INTEGRATED INFORMATION SUPPORT SYSTEM (IISS)
Volume VI - Network Transaction Manager Subsystem
Part 3 - MTM Operator's Manual

General Electric Company
Production Resources Consulting
One River Road
Schenectady, New York 12345

November 1985

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PREPARED FOR:
MATERIALS LABORATORY
AIR FORCE WRIGHT AERONAUTICAL LABORATORIES
AIR FORCE SYSTEMS COMMAND
WRIGHT-PATTERSON AFB, OH 45433-6533
This technical manual provides detailed instructions for running IISS. This includes instructions for bringing up and shutting down the NTH, a description of NTH error codes, and instructions for maintaining NTH tables.
Title

Integrated Information Support System (IISS)
Vol VI - Network Transaction Manager Subsystem
Part 3 - NTM Operator's Manual

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PREFACE

This operator's manual covers the work performed under Air Force Contract F33615-80-C-5155 (ICAM Project 6201). This contract is sponsored by the Materials Laboratory, Air Force Systems Command, Wright-Patterson Air Force Base, Ohio. It was administered under the technical direction of Mr. Gerald C. Shumaker, ICAM Program Manager, Manufacturing Technology Division, through Project Manager, Mr. David Judson. The Prime Contractor was Production Resources Consulting of the General Electric Company, Schenectady, New York, under the direction of Mr. Allan Rubenstein. The General Electric Project Manager was Mr. Myron Hurlbut of Industrial Automation Systems Department, Albany, New York.

Certain work aimed at improving Test Bed Technology has been performed by other contracts with Project 6201 performing integrating functions. This work consisted of enhancements to Test Bed software and establishment and operation of Test Bed hardware and communications for developers and other users. Documentation relating to the Test Bed from all of these contractors and projects have been integrated under Project 6201 for publication and treatment as an integrated set of documents. The particular contributors to each document are noted on the Report Documentation Page (DD1473). A listing and description of the entire project documentation system and how they are related is contained in document FTR630100001, Project Overview.

The subcontractors and their contributing activities were as follows:

**TASK 4.2**

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<tr>
<th>Subcontractors</th>
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<tbody>
<tr>
<td>Boeing Military Aircraft Company (BMAC)</td>
<td>Reviewer</td>
</tr>
<tr>
<td>D. Appleton Company (DACOM)</td>
<td>Responsible for IDEF support, state-of-the-art literature search</td>
</tr>
<tr>
<td>General Dynamics/ Ft. Worth</td>
<td>Responsible for factory view function and information models</td>
</tr>
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### Subcontractors

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<tr>
<th>Illinois Institute of Technology</th>
<th>Role</th>
</tr>
</thead>
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<tr>
<td></td>
<td>Responsible for factory view function research (IITRI) and information models of small and medium-size business</td>
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<tr>
<th>North American Rockwell</th>
<th>Role</th>
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<tr>
<th>Northrop Corporation</th>
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<td></td>
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<th>Role</th>
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### TASKS 4.3 - 4.9 (TEST BED)

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<tr>
<td>Boeing Military Aircraft Company (BMAC)</td>
<td>Responsible for consultation on applications of the technology and on IBM computer technology.</td>
</tr>
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<tr>
<th>Computer Technology Associates (CTA)</th>
<th>Role</th>
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<tbody>
<tr>
<td></td>
<td>Assisted in the areas of communications systems, system design and integration methodology, and design of the Network Transaction Manager.</td>
</tr>
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<tr>
<th>Control Data Corporation (CDC)</th>
<th>Role</th>
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<tr>
<td></td>
<td>Responsible for the Common Data Model (CDM) implementation and part of the CDM design (shared with DACOM).</td>
</tr>
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<th>D. Appleton Company (DACOM)</th>
<th>Role</th>
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<tr>
<td></td>
<td>Responsible for the overall CDM Subsystem design integration and test plan, as well as part of the design of the CDM (shared with CDC). DACOM also developed the Integration Methodology and did the schema mappings for the Application Subsystems.</td>
</tr>
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</table>
### Subcontractors

<table>
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<tr>
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<tr>
<td>Digital Equipment Corporation (DEC)</td>
<td>Consulting and support of the performance testing and on DEC software and computer systems operation.</td>
</tr>
<tr>
<td>McDonnell Douglas Automation Company (McAuto)</td>
<td>Responsible for the support and enhancements to the Network Transaction Manager Subsystem during 1984/1985 period.</td>
</tr>
<tr>
<td>On-Line Software International (OSI)</td>
<td>Responsible for programming the Communications Subsystem on the IBM and for consulting on the IBM.</td>
</tr>
<tr>
<td>Rath and Strong Systems Products (RSSP) (In 1985 became McCormack &amp; Dodge)</td>
<td>Responsible for assistance in the implementation and use of the MRP II package (PIOS) that they supplied.</td>
</tr>
<tr>
<td>SofTech, Inc.</td>
<td>Responsible for the design and implementation of the Network Transaction Manager (NTM) in 1981/1984 period.</td>
</tr>
<tr>
<td>Software Performance Engineering (SPE)</td>
<td>Responsible for directing the work on performance evaluation and analysis.</td>
</tr>
<tr>
<td>Structural Dynamics Research Corporation (SDRC)</td>
<td>Responsible for the User Interface and Virtual Terminal Interface Subsystems.</td>
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Subcontractors and other prime contractors under other projects who have contributed to Test Bed Technology, their contributing activities and responsible projects are as follows:

<table>
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<th>Subcontractors</th>
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<tr>
<td>Boeing Military Aircraft Company (BMAC)</td>
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<tr>
<td>Control Data Corporation (CDC)</td>
<td>1502, 1701</td>
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## LIST OF SYMBOLS, ABBREVIATIONS, ACRONYMS

