer at that element

# General ECS Troubleshooting



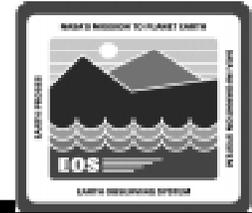
Symptom/Problem	Response
Attempt to <i>cdsping</i> a server finds the server "not listening" and/or server logs show error message suggesting DCE connection problem (e.g., "Binding not found in cache" or, at start up, message concerning PF Init or DCE problem).	Ensure that the host is "up." Execute <b>ps -ef   grep &lt;server process&gt;</b> to check that the server is "up;" if server is "down," restart it, using HP Open View. [For detailed instructions refer to <b>Starting and Shutting Down Servers from HP OpenView Procedure</b> (System Administration lesson, 625-CD-004-002).]
The <i>cdsbrowser</i> shows DCE entries for the server are missing.	If DCE entries are missing, have the Operations Supervisor or DCE administrator restart DCE on the host for which entries are missing. [For detailed instructions on checking DCE entries, refer to the procedure for <b>Using the <i>cdsbrowser</i> to check DCE entries</b> (subsequent section of this lesson).]
The <i>cdsbrowser</i> or the server .CFG file indicates that a call to another server requires a DCE entry different from the one actually being used by the server/client for the call.	<ol style="list-style-type: none"> <li>1. Check the server log for messages indicating a DCE error or connectivity error (e.g., "Cannot reach . . .")</li> <li>2. Ensure that the call name (as reflected in the server .CFG file or in the <i>cdsbrowser</i>) is being used for the call. If it is not, use ECS Assist to make a CDS entry, or call the DCE Administrator for help.</li> </ol> [For detailed instructions refer to the procedure for <b>Viewing logs with ECS Assistant</b> (previous section of this lesson) and the procedure for <b>Using the <i>cdsbrowser</i> to check DCE entries</b> (subsequent section of this lesson).]
Server cannot access the database.	<ol style="list-style-type: none"> <li>1. Check server logs; execute <b>ps -ef   grep dataserver</b> for to check for Sybase error.</li> <li>2. Execute <b>ps -ef   grep sqs</b> and check dates to ensure that sqs was started after Sybase.</li> <li>3. If necessary, restart the server to re-establish the connection.</li> </ol> [For detailed instructions refer to the procedures for <b>Viewing logs with ECS Assistant</b> (previous section of this lesson) and <b>Starting and Shutting Down Servers from HP OpenView Procedure</b> (System Administration lesson, 625-CD-004-002).]

# General ECS Troubleshooting (Cont.)



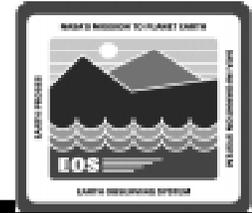
Symptom/Problem	Response
File path incorrect.	Examine the server log to ensure that the file for which the server is looking exists in the path where it is looking. E.g., if the file is for a recently-arrived Data Availability Notice (DAN) for Ingest, the path should appear in the log. If the path is incorrect, it may be necessary to move the file. [For detailed instructions refer to the procedures for <b>Viewing logs with ECS Assistant</b> (previous section of this lesson).]
Incorrect account privileges.	Examine the server log for an attempt to write to the database with the result "Permission Denied." Incorrect permissions can be corrected by using a different account with the correct permissions, or by having the Database Administrator reset the permissions. [For detailed instructions refer to the procedures for <b>Viewing logs with ECS Assistant</b> (previous section of this lesson).]
Mount point missing.	Log in to the machine that the server is trying to access and look at the mount point; i.e., change directory to <b>/usr/ecs/&lt;mode&gt;/CUSTOM/&lt;HWCD&gt;/&lt;machine name&gt;/data</b> , and execute <b>ls</b> . If there is nothing returned, the mount point is gone, and it will be necessary to re-boot the machine.
ESDT problems	<ol style="list-style-type: none"> <li>1. Ensure that the involved subsystems/CSCIs are installed and that associated servers are functioning; i.e., launch the SDSRV GUI and the SBSRV GUI, and use ECS Assistant to check IOS (formerly ADSRV) and DDICT. If these CSCIs are not properly installed and servers are not running, it may be necessary to re-install them and restart servers. [For detailed instructions refer to the procedures for <b>Using the ECS Assistant Server Monitor</b> (previous section of this lesson) and <b>Starting and Shutting Down Servers from HP OpenView Procedure</b> (System Administration lesson, 625-CD-004-002).]</li> <li>2. List the files in the SDSRV .cfg directory to ensure the presence of *.evt files (<i>Note: These will be in SDSRV database in Release 5A</i>). If there are no *.evt files, re-installation may be necessary.</li> <li>3. Examine SDSRV log files to ensure that SDSRV communicated with IOS and SBSRV. If not, check for connection/DCE problems (refer to Response to DCE connection problems, first three entries in this table). [For detailed instructions refer to the procedures for <b>Viewing logs with ECS Assistant</b> (previous section of this lesson).]</li> <li>4. Ensure collection mapping for DDICT; when an ESDT is re-installed, or when a new ESDT is installed, it is necessary to use the Data Dictionary Maintenance Tool to update the mapping for all collections. [For detailed instructions refer to the procedure for <b>Update Data Dictionary Attribute/Keyword Mapping</b> (in User Services Lesson, 625-CD-013-002).]</li> </ol>