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<td>AP</td>
<td>Application Process</td>
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<td>APG</td>
<td>Application Process Cluster</td>
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<tr>
<td>API</td>
<td>Application Process Interface</td>
</tr>
<tr>
<td>CDMRP</td>
<td>Common Data Model Request Processor</td>
</tr>
<tr>
<td>COMM</td>
<td>Communications Handler</td>
</tr>
<tr>
<td>CPCGI</td>
<td>Computer Program Configuration Item</td>
</tr>
<tr>
<td>DBMS</td>
<td>Data Base Management System</td>
</tr>
<tr>
<td>DMN</td>
<td>Data Manipulation Language</td>
</tr>
<tr>
<td>ICAM</td>
<td>Integrated Computer Aided Manufacturing</td>
</tr>
<tr>
<td>IDSS</td>
<td>Integrated Decision Support System</td>
</tr>
<tr>
<td>IISS</td>
<td>Integrated Information Support System</td>
</tr>
<tr>
<td>IPC</td>
<td>Inter Process Communication</td>
</tr>
<tr>
<td>LAN</td>
<td>Local Area Network</td>
</tr>
<tr>
<td>MCMN</td>
<td>Manufacturing Control Material Management</td>
</tr>
<tr>
<td>MDL</td>
<td>Message Definition Language</td>
</tr>
<tr>
<td>MM</td>
<td>Message Manager</td>
</tr>
<tr>
<td>MO</td>
<td>Maintain Operability</td>
</tr>
<tr>
<td>MPU</td>
<td>Message Processing Unit</td>
</tr>
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<td>MRP</td>
<td>Materials Requirements Planning</td>
</tr>
<tr>
<td>MSG</td>
<td>Message</td>
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<tr>
<td>NTH</td>
<td>Network Transaction Manager</td>
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<tr>
<td>OS</td>
<td>Operating System</td>
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<td>PM</td>
<td>Process Manager</td>
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<td>QA</td>
<td>Quality Assurance</td>
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<td>SS</td>
<td>System Specification</td>
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<tr>
<td>UI</td>
<td>User Interface</td>
</tr>
<tr>
<td>VAX</td>
<td>Trademark of Digital Equipment Corporation: 32 bit minicomputer</td>
</tr>
<tr>
<td>VMS</td>
<td>Trademark of Digital Equipment Corporation: The VAX OS</td>
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SECTION 1
RUNNING THE IISS

1.1 Location of Runtime Modules

In order to run IISS, the NTM executable modules MONITR, NTMRVMPU, NTCDMMPU, NTCOVMPU, NTUVMPPU, and NTT1VMPU must be resident in the directory in which IISS will be run. All of the data files (for NTM tables, queues, and sysgen parameters) must also be in this directory. All executable modules of AP's to be run in the IISS environment must be in directories known to the NTM.

A directory is known to the NTM via an entry in the Directory Table. This entry contains the two character directory ID (as used in the AP Naming Convention) and the actual directory name (not to exceed twelve characters including the period).

Finally, the executable module MPUGEN must reside in the directory in which the IISS will be run. This allows the operator to modify the sysgen parameters and run without having to move files.

1.2 Sysgen Parameters

Prior to running the IISS, and "Instance" must be assigned to the NTM. This Instance ID allows multiple IISS environments to run simultaneously. On the VAX, the separate IISS instances must run in separate VAX Groups (where a VAX User Identification Code (UIC) = [group id, member id]). To assign an instance ID, MPUGEN is run. The MPUGEN menu includes a choice for modifying the current IISS Instance.

1.3 IISS Startup

The IISS environment on each host within the IISS system is started individually under control of the local host operating system. Once the IISS operator has logged on to the local host under the appropriate system directory, the invocation of a command file will cause the local operating system to load and execute the monitor AP (Monitor AP is the NTM system component responsible for coordinating IISS start up). On the VAX, the command file is "IISS" and is executed as follows:
In the above example, CLEANSUP is the pre-start up file initialization phase in which message logs and queues are "cleaned up" and NTM files are assigned. File Delete Errors during cleanup will occur. This may not indicate an error; it is possible that the particular file was not created during the previous execution. These error messages may usually be ignored.

Once IISS start up has begun, start up status messages are displayed to the IISS operator console. These messages indicate which IISS components have been successfully initiated and where errors have occurred in start up processing. In the above example, all local APC's (MRV, CDM, UIV, COV, TIV) have started successfully as has the VAX-IBM com link (VI). If an error occurs during the start up of an APC, an error message would be displayed. If a Component APC (MRx, CDM, UIx, COx, where x is the host identifier) fails, the IISS start up would fail and the Monitor AP terminate. The following is an example of such an occurrence:

MRV START UP SUCCESSFUL
CDM START UP FAILED: FAIL CODE: 50001
TIMEOUT ON WAIT FOR MPU TABLE STATUS REQUEST
ERROR IN MODULE STRUTP ERROR CODE: 50020
COMPONENT APC FAILED AT START UP
If a non-component APC fails, start up continues; the IISS can run without the non-component APC's being active. The following is an example of this situation:

MRV START UP SUCCESSFUL.
CDM START UP SUCCESSFUL.
UIV START UP SUCCESSFUL.
COV START UP SUCCESSFUL.
TIV START UP FAILED: FAIL CODE: MTRO1
TIMEOUT ON WAIT FOR TABLE STATUS REQUEST

* * * * * IISS START UP COMPLETE * * * * *
COMM LINK VI IS ACTIVE.

The IISS Central Node (VAX) can operate in the IISS environment without any Remote Node being active. If, during IISS start up, any or all of the comm link start up requests fail, start up processing will continue and normal IISS processing will be available to the local host.

MRV START UP SUCCESSFUL.
CDM START UP SUCCESSFUL.
UIV START UP SUCCESSFUL.
COV START UP SUCCESSFUL.
TIV START UP SUCCESSFUL.

* * * * * IISS START UP COMPLETE * * * * *
VI LINK START FAILED: FAIL CODE 30016

The above situation is currently not applicable to a Remote Node. The current implementation of the NTM requires Remote Nodes to have an active link to the Central Node to run in the IISS environment. If the above example were on a Remote Node, it would look as follows (Note: the comm link to the Central Node is started immediately after the Monitor APC is initiated):

MRI START UP SUCCESSFUL.
IV LINK START FAILED; FAIL CODE: 30016
ERROR IN MODULE LKTOCN ERROR CODE: 30016
COMM LINK FAILED AT START UP
SECTION 2

IISS OPERATOR COMMANDS

2.1 Introduction

The NTM currently supports 12 operator commands. They are as follows:

1. Shutdown IISS (SD)
2. Shutdown APC (SC)
3. Start APC (ST)
4. Shutdown Comm Link (LS)
5. Start Comm Link (SL)
6. Cancel IISS Shutdown (CN)
7. Display IISS Status (DS)
8. Display Active AP's (DA)
9. Enable a SIGERR Messages (SE)
10. Disable SIGERR Messages (SO)
11. Select Logging Features (LG)
12. Start New Log File (SN)

"HELP" will display the list of operator commands. The processing of these commands is fairly straightforward. "Shutdown IISS" is more complex and will be covered in the section of this manual on shutting down the IISS (Section 3). Except for the commands "CN" and "DS", the operator is prompted for additional information - either an APC name or a Link ID. This data is verified and the command is executed. Between the time the operator enters the requested command data and the time at which the command processing is complete, the operator console is disabled for further input. Therefore, there may be no overlapping of operator commands. The results of the command will be displayed at the console.

2.2 Shutdown APC

This command causes an APC anywhere in the IISS environment to be shutdown. The operator is prompted for the name of the APC and the command status is displayed to the operator. Only non-component APC's may be shutdown via operator command.

ENTER OPERATOR COMMAND (OR HELP)
SC (return)
ENTER APC NAME
TIV (return)
2.3 Start APC

This command enables the IISS operator to start an APC. Currently only non-component APC's on the local host may be started via operator command. As in the Shutdown APC command, the operator is prompted for the name of the APC.