# General ECS Troubleshooting (Cont.)



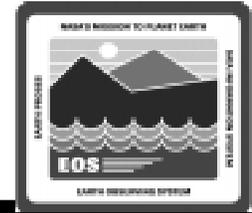
Symptom/Problem	Response
V0GTWY/DDICT connectivity problem	<p>Perform a data dictionary search using the V0 IMS Web Client or B0SOT.</p> <ol style="list-style-type: none"> <li>1. Ensure that the V0GTWY is using a valid isql query.</li> <li>2. Ensure that the V0GTWY and DDICT databases match up correctly.</li> </ol>
Problem with SDSRV triggers to SBSRV	<p>Use the SBSRV GUI to add an FTPpush subscription for insertion of a small data file (e.g., AST_L1BT), and an FTP push subscription for output data from a PGE [e.g., ASTER output data from ETS (AST_08)]</p> <ol style="list-style-type: none"> <li>1. Ensure that you can access SBSRV.</li> <li>2. Ensure that you can access the database with the userID and password used by the server.</li> </ol>
Granule insertion problems	<p>Insert a small file (e.g., AST_L1BT), either using Ingest or using the DSS Driver</p> <ol style="list-style-type: none"> <li>1. Determine if the insertion is reflected in the Archive directory (on x0drg01, look for /dss_stk1/&lt;mode&gt;/&lt;data_type&gt;).</li> <li>2. Determine if the insertion is reflected in the inventory database used by SDSRV.</li> <li>3. Ensure that the directory from or to which the copy is being made is visible on the machine being used.</li> <li>4. Examine the server logs to determine where communication breaks down.</li> <li>5. Determine if a staging disk was created (examine the drp- or icl-mounted staging directory).</li> <li>6. Ensure that the Archive volume groups are set up correctly. [For detailed instructions, refer to <b>Use Storage Management GUIs to Display Archive Path Information</b> (Archive Lesson, 625-CD-010-002).]</li> <li>7. Ensure that the volume groups are on line. [For detailed instructions, refer to <b>Using the AMASS GUI to View Volume Group and Volume Information</b> (Archive Lesson, 625-CD-010-002).]</li> <li>8. Examine server logs to determine if the subscription was triggered by the insertion (i.e., Did SDSRV send a trigger? Did SBSRV receive the trigger? Did SBSRV send SDSRV an acquire request? Did SDSRV receive the acquire? Was an e-mail notification sent to the user identified in the subscription?) [For detailed instructions refer to the procedures for <b>Viewing logs with ECS Assistant</b> (previous section of this lesson).]</li> </ol>

# General ECS Troubleshooting (Cont.)



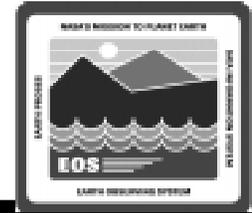
Symptom/Problem	Response
PGE problems	<p>Insert a small file using the DSS Driver.</p> <ol style="list-style-type: none"> <li>1. Check that SDSRV and STMGT are inserting and archiving properly (refer to Response to Granule insertion problems).</li> <li>2. Determine if the PDPS mount point is visible on x0acs03 (or n0acs04 at NSIDC) and on x0drg01.</li> <li>3. Examine server logs to determine if PDPS communicated with SDSRV.</li> </ol>
Ingest problems	<p>Perform test ingests of appropriate types (i.e., polling ingest of MODIS L0 data, ingest of AST_L1BT data from D3 tape, polling ingest of Attitude data without delivery record, polling ingest of L7 IAS data with delivery record, auto ingest of L7 Format 1 and Format 2 data).</p> <ol style="list-style-type: none"> <li>1. In each case, check that SDSRV and STMGT are inserting and archiving properly (refer to Response to Granule insertion problems).</li> <li>2. Check archive and inventory databases (refer to Response to Granule insertion problems).</li> </ol>
Problems with FTPpush from SDSRV	<p>Perform checks when using DSS Driver to insert files needed for PGEs.</p> <ol style="list-style-type: none"> <li>1. Use the DDIST GUI to determine if DDIST has a request for the data and to view the request for push of the files from SDSRV for data processing. [For detailed instructions refer to <b>Monitor Archive Requests Procedure</b> (Archive Lesson, 625-CD-010-002).]</li> <li>2. Examine server logs to determine if the files were pushed to the correct directory. If there is no entry, it may be necessary to restart the server. [For detailed instructions refer to the procedures for <b>Viewing logs with ECS Assistant</b> (previous section of this lesson) and <b>Starting and Shutting Down Servers from HP OpenView Procedure</b> (System Administration lesson, 625-CD-004-002).]</li> <li>3. On the machine to which the files are being pushed, execute <b>ls -l</b> command(s) to determine if the directory exists. If it does not, execute <b>md &lt;directory name&gt;</b> to create it.</li> <li>4. Examine the server log for an attempt to write to the directory with the result "Permission Denied." Incorrect permissions can be corrected by using a different account with the correct permissions, or by having the permissions reset. [For detailed instructions refer to the procedures for <b>Viewing logs with ECS Assistant</b> (previous section of this lesson).]</li> <li>5. Determine if there are data in the staging area for the push.</li> <li>6. Examine the server logs to determine the last successful communication.</li> <li>7. Determine if the FtpDisServer could find the ftp_popen exec.</li> </ol>

# General ECS Troubleshooting (Cont.)



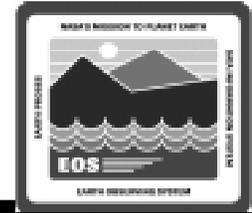
Symptom/Problem	Response
Delivered Algorithm Package (DAP) insertion problems	<ol style="list-style-type: none"> <li>1. Check appropriate insertion functions (refer to Response to Granule insertion problems).</li> <li>2. Check Archive and Inventory databases (refer to Response to Granule insertion problems).</li> <li>3. Check functions as for other acquires by FTPpush (refer to Response to Problems with FTPpush from SDSRV).</li> </ol>
Problems with other SSI&T tools and GUIs	<ol style="list-style-type: none"> <li>1. Ensure that the subsystem/CSCIs are correctly installed [i.e., use ECS Assistant to check Algorithm and Test Tools (AITTL)]. [For detailed instructions, refer to <b>Handling an ESDT Installation Failure</b> (Appendix A of the Science Software Integration &amp; Test Lesson, 625-CD-016-002)].</li> <li>2. Check appropriate insertion functions (refer to Response to Granule insertion problems).</li> <li>3. Check Archive and Inventory databases (refer to Response to Granule insertion problems).</li> <li>4. Check functions as for other acquires by FTPpush (refer to Response to Problems with FTPpush from SDSRV).</li> </ol>
Problems with PDPS plan creation and activation	<ol style="list-style-type: none"> <li>1. Ensure that FTPpush and inserts are functioning (refer to Response to Problems with FTPpush from SDSRV and Response to Granule insertion problems).</li> <li>2. Examine PDPS run-time directories.</li> <li>3. Examine server logs to determine if an e-mail notification was sent to the user identified in the subscription. If notification was not sent, it may be necessary to restart servers. [For detailed instructions refer to the procedures for <b>Viewing logs with ECS Assistant</b> (previous section of this lesson) and <b>Starting and Shutting Down Servers from HP OpenView Procedure</b> (System Administration lesson, 625-CD-004-002).]</li> <li>4. Examine server logs to determine if the files were pushed to the correct directory. If there is no entry, it may be necessary to restart the server. [For detailed instructions refer to the procedures for <b>Viewing logs with ECS Assistant</b> (previous section of this lesson) and <b>Starting and Shutting Down Servers from HP OpenView Procedure</b> (System Administration lesson, 625-CD-004-002).]</li> <li>5. Execute <i>cdsping</i> of machines with which DDIST communicates from x0dis02. It may be necessary to reboot any machine(s) from which there is no response. [For detailed instructions refer to procedures for <b>Starting the ECS Monitor GUI</b> and <b>System Startup and Shutdown</b> (System Administration Lesson, 625-CD-004-002).]</li> </ol>

# General ECS Troubleshooting (Cont.)



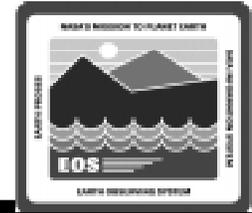
Symptom/Problem	Response
QA Monitor problems	<ol style="list-style-type: none"> <li>1. Ensure that the data on which to perform QA are in SDSRV (i.e., on x0drg01, look for /dss_stk1/&lt;mode&gt;/&lt;data_type&gt;). If the data product is not there, try again after data are inserted.</li> <li>2. Examine the server log to ensure that the data query was successfully received by SDSRV, and that results were returned. If the query was not received and/or the results were not returned, it may be necessary to re-initiate the query or restart the server.</li> </ol> <p>[For detailed instructions refer to the procedures for <b>Viewing logs with ECS Assistant</b> (previous section of this lesson) and <b>Starting and Shutting Down Servers from HP OpenView Procedure</b> (System Administration lesson, 625-CD-004-002).]</p>
Problems with FTPpull from SDSRV	<p>Making sure that the FTPpull is working ensures that the FtpDis and FTPpull Monitor servers are "up" and functioning correctly.</p> <ol style="list-style-type: none"> <li>1. Use the DDIST GUI to determine if DDIST has a request for the data and to view the request for pull of the files from SDSRV for data processing.</li> </ol> <p>[For detailed instructions refer to <b>Monitor Archive Requests Procedure</b> (Archive Lesson, 625-CD-010-002).]</p> <ol style="list-style-type: none"> <li>2. On the machine to which the files are being sent by FTP, execute <b>ls -l</b> command(s) to determine if the directory to which the files are being sent exists. If it does not, execute <b>md &lt;directory name&gt;</b> to create it.</li> <li>3. Examine the server log for an attempt to write to the directory with the result "Permission Denied." Incorrect permissions can be corrected by using a different account with the correct permissions, or by having the permissions reset.</li> </ol> <p>[For detailed instructions refer to the procedures for <b>Viewing logs with ECS Assistant</b> (previous section of this lesson).]</p> <ol style="list-style-type: none"> <li>4. Determine if there are data in the staging area for the pull.</li> <li>5. Examine the server logs to determine the last successful communication.</li> <li>6. Determine if the FtpDisServer could find the ftp_popen exec.</li> <li>7. Execute <i>cdsping</i> of machines with which DDIST communicates from x0dis02. It may be necessary to reboot any machine(s) from which there is no response.</li> </ol> <p>[For detailed instructions refer to procedures for <b>Starting the ECS Monitor GUI</b> and <b>System Startup and Shutdown</b> (System Administration Lesson, 625-CD-004-002).]</p>
Problems with data search functions	<ol style="list-style-type: none"> <li>1. Ensure that the data for which the search is being conducted have been ingested and/or produced and are in SDSRV (i.e., on x0drg01, look for /dss_stk1/&lt;mode&gt;/&lt;data_type&gt;). If the data product is not there, try again after the data are inserted.</li> <li>2. Ensure that V0GTWY is sending a valid isql query to SDSRV.</li> <li>3. Ensure that the V0GTWY, DDICT, and SDSRV databases match up correctly.</li> </ol>