ENTER OPERATOR COMMAND (OR HELP)
ST (return)
ENTER APC NAME
TIV(return)
TIV START UP SUCCESSFUL.

Other possible status returns for this command are:
- APC NOT IN APC STATUS TABLE
- APC IS INACTIVE
- NO RESPONSE FROM APC: ASSUMED TERMINATED
- INVALID COMMAND FOR COMPONENT APC

2.4 Shutdown Comm Link

This command is invoked to shutdown the communications link to a remote host. The operator is prompted for the id of the link to be shutdown.

ENTER OPERATOR COMMAND (OR HELP)
LS(return)
ENTER LINK ID
VH(return)
COMM LINK VH HAS TERMINATED.

Other possible status returns for this command are:
- LINK-ID NOT IN LINK STATUS TABLE
- LINK-ID IS INACTIVE
- NO RESPONSE FROM LINK ID VH: ASSUMED TERMINATED
2.5 Start Comm Link

This command is invoked to start the communications link to a remote host. The operator is prompted for the id of the link to be started.

ENTER OPERATOR COMMAND (OR HELP)
›SL(return)
ENTER LINK ID
›VH(return)
COMM LINK VH IS ACTIVE

Other possible status returns for this command are:
- LINK-ID NOT IN LINK STATUS TABLE
- LINK-ID IS ALREADY ACTIVE
- LINK-ID LINK START UP FAILED: FAIL CODE MTRxx

2.6 Display IISS Status

This command displays the current status of all IISS components.

ENTER OPERATOR COMMAND (OR HELP)
›DS(return)
..................................SYSTEM STATUS..................................

HOST VAX IS ACTIVE
HOST HL6 IS INACTIVE
HOST IBM IS INACTIVE

APC MRV IS ACTIVE
APC UIV IS ACTIVE
APC COV IS ACTIVE
APC CDM IS ACTIVE
APC T1V IS ACTIVE
APC COH IS INACTIVE

LINK VH IS ACTIVE
LINK VI IS INACTIVE
LINK IH IS INACTIVE

2.7 Display Active AP's

This command enables the IISS operator to set a list of
the active AP's on a particular APC. The operator is prompted for the name of the APC who's active AP's are to be displayed.

ENTER OPERATOR COMMAND (OR HELP)  
>DA(return)  
ENTER APC NAME  
>TIV(return)  

THE ACTIVE AP'S ON APC ARE AS FOLLOWS:

AP NAME: ap-name  
ABORT CHARACTERISTICS: ap-abort-characteristic  
ORIGINAL SOURCE: ap-original-source  

(repeated for each active ap on the APC)

Other possible status returns for this command are:

- APC NOT IN APC STATUS TABLE  
- APC IS INACTIVE  
- NO RESPONSE FROM APC: ASSUMED TERMINATED  
- NO ACTIVE AP'S ON APC

2.8 Enable SIGERR Messages

This command sets the condition that all SIGERR messages that arrive at MONITR will be displayed on the Operator's console.

ENTER OPERATOR COMMAND (OR HELP)  
>SE (return)  
>(new prompt indicates SIGERR Messages are enabled)

2.9 Disable SIGERR Messages

This command prevents SIGERR messages from being displayed at the operator's console. As most SIGERR messages are notifications of internal AP problems, the operator may choose this option to restrict console displays to NTM errors only. This mode is the default one. When the IISS starts up, the displaying of SIGERR messages at the operator's console is disabled.

ENTER OPERATOR COMMAND (OR HELP)  
>SO (return)
2.10 Select Logging Features (LG)

This command starts a dialog with the operator to select IISS logging features. At IISS startup, complete logging is enabled; all IISS messages will be logged at all APCs. The IISS messages are logged in the file NTMLOG.DAT.

ENTER OPERATOR COMMAND (OR HELP)
>LG (return)

SELECT LOGGING FUNCTION COMMAND

SELECT ONE FROM THE FOLLOWING FUNCTIONS.

1. DISABLE ALL MESSAGE LOGGING.
2. ENABLE LOGGING OF ALL MESSAGES.
3. ENABLE SELECTIVE LOGGING:
   (CHOICES WILL FOLLOW)
4. QUIT

ENTER CHOICE:
>

If choice 1 is selected:
>1 (return)

LOGGING HAS BEEN DISABLED.
>

will appear. All message logging is now disabled.

If choice 2 is selected:
>2 (return)

Logging of all messages is enabled.
>

will appear. All IISS messages will now be logged. (the IISS startup default)

If choice 3 is selected:

The first question to appear is

2-5
DO YOU WISH TO DISABLE ANY MESSAGE PRIORITIES?
(1: YES 2: NO)
ENTER RESPONSE (1/2):

If 1 is selected, the next choice that appears is:

DISABLE HOT (H) OR COLD (C) MESSAGES?
RESPONSES: 1: HOT 2: COLD
ENTER CHOICE (1/2):

The operators choice will disable the requested priority.
If, for example, the operator enters an invalid choice, he
is asked to repeat the entry. Three tries are given
before the selective logging program aborts and returns
control to the operators normal monitoring sequence.

The next choice that appears if "3" was selected from the
original menu is

DO YOU WISH TO DISABLE ANY MESSAGE CATEGORIES?
(1: YES 2: NO)
ENTER RESPONSE (1/2):

If 1 is selected, the existing categories will be displayed
one by one for the operator to select the categories that he
wishes to disable. The following is an example dialog for this
feature.

DISABLE CATEGORY: A?
(1: YES 2: NO)
ENTER RESPONSE (1/2):
> 1

DISABLE CATEGORY: B?
(1: YES 2: NO)
ENTER RESPONSE (1/2):
> 1

DISABLE CATEGORY: C?
(1: YES 2: NO)
ENTER RESPONSE (1/2):
> 1

DISABLE CATEGORY: D?

2-6
The last selective logging choice allows the operator to disable logging at particular APCs. The choices and a sample dialog follow:

DO YOU WISH TO MODIFY LOGGING BY PARTICULAR APCS?
(1: YES 2: NO)
ENTER RESPONSE: (1/2)
> 1

SOURCE/DESTINATION LOGGING CHOICES:
1. LOG AT MESSAGE SOURCE APCS ONLY.
2. LOG AT BOTH SOURCE AND DESTINATION APCS.
3. LOG AT ALL APCS WHERE LOGGING IS ENABLED.
ENTER RESPONSE (1/2/3):
, 3
DO YOU WISH TO DISABLE ANY APCS?
(1: YES 2: NO)
ENTER RESPONSE (1/2):
, 1
DISABLE APC: MRV?
(1: YES 2: NO)
ENTER RESPONSE (1/2):
, 1
DISABLE APC: UIV?
(1: YES 2: NO)
ENTER RESPONSE (1/2):
, 1
DISABLE APC: TIV?
(1: YES 2: NO)
ENTER RESPONSE (1/2):
, 2
DISABLE APC: COM?
(1: YES 2: NO)
ENTER RESPONSE (1/2):
, 2
DISABLE APC: CDM?
(1: YES 2: NO)
ENTER RESPONSE (1/2):
, 2

SELECT LOGGING FUNCTION COMPLETE.