# General ECS Troubleshooting (Cont.)



Symptom/Problem	Response
<p>Problems with functions for data order by a registered user</p>	<ol style="list-style-type: none"> <li>1. Ensure that the order is for data indicated by a successful search (refer to Response to Problems with data search functions.)</li> <li>2. Determine if the user received an e-mail message.</li> <li>3. Examine server logs to identify where order failure occurred. [For detailed instructions refer to <b>Viewing logs with ECS Assistant</b> (previous section of this lesson).]</li> <li>4. Examine SDSRV log to determine if SDSRV received the request. If there is no entry for the request, it may be necessary to restart the server.  [For detailed instructions refer to the procedures for <b>Viewing logs with ECS Assistant</b> (previous section of this lesson) and <b>Starting and Shutting Down Servers from HP OpenView Procedure</b> (System Administration lesson, 625-CD-004-002).]</li> <li>5. Use the DDIST GUI to determine if there is a DDIST request from SDSRV.  [For detailed instructions refer to <b>Monitor Archive Requests Procedure</b> (Archive Lesson, 625-CD-010-002).]</li> <li>6. Determine if there are data in the staging area for the pull.</li> <li>7. Execute <i>cdsping</i> of machines with which DDIST communicates from x0dis02. It may be necessary to reboot any machine(s) from which there is no response.  [For detailed instructions refer to procedures for <b>Starting the ECS Monitor GUI</b> and <b>System Startup and Shutdown</b> (System Administration Lesson, 625-CD-004-002).]</li> <li>8. Determine if the request is reflected in the MSS Order Tracking database. If it does not appear, it may be necessary to restart the order tracking server.  [For detailed instructions refer to procedures for <b>ECS Order Tracking and Cancellation</b> (User Services Lesson, 625-CD-013-002) and <b>System Startup and Shutdown</b> (System Administration Lesson, 625-CD-004-002).]</li> <li>9. If the order is for an L7 scene, examine the HDF Server log to ensure that the HDF server received the request. If there is no entry for the request, it may be necessary to restart the server.  [For detailed instructions refer to the procedures for <b>Viewing logs with ECS Assistant</b> (previous section of this lesson) and <b>Starting and Shutting Down Servers from HP OpenView Procedure</b> (System Administration lesson, 625-CD-004-002).]</li> </ol>

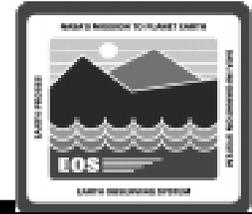
# General ECS Troubleshooting (Cont.)



Symptom/Problem	Response
Problems starting servers with HP OpenView	<ol style="list-style-type: none"><li>1. Use ECS Assist to determine if servers in shared mode are running. If not, it may be necessary to restart them. [For detailed instructions refer to the procedures for <b>Using the ECS Assistant Server Monitor</b> (previous section of this lesson) and <b>Subsystem Server Startup / Shutdown Procedure</b> (System Administration lesson, 625-CD-004-002).]</li><li>2. Determine if the deputy is running (i.e., on x0msh03 or, at GSFC, g0msh08, execute <b>ps -ef   grep EcMsAgDeputy</b>). If it is not running, start it from the command line or use ECS Assist to start it. [For detailed instructions refer to the procedure for <b>Subsystem Server Startup / Shutdown Procedure</b> (System Administration lesson, 625-CD-004-002).]</li><li>3. Determine if the server has the correct <i>.config</i> files. If it does not, it may be necessary to re-install them.</li><li>4. Determine if the server can be started from the command line. If it cannot, it may be necessary to re-install the server.</li></ol>

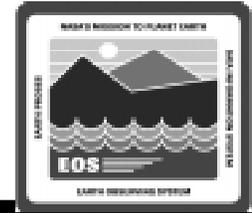


# Monitoring Custom Servers



- **HP OpenView Mode Management capability**
  - Integration of Mode Management with HP OpenView provides capability for server startup and shutdown within ECS modes
  - HP OpenView monitoring capability for server status
- **HP OpenView Log Browser**
  - Event details

# Monitoring Custom Servers (Cont.)



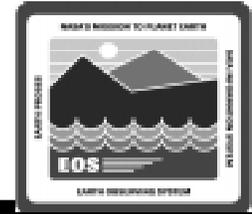
The screenshot shows the IDG (Integrated Data Gateway) monitoring interface. The window title is "IDG". The menu bar includes: Map, Edit, Locate, View, Performance, Configuration, Fault, Misc, Options, Administer, and Help. Below the menu bar is a toolbar with icons for home, refresh, zoom in, zoom out, search, and help. The main area displays a grid of server symbols, each represented by a circular icon containing a server rack and a bar chart. A context menu is open over one of the symbols, listing the following actions:

- Symbol: EcSbSubServerApp\_147\_OPS\_t1ins02.vatc.ecs.nasa.gov
- Open Symbol
- Change Symbol Type...
- Describe/Modify Symbol...
- Delete Symbol
- Hide Symbol
- Describe/Modify Object...
- Start executable
- Shutdown executable

At the bottom of the window, the status bar shows "VATC [Read-Write]" on the left and "[Auto-Layout]" on the right.

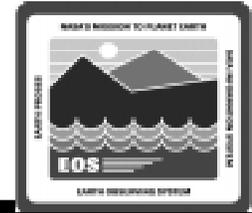
# Trouble Ticket (TT)

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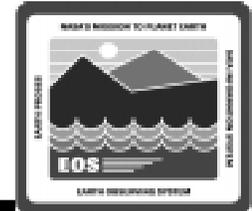
- **Documentation of system problems**
- **COTS Software (Remedy)**
- **Documentation of changes**
- **Failure Review Board**
- **Emergency fixes**
- **Configuration changes → CCR**

# Using Remedy



- **Creating and viewing Trouble Tickets**
- **Adding users to Remedy — Database Administrator**
- **Controlling and changing privileges in Remedy — Configuration Management Administrator**
- **Modifying Remedy's configuration — Configuration Management Administrator.**
- **Generating Trouble Ticket reports — System Administrator, others**

# Remedy ReIB-User Schema Screen



Action Request System -- User (cyclops)

File Edit Query Actions Macros Windows Help

Entry-Id  Status  Current License Type  Read  Fixed  Floating

Login name  Password

Email Address  Group list

Full Name  Phone Number

Home DAAC

Default Notify Mechanism  None  Notifier  E-mail

Full Text License Type  None  Fixed  Floating

Creator  Create-date

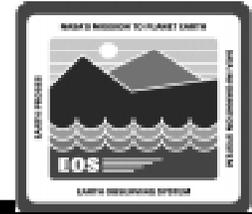
Last-modified-by  Modified-date

Fields

Query

# Adding Users to Remedy

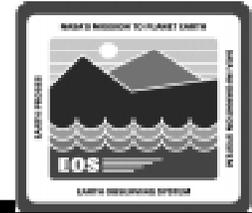
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- **Status**
- **License Type**
- **Login Name**
- **Password**
- **Email Address**
- **Group List**
- **Full Name**
- **Phone Number**
- **Home DAAC**
- **Default Notify Mechanism**
- **Full Text License**
- **Creator**

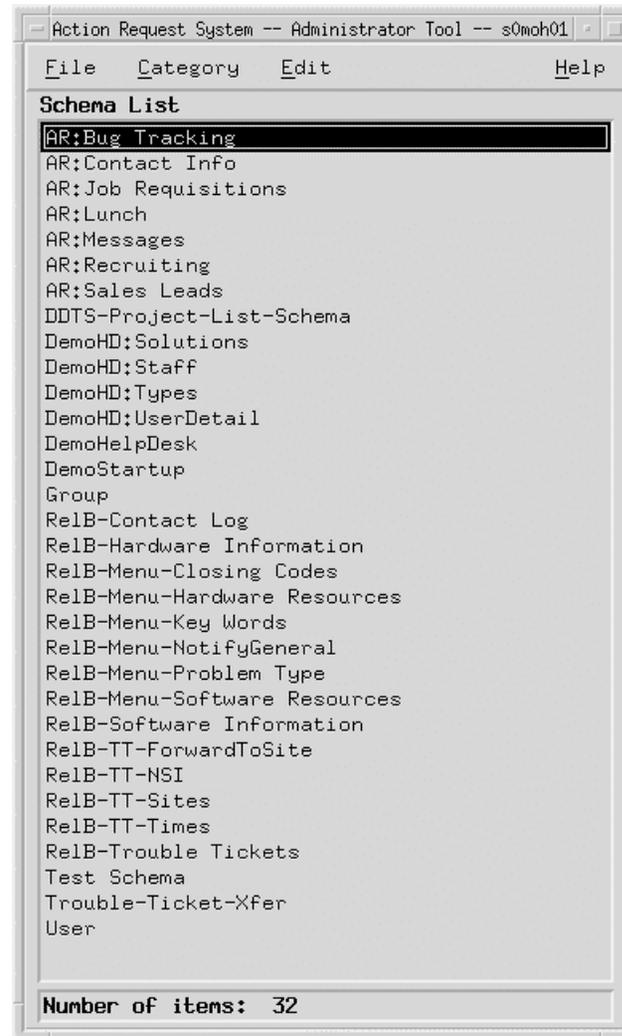
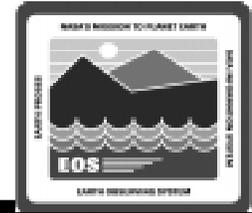
# Changing Privileges in Remedy