2.11 Start a New Log File (SN)

ENTER OPERATOR COMMAND (OR HELP)
SN (return)

A new LOGFILE has been started

On the VAX, a new version of the logfile, NTMLOG.DAT will be started. This allows the operator to isolate the logs for specific tests or times.
SECTION 3

SHUTTING DOWN THE IISS

The operator command "Shutdown IISS" is invoked when the entire IISS system is to be shutdown. IISS shutdown is accomplished in four phases as follows:

Phase 1 Notify users that IISS shutdown is pending
Phase 2 Request the shutdown of non-component APC's and remote hosts.
Phase 3 Request the shutdown of network communications
Phase 4 Shutdown component APC's

When the shutdown command is entered, the operator is prompted for a "time until shutdown." The time value (in minutes) entered by the operator will determine the elapsed time until shutdown processing (phase 2) actually begins. Phase 1 will be executed only if time until shutdown is one minute or more. Otherwise, shutdown will proceed immediately to phase 2, thereby denying active AP's the time to shut down gracefully.

During Phase 1, IISS users are notified that a system shutdown is pending and they should prepare to close their session. After shutdown has been requested, only operator commands "Display IISS Status", "Display Active AP's", and "Cancel Shutdown" will be accepted. It is only during phase 1 of shutdown that the operator may choose to cancel the shutdown request. If the operator requests the "Cancel Shutdown" command, IISS users are notified that the shutdown has been cancelled and normal IISS processing is resumed. After the elapsed time until shutdown has expired, shutdown processing begins with the shutdown of all active non-component APC's and active remote hosts. All components not responding to the shutdown request within a certain time interval will be assumed terminated. When all non-component APC's and remote hosts shutdown in phase 2 have been accounted for, phase 3 is entered. During this phase network communications are terminated. When all active comm links have been shutdown, phase 4 of shutdown begins and all component APC's are shutdown. Finally, when all other NTM components have terminated, Monitor AP concludes shutdown processing and ends execution.

The following is an example of the IISS shutdown request:

ENTER OPERATOR COMMAND (OR HELP)
SHUTDOWN WILL BEGIN IN 1 MINUTE

(one minute later)
BEGINNING IISS SHUTDOWN
***APC TIV HAS SHUTDOWN***
***COMM LINK VH HAS SHUTDOWN***
***APC UIV HAS SHUTDOWN***
***APC CDM HAS SHUTDOWN***
***APC COV HAS SHUTDOWN***
***APC MRV HAS SHUTDOWN***

***IISS SHUTDOWN COMPLETE***

Control is returned to the host operating system.
SECTION 4
ERROR CODES

4.1 MPU Processing Error Codes (31XXX)

MPU processing codes are those errors which are detected by an MPU during its normal processing activities. Upon the occurrence of an MPU processing error, the following error message is displayed to the IISS operator console:

MPU PROCESSING ERROR: SOURCE: MPU-NAME
ERROR CODE: CODE FOR ERROR OCCURRENCE
ERROR INFO: FURTHER CLARIFICATION OF THE ERROR

The "source" of the MPU processing is the name of the MPU that detected the error condition. The "error info" is data relevant to the error condition. As an example, on a 31001 error (Mailbox Write) the name of the mailbox where the error occurred is given. Table names, file names, and (host) system return codes are other examples of information supplied in an MPU processing error message. In most cases, it will be necessary to call the IISS system programmer to investigate the cause of the problem.

The MPU processing error codes are as follows:

31001 MAILBOX WRITE ERROR
31002 MAILBOX CREATE ERROR
31003 NO READ ON MAILBOX
31004 MAILBOX DISCONNECT ERROR
31005 EVENT WAIT ERROR
31006 SET TIMER ERROR
31007 TABLE MAPPING ERROR (VAX)
31008 JOB PROCESS INFORMATION ERROR (VAX)
31009 PROCESS START ERROR
31010 PROCESS ABORT ERROR
31016 TABLE READ ERROR
31017 TABLE WRITE ERROR
31018 CDM ACCESS ERROR
31019 MESSAGE ROUTING ERROR
31020 OS CALL ERROR
31021 TIMEOUT ERROR
31022 COBOL CALL ERROR
31023 EXCEPTION CONDITION
31024 TABLE ENTRY NOT FOUND

4-1
**4.2 AP Interface Error Codes (32XXX)**

AP interface errors are those errors occurring in the AP interface (to the NTH) and detected by the MPU during message processing. All errors of this type involve invalid message header field values. For example, upon the occurrence of an AP interface error where an invalid message category is given in the header, the following message will be displayed to the IISS operator console:

```
AP INTERFACE ERROR; SOURCE: mpu-name
ERROR CODE: 32001
ERROR INFO: errant-ap-name
```

The "source" of the message refers to the MPU that detected the error and the "ERROR INFO" indicates the name of the application process sending the message where the error has occurred. These errors are caused by the AP of AP Interface providing invalid data in the message header. The application designer should check to insure that proper "Data Length", "Message Type", and "Destination AP Name" arguments are passed to the AP Interface. Otherwise, it will be necessary for the IISS system programmer to investigate the errant AP Interface.

The AP interface error codes are as follows:

- **32001** INVALID MESSAGE CATEGORY
- **32002** INVALID HEADER FORMAT
- **32003** INVALID HEADER LENGTH
- **32004** INVALID HEADER BINARY/NATIVE FLAG
A "RESOURCE UNAVAILABLE ERROR" occurs either when an application process requests an IISS system resource that is currently unavailable or when a table-full is encountered when trying to write an entry to an NTM table. In either case, the following message is displayed to the IISS operator console:

```
RESOURCE UNAVAILABLE MESSAGE FROM: mpu-name
ERROR CODE: 33001
RESOURCE: unavailable-resource-name
```

The "SOURCE" refers to the MPU where the resource unavailable condition was detected. "RESOURCE" is the name of the requested resource, such as a table name or a destination AP of APC name.

There is currently only one "RESOURCE AVAILABLE" error code which covers both cases.

```
33001 TABLE FULL
RESOURCE UNAVAILABLE
```

The "RESOURCE" portion of the message will indicate the type of resource in question.

4.4 Table Error Codes (35XXX)

Table error codes provide the return status from the table access routines. The return of one of these codes does not necessarily imply that an error has occurred. The MPU will interpret the returns in the context of the call and will inform Monitor only where an error condition is deemed to exist. As an example, the END-OF-TABLE return is given at the end of the table routines READ-ALL function. In the case where the MPU is polling the table (such as when checking for timed-out message pairs) this is not considered to be an error. However, when the MPU’s records show the existence of an entry, a return of
END-OF-TABLE before the entry is found does indicate an error condition.