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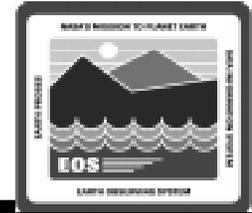


- **Access privileges (for fields)**
  - View
  - Change
- **Privilege change methods**
  - Change group assignment
  - Change privileges of a group
    - Use Admin tool to define group access for schemas (Remedy databases)

# Remedy Admin Tool - Schema List



# Remedy Admin - Group Access



Group Access -- Schemas

Group: Resolution Technician

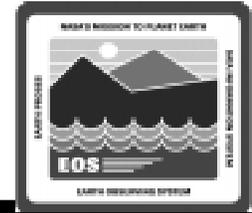
<input type="checkbox"/> Visible	<input type="checkbox"/> Hidden	<input type="checkbox"/> None	AR:Bug Tracking
<input type="checkbox"/> Visible	<input type="checkbox"/> Hidden	<input type="checkbox"/> None	AR:Contact Info
<input type="checkbox"/> Visible	<input type="checkbox"/> Hidden	<input type="checkbox"/> None	AR:Job Requisitions
<input type="checkbox"/> Visible	<input type="checkbox"/> Hidden	<input type="checkbox"/> None	AR:Lunch
<input type="checkbox"/> Visible	<input type="checkbox"/> Hidden	<input type="checkbox"/> None	AR:Messages
<input type="checkbox"/> Visible	<input type="checkbox"/> Hidden	<input type="checkbox"/> None	AR:Recruiting
<input type="checkbox"/> Visible	<input type="checkbox"/> Hidden	<input type="checkbox"/> None	AR:Sales Leads
<input type="checkbox"/> Visible	<input type="checkbox"/> Hidden	<input type="checkbox"/> None	DDTS-Project-List-Schema
<input type="checkbox"/> Visible	<input type="checkbox"/> Hidden	<input type="checkbox"/> None	DemoHD:Solutions
<input type="checkbox"/> Visible	<input type="checkbox"/> Hidden	<input type="checkbox"/> None	DemoHD:Staff
<input type="checkbox"/> Visible	<input type="checkbox"/> Hidden	<input type="checkbox"/> None	DemoHD:Types
<input type="checkbox"/> Visible	<input type="checkbox"/> Hidden	<input type="checkbox"/> None	DemoHD:UserDetail
<input type="checkbox"/> Visible	<input type="checkbox"/> Hidden	<input type="checkbox"/> None	DemoHelpDesk
<input type="checkbox"/> Visible	<input type="checkbox"/> Hidden	<input type="checkbox"/> None	DemoStartup
<input type="checkbox"/> Visible	<input type="checkbox"/> Hidden	<input type="checkbox"/> None	Group
<input type="checkbox"/> Visible	<input type="checkbox"/> Hidden	<input type="checkbox"/> None	ReIB-Contact Log
<input type="checkbox"/> Visible	<input type="checkbox"/> Hidden	<input type="checkbox"/> None	ReIB-Hardware Information
<input type="checkbox"/> Visible	<input type="checkbox"/> Hidden	<input type="checkbox"/> None	ReIB-Menu-Closing Codes
<input type="checkbox"/> Visible	<input type="checkbox"/> Hidden	<input type="checkbox"/> None	ReIB-Menu-Hardware Resources

Apply Previous List Next List Dismiss



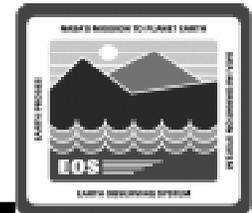
# Changing Remedy Configuration

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- **User Contact Log, Category**
- **User Contact Log, Contact Method**
- **Configuration Item (CI)**

# Remedy Admin - Modify Menu



Modify Menu -- RelB-CI

Menu Name

Refresh  On Connect  On Open  On 15 Minute Interval

Menu Type  Character  Query  File  SQL

◆ Level 0      ◆ Level 1

<input type="checkbox"/> Destop	
<input type="checkbox"/> Workbench	
<input type="checkbox"/> Advertising Se	
<input type="checkbox"/> Advertising Se	
<input type="checkbox"/> Local Info Mar	
<input type="checkbox"/> Distrib Info M	
<input type="checkbox"/> Data Dictionar	
<input type="checkbox"/> Ver 0 Interop	
<input type="checkbox"/> Data Mgmt HWCI	

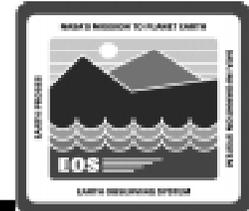
Label

Value

Add New Entries



# Remedy Admin - Reports



Report == ReSP-Trouble Tickets (defwin001)

Define Edit Actions

Custom Report Name:	Help Text:
[[[New Report]]]	
AllTickets	
Assigned-to Report	Outputs a report of the number of Tickets assigned to technicians
Average Time To Close TTs	Outputs a report of the average time to close trouble tickets.
Daily Trouble Tickets	
Forward Set Up	Sets up the forward script.
Hardware Resource Report	Outputs a report sorted and grouped by Hardware Resources and Closing Codes
HSI-EBnet-Report	Sets up the HSI EBnet forward file.
Number of Tickets by Priority	Outputs the number of Trouble Tickets grouped by assigned priority
Number of Tickets by Status	Outputs the number of Trouble Tickets grouped by status
Review Board Report	Outputs a report of the details of TTs for the TT Review Board
SMC Hardware Report	
SMC TT Report	Outputs a report to be sent to the SMC.
Software Resource Report	Outputs a report sorted by Software Resources and their Closing Codes
Submitter Report	Outputs a report by submitter.
Ticket Status Report	Outputs a report sorted and grouped by Ticket Status
Ticket Status by Assigned-To	Outputs a report sorted and grouped by the last person assigned to a Trouble Ticket
TroubleTickets	
Usergroups	Report cross referencing user names with the groups of which they are a member.
WeeklyStatus	Export data to Access For Weekly Status Report
xferTT.emm	From Report chose record layout.

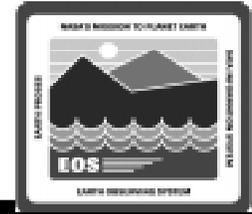
```
Ticket-Id ;
Ticket Status ;
Ticket Status-History ;
Assigned-Priority ;
Short-Description ;
Submitter Impact ;
Forward-to ;
Forward-to-email ;
Long-Description ;
Detailed Resolution Log ;
Forwarded-From ;
Resolution Log (End User Sees) ;
Forwarded-by ;
Forward-date ;
Submitter ID ;
Assigned-To ;
Closing Code ;
Unique-Identifier ;
Forward-to-1-email ;
Submitter Name ;
Last-modified-by ;
Closed-by ;
Forwarded-to-1 ;
```

Number of matching entries : 321

Layout Record Column Compressed Text CSV All Export

Report to Screen... Report to File... Report to Printer... Done

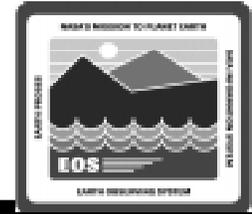
# Operational Work-around



- **Managed by the ECS Operations Coordinator at each center**
- **Master list of work-arounds and associated trouble tickets and configuration change requests (CCRs) kept in either hard-copy or soft-copy form for the operations staff**
- **Hard-copy and soft-copy procedure documents are “red-lined” for use by the operations staff**
- **Work-arounds affecting multiple sites are coordinated by the ECS organizations and monitored by ECS M&O Office staff**

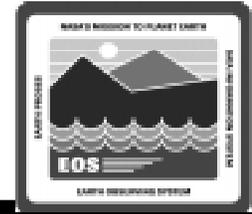
# Diagnosing Network Problems

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- **Network failures require same management as other failures**
  - Detection of the fault
  - Isolation of the fault
  - Correction of the fault
- **Standard troubleshooting tools apply**
  - Error logs
  - Error detection processes
  - Diagnostic testing

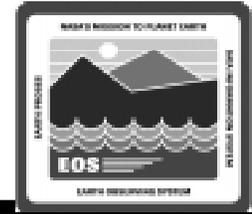
# Identifying Connectivity Problems



- **HP OpenView -- color of connections on maps**
  - cyan: warning
  - yellow: minor
  - orange: major
  - red: critical
- **HP OpenView Fault Diagnostic Aids**
  - Ping
  - Remote Ping
  - Route Analysis