There are also occurrences of table error conditions that are of interest to the AP’s. The MPU will send an error message to the AP on these occurrences. In most cases, these conditions will occur while the AP is waiting for a return from an API Service. The services are therefore able to interpret the error message and return the appropriate status code. In those cases where control has been returned to the AP, the MPU uses the SIGERR message convention to inform the AP of the error occurrence. The AP must of course be in test mode in order to receive these messages.

The table error/status codes are:

- 00000 SUCCESSFUL RETURN
- 31024 ENTRY NOT FOUND (on a READ-SEARCH access)
- 35002 END OF TABLE (on a READ-ALL access)
- 33001 TABLE FULL (on a WRITE-NEW access)

4.5 Monitor AP Error Codes (30XXX)

Monitor AP error codes are associated with errors detected by the Monitor AP during its normal processing. Most errors detected by the Monitor are at system start up. These errors may cause the Monitor to terminate depending on where the error occurred. Errors may also occur during shutdown or operator command processing. When an error is detected, the error code and a descriptive message are displayed at the operator’s console. Errors pertaining to entries not found in tables (30010-30013) are probably indications of inconsistencies between tables. Timeout errors (30001, 30002, 30015) imply that a process the Monitor AP expects a message from is not responding. In most cases it will be necessary to call the IISS system programmer to investigate the problem.

The following is a list of all currently defined monitor error codes:

- 30001 TIMEOUT ON WAIT FOR MPU TABLE STATUS REQUEST
- 30002 TIMEOUT ON WAIT FOR MPU START UP STATUS
- 30005 INVALID EVENT RECEIVED
- 30010 ENTRY NOT FOUND IN APC STATUS TABLE
- 30011 ENTRY NOT FOUND IN LINK STATUS TABLE
- 30012 ENTRY NOT FOUND IN HOST-LINK-TABLE
- 30013 ENTRY NOT FOUND IN HOST-LINK-TABLE
30015 LINK START TIMEOUT
30016 LINK FAILED AT START UP
30017 COMM AP START-UP FAILED
30020 COMPONENT APC FAILED AT START UP
30025 NO RESPONSE FROM CENTRAL NODE (VAX)
30030 ERROR IN GET TERMINAL ID
SECTION 5

NTM TABLE MAINTENANCE

5.1 Overview

This section describes the procedures for maintenance of the NTM tables. The NTM uses the tables described in this section to maintain system information and current status. Some of the NTM tables are global to all MPU components on a host while some are local to each MPU. It is anticipated that in the future these tables will be kept and configured in the CDM (Common Data Model) and will be the responsibility of the CDA (Common Data Administrator). For the time being, however, when a change is made to the IISS which affects the system configuration (for example, the addition of a new AP), certain tables must be manually updated to reflect these changes.

The tables which are to be maintained by the IISS system operator are as follows:

- Authority Check Table (ACT)
  Provides indication of whether or not message access to an AP requires authorization.

- AP Cluster Status Table (APC)
  Provides both the host location within the IISS and the current operational status of an application process cluster (APC)

- AP Information Table (API)
  Provides the name of the APC on which an application resides in the IISS

- AP Characteristics Table (APT)
  Provides the processing characteristics of all application processes in the IISS environment.
- **Message Category Table (CAT)**
  Provides information pertaining to specific NTM message processing based on message category.

- **Host Status Table (HST)**
  Provides the current operational status of a host machine on the IISS.

- **Link Status Table (LST)**
  Provides the current operational status of a communication link between two hosts on the IISS.

- **Directory Table (DIR)**
  Provides directory identifiers, their full directory names, and the length (in bytes) of the full directory name. At present this name is restricted to 12 bytes including the period.

It should be noted that there are additional NTH tables but they are dynamic in nature and do not require data initialization. Because this document is concerned only with those tables requiring modification due to system configuration changes, a discussion of these dynamic tables is omitted. All of the NTH tables are fully described in the NTH Development Specification in Section 3.5.

Given a change to the IISS system configuration, one or more of the above tables will need to be updated. The modification of any of these tables is a simple and straightforward procedure involving editing a table.

*In the previous edition of this document the AP Operating Information table (APO) was identified as a static table. Due to its nature, it has been reconfigured as a dynamic table and is therefore, no longer of concern here.*
Initialization file to make the necessary changes. These table init files are maintained in the NTM system directory on each host in the IISS system. The file names are of the format "XXXTBL" where "XXX" is the three character table identifier.

The specific table initialization data file names are as follows:

<table>
<thead>
<tr>
<th>VAX</th>
<th>HL6</th>
<th>IBM</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSTTBL.DAT</td>
<td>HSTTBL.D</td>
<td></td>
</tr>
<tr>
<td>APCTBL.DAT</td>
<td>APCTBL.D</td>
<td></td>
</tr>
<tr>
<td>LSTTBL.DAT</td>
<td>LSTTBL.D</td>
<td></td>
</tr>
<tr>
<td>APTTBL.DAT</td>
<td>APTTBL.D</td>
<td></td>
</tr>
<tr>
<td>APITBL.DAT</td>
<td>APITBL.D</td>
<td></td>
</tr>
<tr>
<td>ACTTBL.DAT</td>
<td>ACTTBL.D</td>
<td></td>
</tr>
<tr>
<td>CATTBL.DAT</td>
<td>CATTBL.D</td>
<td></td>
</tr>
</tbody>
</table>

The above table initiation files contain data which appears as a string of characters. Each record in the file represents one table entry. Therefore, to add a new entry to a table, one has only to add another entry to the table initiation file. Similarly, to delete or modify a table entry, the specific record in the initiation file should be deleted or modified. It is critical that the alignment of data in these records remain intact: any errors introduced during the editing process will cause problems at system run time. For this reason, great care should be taken when modifying any table initialization file. When editing a file, check to make sure the new or modified entry is in line with all of the other file entries.

5.2 Table Descriptions

In the following section, the structure of above tables and an example of an initialization data record for each will be described. This should be used as a guide when updating any of the NTM tables. For further information regarding these tables and a description of individual fields, see the "IISS Test Bed Network Transaction Manager Development Specification." A list of legal table values for each data item is given in Section 4.5 of this document.
ACT - AUTHORITY CHECK TABLE

<table>
<thead>
<tr>
<th>FIELD NAME</th>
<th>SIZE</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>DESTINATION AP NAME</td>
<td>8</td>
<td>ALPHANUMERIC</td>
</tr>
<tr>
<td>ACCESS FLAG</td>
<td>1</td>
<td>ALPHANUMERIC</td>
</tr>
</tbody>
</table>

TABLE INITIALIZATION FILE ENTRY (ACTTBL)

TSAP1MPUI

NOTE: The authority check is based on the "generic" AP name. The access restrictions are directory independent.

APC - AP CLUSTER STATUS TABLE

<table>
<thead>
<tr>
<th>FIELD NAME</th>
<th>SIZE</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP CLUSTER NAME</td>
<td>3</td>
<td>ALPHANUMERIC</td>
</tr>
<tr>
<td>AP CLUSTER STATUS</td>
<td>1</td>
<td>NUMERIC</td>
</tr>
<tr>
<td>AP CLUSTER LOGICAL HOST</td>
<td>3</td>
<td>ALPHANUMERIC</td>
</tr>
</tbody>
</table>

TABLE INITIALIZATION FILE ENTRY

CDM5VAX

NOTE: The authority check is based on the "generic" AP name. The access restrictions are directory independent.
NOTE: The value assigned to "status" will in fact determine whether the APC is initiated at startup.
### API - AP INFORMATION TABLE

<table>
<thead>
<tr>
<th>FIELD NAME</th>
<th>SIZE</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP NAME</td>
<td>10</td>
<td>ALPHANUMERIC</td>
</tr>
<tr>
<td>AP CLUSTER NAME</td>
<td>3</td>
<td>ALPHANUMERIC</td>
</tr>
<tr>
<td>QUEUE SERVER TYPE</td>
<td>1</td>
<td>ALPHANUMERIC</td>
</tr>
</tbody>
</table>

### TABLE INITIALIZATION FILE ENTRY (APITBL)

```
MTTSAP1MPUT1V1
| --- | ---- |      |
|     |     | QUEUE SERVER TYPE |
|     |     | AP CLUSTER NAME   |
|     |     | AP NAME           |
```

**NOTE:** The API table is directory dependent. As there may be different versions of an AP residing in different directories, those versions may also be assigned to different APC's.
### APT - AP CHARACTERISTICS TABLE

<table>
<thead>
<tr>
<th>NAME</th>
<th>SIZE</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP NAME</td>
<td>8</td>
<td>ALPHANUMERIC</td>
</tr>
<tr>
<td>MAX. NUMBER OF QUEUED MESSAGES</td>
<td>2</td>
<td>NUMERIC</td>
</tr>
<tr>
<td>MAX. INSTANCES</td>
<td>2</td>
<td>NUMERIC</td>
</tr>
<tr>
<td>NUMBER OF PARENTS PER INSTANCE</td>
<td>2</td>
<td>NUMERIC</td>
</tr>
<tr>
<td>INITIATION NEEDS</td>
<td>1</td>
<td>NUMERIC</td>
</tr>
<tr>
<td>ON ABORT</td>
<td>1</td>
<td>NUMERIC</td>
</tr>
<tr>
<td>NUMBER OF MAILBOXES</td>
<td>1</td>
<td>NUMERIC</td>
</tr>
<tr>
<td>ON SHUTDOWN</td>
<td>1</td>
<td>NUMERIC</td>
</tr>
<tr>
<td>ON RECOVERY</td>
<td>1</td>
<td>NUMERIC</td>
</tr>
<tr>
<td>ON CHILD NORMAL TERM.</td>
<td>1</td>
<td>NUMERIC</td>
</tr>
<tr>
<td>ON CHILD ABNORM TERM.</td>
<td>1</td>
<td>NUMERIC</td>
</tr>
<tr>
<td>ON CHILD SHUTDOWN</td>
<td>1</td>
<td>NUMERIC</td>
</tr>
<tr>
<td>TIMEOUT HANDLING</td>
<td>1</td>
<td>NUMERIC</td>
</tr>
<tr>
<td>AP PRIORITY</td>
<td>1</td>
<td>NUMERIC</td>
</tr>
</tbody>
</table>
TABLE INITIALIZATION FILE ENTRY (APTTBL)

<table>
<thead>
<tr>
<th>AP NAME</th>
<th>MAX NUMBER OF QUEUED MESSAGES</th>
<th>MAX INSTANCES</th>
<th>NUMBER OF PARENTS PER INSTANCE</th>
</tr>
</thead>
</table>

TSAP1MPU0101010320000010

INITIATION NEEDS

- AP PRIORITY
- TIMEOUT HANDLING

ON ABORT

- ON CHILD SHUTDOWN

NUMBER OF MAILBOXES

- ON CHILD ABNORM. TERM.

ON SHUTDOWN

- ON CHILD NORM. TERM.

ON RECOVERY

NOTE: The APT table is directory independent. It is assumed that a given AP will have a single set of characteristics regardless of its directory location or the number of existing versions. The values in this table drive the NTM’s processing of an AP. It is critical that they are defined correctly.
ON 620142000
1 November 1985

---

CAT - MESSAGE CATEGORY TABLE

<table>
<thead>
<tr>
<th>FIELD NAME</th>
<th>SIZE</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>MESSAGE CATEGORY</td>
<td>1</td>
<td>ALPHA</td>
</tr>
<tr>
<td>AUTHORIZATION REQUIREMENT</td>
<td>1</td>
<td>NUMERIC</td>
</tr>
<tr>
<td>PAIRING REQUIREMENT</td>
<td>1</td>
<td>NUMERIC</td>
</tr>
<tr>
<td>GUARANTEED DELIVERY</td>
<td>1</td>
<td>NUMERIC</td>
</tr>
<tr>
<td>MESSAGE PRIORITY</td>
<td>1</td>
<td>NUMERIC</td>
</tr>
<tr>
<td>LOG REQUIREMENT</td>
<td>1</td>
<td>NUMERIC</td>
</tr>
<tr>
<td>STATISTICS COLLECTION FLAG</td>
<td>1</td>
<td>NUMERIC</td>
</tr>
</tbody>
</table>

TABLE INITIALIZATION FILE ENTRY (CATTBL)

---

A101011

---

MESSAGES CATEGORY

AUTHORIZATION

PAIRING REQUIREMENT

GUARANTEED DELIVERY

STATISTICS COLLECTION FLAG

LOG REQUIREMENT

MESSAGE PRIORITY

---

5-9
HST - HOST STATUS TABLE

<table>
<thead>
<tr>
<th>FIELD NAME</th>
<th>SIZE</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOGICAL HOST NAME</td>
<td>3</td>
<td>ALPHANUMERIC</td>
</tr>
<tr>
<td>HOST STATUS</td>
<td>1</td>
<td>NUMERIC</td>
</tr>
<tr>
<td>PHYSICAL HOST NAME</td>
<td>3</td>
<td>ALPHANUMERIC</td>
</tr>
</tbody>
</table>

TABLE INITIALIZATION FILE ENTRY (HSTTBL)

VAXOVAX

| | | | | | | | ----> PHYSICAL HOST NAME | | ----> HOST STATUS | | ----> LOGICAL HOST NAME |

LST - LINK CLUSTER STATUS TABLE

<table>
<thead>
<tr>
<th>FIELD NAME</th>
<th>SIZE</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>LINK ID</td>
<td>2</td>
<td>ALPHANUMERIC</td>
</tr>
<tr>
<td>LINK STATUS</td>
<td>1</td>
<td>NUMERIC</td>
</tr>
</tbody>
</table>