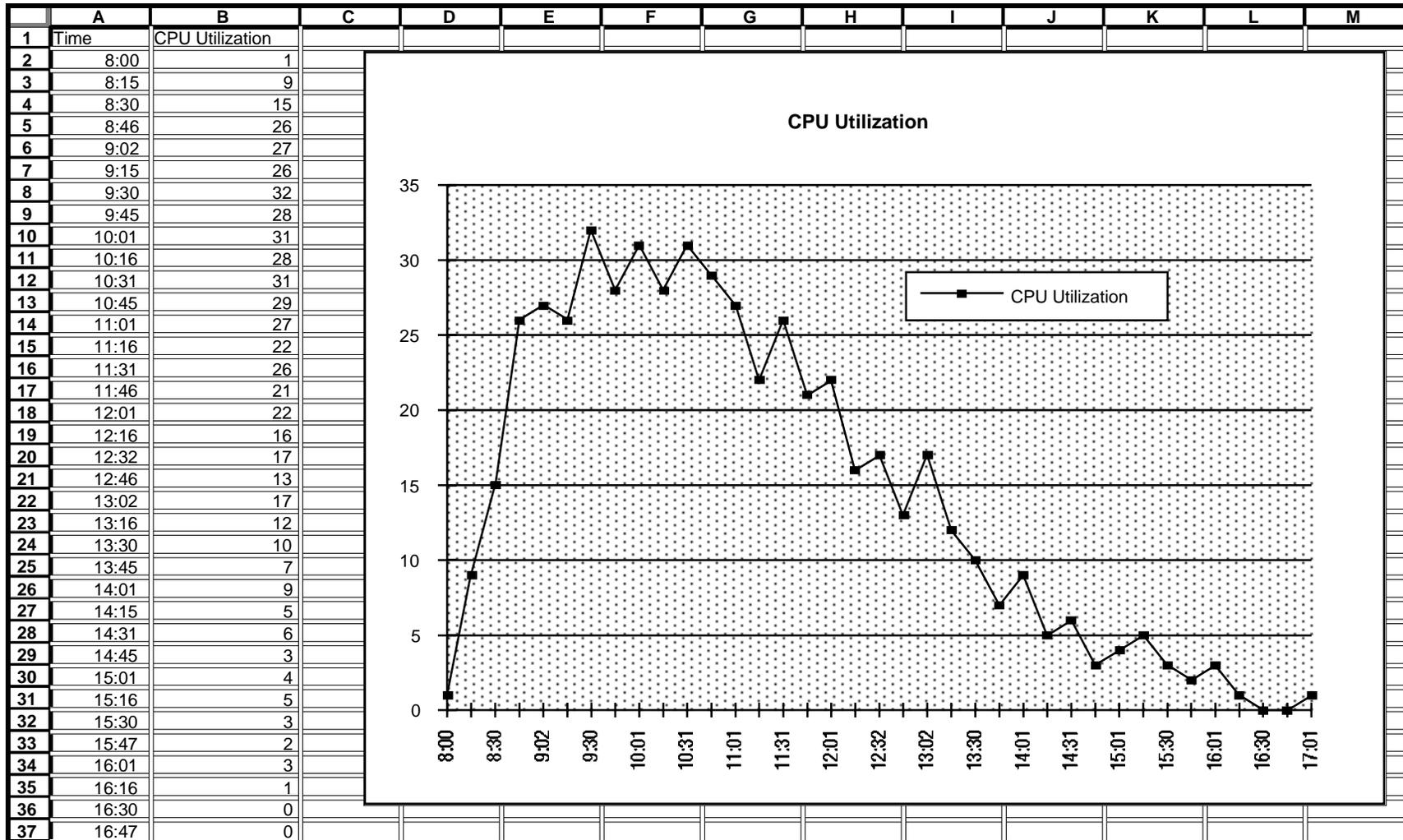
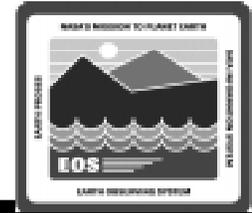
# Diagnosing Performance Problems

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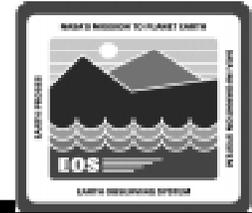
- **HP OpenView**
  - Check interface traffic
  - Check CPU loading

# Example of HP OpenView Graphical Display of CPU Usage



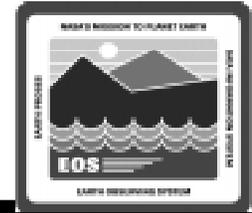
# Diagnosing Network Service Problems

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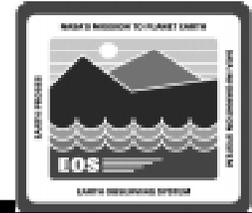
- **If unable to access a network service (e.g., ftp, telnet) on a remote system, use diagnostic procedure**
- **General Systematic Troubleshooting**
  - **Review Trouble Ticket**
  - **HP Open View**
    - **Look for color alerts**
    - **Locate relevant host**
    - **Check network activity, traffic on host**
    - **Check CPU load on host**

# Viewing Historical Trends



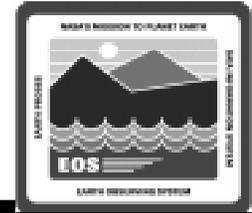
- **HP OpenView Network Node Manager**
  - Data collection
  - Event configuration
  - Application building
- **Process**
  - Establish baselines
  - Build applications to monitor trends
  - Establish and refine thresholds
  - Set up event-triggered actions

# Viewing Historical Trends (Cont.)



- **HP OpenView Grapher**
  - Viewing of collected information in graph form
  - Graphing of combinations of data values
  - Viewing data values representing different instances of data variables or different variables for different nodes
  - Viewing data for selected nodes or viewing all the data in the Data Collector database

# Viewing Historical Trends (Cont.)



**Table 1**  
***ECS MIB Data Collection Definitions***

<b>MIB Object Group</b>	<b>Resource/Expression</b>
ICMP	ICMP%InErrors
	ICMP%InDestUnreachs
	ICMP%OutErrors
	ICMP%OutDestUnreachs
TCP	TCP%InErrors
UDP	UDP%InErrors
IP	IP%InHdrErrors
	IP%InAddrErrors
	IP%InUnknownProtos
	IP%InDiscards
	IP%OutDiscards
	IP%OutNoRoutes
Network Interface	If%InDiscards
	If%InErrors
	If%InUnknownProtos
	if%OutDiscards
	If%OutErrors