TABLE INITIALIZATION FILE ENTRY

VHO

| | | | | ----> LINK STATUS | | ----> LINK ID |

5-10
DIR - DIRECTORY TABLE

<table>
<thead>
<tr>
<th>FIELD NAME</th>
<th>SIZE</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIRECTORY PREFIX</td>
<td>2</td>
<td>ALPHANUMERIC</td>
</tr>
<tr>
<td>DIRECTORY NAME</td>
<td>20</td>
<td>ALPHANUMERIC</td>
</tr>
<tr>
<td>DIRECTORY NAME LENGTH</td>
<td>2</td>
<td>ALPHANUMERIC</td>
</tr>
</tbody>
</table>

TABLE INITIALIZATION FILE ENTRY (DIRTBL)

```
MT[CROS.NMTESR] 12
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

NOTE: All directory prefixes used by AP's in the IISS must be defined in this table.

5.3 Monitor AP Internal Table

The monitor AP has a special internal table, called the Host-Link Information Table (HLT), which provides the monitor with information regarding remote IISS hosts, the comm links used to communicate with these remote hosts, and the remote monitor APs. This table is maintained as a sysgen parameter.

5.4 When to Modify a Table

Host Status Table.

The Host Status Table is modified when a new host is added to the IISS configuration. The host status entry should be initialized to "0" (inactive).

AP Cluster Status Table.

The AP Cluster Status Table is modified under two
circumstances: (1) when a new APC is added to the IISS configuration, or (2) when the initial APC status is to be modified. The APC status differs from the host or link status in that there is more than one initial status possible; a value of "5" is assigned if the APC is to be initiated during IISS start up; a value of "2" is assigned if it is not to be initiated at start up.

Link Status Table.

The Link Status Table is modified when a new host, and therefore new comm links, are to be added to the system configuration. The link status entry should be initialized to "0" (inactive).

AP Characteristics Table.

The AP Characteristic Table must be modified when an AP is added or removed from the system configuration or when a characteristic of an AP changes. The characteristics of an application process are specified by the application designer based on the list of characteristics supported by the NTM. These values must be supplied at the time the new AP is introduced to the IISS environment.

AP Information Table.

This table is modified when a new application process is added to the system configuration. The system administrator determines, based on the database supporting the application, which AP cluster the new AP is to reside on. If an application process is moved from one APC to another, the API table must be modified to reflect this change. The AP's chaining support requirement (Queue Server Type Value) is supplied by the AP developer.

Authority Check Table.

A new entry is made to the authority check table when a new application process is added to the system or when the authority restriction of an AP is changed. The application designer determines whether or not messages sent to the new AP require authorization.

Message Category Table.

Modification of the Message Category Table is necessary.
only when a new message category is created or when the processing requirements implied by the message category are changed.

Directory Table.

Modification of the Directory Table is required when a new directory is added to the IISS configuration.

Host-Like Information Table.

When a new host is introduced into the IISS environment, a new entry must be made in this table. This is accomplished by adding REC-N (where N is the next number available) to the include file BASYSG.INC. The specific values of the new entry will be stored in this file. In addition, the value for "INIT-LINK-COUNT" must be updated to reflect the actual number of links that must be established at startup. The new record and volumes are read into the sysgen data file by running MPUGEN to create a default file.

Below is a description of the fields of the Host-Link Information Table:

<table>
<thead>
<tr>
<th>FIELD NAME</th>
<th>SIZE</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMM LINK ID</td>
<td>2</td>
<td>ALPHANUMERIC</td>
</tr>
<tr>
<td>COMM AP NAME</td>
<td>10</td>
<td>ALPHANUMERIC</td>
</tr>
<tr>
<td>REMOTE HOST NAME</td>
<td>3</td>
<td>ALPHANUMERIC</td>
</tr>
<tr>
<td>REMOTE MONITOR AP NAME</td>
<td>10</td>
<td>ALPHANUMERIC</td>
</tr>
<tr>
<td>REMOTE MONITOR APC NAME</td>
<td>3</td>
<td>ALPHANUMERIC</td>
</tr>
<tr>
<td>NODE TYPE</td>
<td>1</td>
<td>NUMERIC **</td>
</tr>
</tbody>
</table>
ON 620142000
1 November 1985

VICOMVICOMIBMNTMONITIMPUMRIO

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

--- NODE TYPE

--- REMOTE MONITOR APC NAME

--- REMOTE MONITOR AP NAME

--- REMOTE HOST NAME

--- COMM AP NAME

--- COMM LINK ID
5.5 **Table Values**

The following is a list of legal values for the table fields:

**Access Flag (ACT)**

- 0 - Restricted Access (requires authorization)
- 1 - Open Access

**AP Cluster Status (APC)**

- 1 - Active
- 2 - Unavailable (will not be started during startup)
- 3 - Shutting Down
- 4 - In Start Up
- 5 - Start APC at IISS Start Up

**AP Priority (APT)**

- 0 - Default AP Priority (all present all IISS AP's will be assigned the same priority)

**Authorization Requirement (CAT)**

- 0 - Message Does Not Require Authorization
- 1 - Message Requires Authorization

**Guaranteed Delivery (CAT)**

- 0 - No Guaranteed Delivery
- 1 - Guaranteed Delivery Services Required on Message

**Host Status (HST)**

- 0 - Inactive
- 1 - Active
- 2 - In Start Up
- 3 - In Shutdown

**Initiation Needs (APT)**

- 0 - No Restriction
- 1 - Requires AP Init Message
- 2 - Start From Terminal (UI Only)
Link Status (LST)

0 - Inactive  
1 - Active  
2 - Initiated (Waiting Response)  
3 - Comm AP is active but link to remote host is not

Log Requirement (CAT)

0 - Message is not to be Logged  
1 - Message is to be Logged

Message Priority (CAT)

0 - Low Priority  
1 - High Priority

Node Type (HLT)

0 - IISS Remote Node  
1 - IISS Central Node

Number of Mailboxes (APT)

0 - AP Does Not Require Mailboxes  
1 - AP Supports a Cold and an ACK Mailbox only  
2 - AP Supports Cold, ACK, and Hot Mailboxes

On Abort (APT)

1 - Run to Completion  
2 - Send Abort Message to AP  
3 - Abnormally Terminate AP

On Child Abnormal Termination (APT)

0 - No Message to AP  
1 - Message to AP Required  
2 - Terminate Parent AP

On Child Normal Termination (APT)

0 - No Message to AP  
1 - Message to AP Required  
2 - Terminate Parent AP
On Child Shutdown (APT)

0 - No Message to AP
1 - Message to AP Required
2 - Terminate Parent AP

On Recovery (APT)

0 - AP Has No Recovery Logic
1 - AP Has Internal Recovery Logic

On Shutdown (APT)

0 - AP Has No Shutdown Logic
1 - AP Has Logic To Gracefully Shut Itself Down

Pairing Requirement (CAT)

0 - Message Not Paired
1 - Message Paired

Queue Server Type (API)

0 - No Chaining Support Required
1 - Child AP Chaining Support Required
2 - Message Chaining Support Required

Statistics Collection Flag (CAT)

0 - No Statistics Collected On Message
1 - Statistics Collected On Message

Timeout Handling (APT)

0 - Paired Messages Not Handled
1 - Cancel Message Pair On Timeout
2 - Abort AP On Timeout
3 - Do Not Cancel Pair (Renew Timeout Period)
TROUBLESHOOTING SUGGESTIONS

There may be times when something completely unexpected occurs or something expected doesn't occur. This section addresses what these situations might look like and what to do when they are detected. These problems tend to be host specific and therefore will be discussed as such.

VAX EXAMPLES:

1. If the IISS is started while various components (MPU's) within the same group are still executing, the following may be observed:

   @IISS

   %COB-F-INVDECDAT, invalid decimal data

   To correct this situation, the operator must stop all currently running MPU's in the group using the "STOP Process Name" command under VMS and re-enter the IISS command procedure.

2. If, during normal IISS operation, the operator console does not respond and the system appears to be hung up, the operator may abort the IISS process by entering a "CTRL Y" character. Once at the host operating system command level, all MPU's must be stopped via the "STOP" command under VMS.

3. It is possible that after "* * * * BEGINNING IISS START UP * * * *" is displayed to the console, the host operating system command level prompt is returned with no indication as to what happened to the IISS. The problem here may involve terminal device assignment conflicts. The operator should log off of the system, log back on and try again. If the problem persists, call the IISS system programmer.
APPENDIX A

NTM LOG UTILITY

Description - The NTM log utility is a tool which provides the following functions:

1. Selection of NTM log records based upon any combination of the following fields:
   A. Date
   B. Time
   C. Destination Application Program Name
   D. Destination Application Program Cluster Name
   E. Source Application Program Name
   F. Source Application Program Cluster Name
   G. Message Type
   H. Message Category

2. Online display of selected NTM log records.

3. File creation of selected NTM log records.

4. File creation of selected NTM log records formatted per online display option.

Processing Options -

1. Selection Criteria
   A. Date - To select on the date field, a beginning and ending date must be entered per the following format:

      DD-MMM-YYYY where - 'DD' represents the day
      - 'MM' represents the month
      - 'YYYY' represents the year

      Example - 01-MAR-1985

   Date Field Options:
   1. Enter date per required format.
   2. Leave the date field blank to default to the
current date.

3. Enter one or more asterisks to use the following defaults:

01-JAN-0001 - FOR BEGINNING DATE
31-DEC-9999 - FOR ENDING DATE

B. Time - To select on the time field, a beginning and ending time must be entered using the following format:

HH:MM:SS.ss where - 'HH' represents hours
'MM' represents minutes
'SS' represents seconds
'ss' represents hundredths of a second

Time Field Options:

1. Enter time per required format.

2. Leave the time field blank to use the following defaults:

00:00:00.00 - FOR BEGINNING TIME
23:59:59.59 - FOR ENDING TIME

3. Enter a partial time and use the default value so the remaining positions of the time field (i.e., hours, hours and minutes, or hours, minutes, and seconds only).

Example - 09:_____ DEFAULTS TO
09:00:00 WHEN ENTERED FOR THE BEGINNING TIME
AND 09:59:59 WHEN ENTERED FOR THE ENDING TIME

C. Destination Application Program Name

Destination Application Program Name Field Options:

1. Enter a 10-character destination application program name.

2. Leave the destination application program name field
blank to use the following default: 'MTNTHONITV'.

D. Destination Application Program Cluster Name
Destination Application Program Cluster Name Field Options:

1. Enter a 3-character destination application program cluster name.

2. Leave the destination application program cluster name field blank to use the following default: 'MRV'.

E. Source Application Program Name
Source Application Program Name Field Options:

1. Enter a 10-character source application program name.

2. Leave the source application program name blank to use the following default: 'MTNTHONITV'.

F. Source Application Program Cluster Name
Source Application Program Cluster Name Field Options:

1. Enter a 3-character source application program cluster name.

2. Leave the source application program cluster name blank to use the following default: 'MRV'.

G. Message Type – Enter a 2-character message type
- A default message type is not available
- A blank message type will be ignored and treated as though message type was not selected.

H. Message Category – Enter a 1-character message category
- A default message category is not available
- A blank message category will be ignored and treated as though message category was not selected.

2. Online Display Option

When the "online display" option is selected, each NTH log
ON 620142000
1 November 1985

A record which satisfies the selection criteria will be displayed on the terminal. Each displayed record consists of two or three screens. The first screen displays the NTM log header information (positions 1-127), while the second and third screens display the NTM log data information (positions 128-2042). The third screen will only appear when the NTM log record being displayed contains more than 960 characters of data. After each screen is displayed, the following options are available:

A. You may continue to the next sequential screen by pressing the carriage return.

B. You may select to display the first screen (NTM log header information) for the next selected NTM log record.

C. You may terminate displaying of selected NTM log records.

3. File Creation of Selected NTM Log Records

When the "create an NTM log file" option is selected, each NTM log record which satisfies the selection criteria will be written as raw data to the user-specified file name or when a file name is not specified, the following default file name will be created in the current user's directory: NTMUTIL.DAT

4. File Creation of Selected NTM Log Records Formatted per Online Display Option

When this option is selected, each NTM log record which satisfies the selection criteria will be written in the format of the display option screens to the user-specified file name or when a file name is not specified, the following default file name will be created in the current user's directory: NTMRPT.DAT

Miscellaneous Notes:

1. The input NTM log may be a fixed or variable length file with a record length not exceeding 2042 characters. When an input NTM log file is not specified, the following default file name will be used and accessed in the current user's directory: NTMLOG.DAT
2. Upper and lower case characters are acceptable as input. When a lower case character is entered in a selection field, the character will be converted to the equivalent upper case character and used as such for all further displays and file selection.

3. Any termination of the program after having selected the creation of an output file will result in the creation of the requested file.
EXAMPLE ONE

Reformats all NTMLOG.DAT records.
No interactive display of selected records.
Creates formatted output file NTMRPT.DAT.
RUN NTMUTIL

***** NTM LOG ANALYSIS UTILITY STARTED *****

PLEASE ENTER THE NAME OF THE NTM LOG FILE TO BE ANALYZED:
NTM LOG FILE TO BE ANALYZED DEFAULTS TO: NTMLOG.DAT

WOULD YOU LIKE TO CREATE A FILE CONTAINING THE SELECTED
NTM LOG RECORDS? (Y/N): NO

WOULD YOU LIKE TO CREATE A FILE CONTAINING THE SELECTED
NTM LOG RECORDS IN THE ONLINE DISPLAY FORMAT? (Y/N): YES

PLEASE ENTER THE FILE NAME:
DEFAULT FILE NAME: NTMRPT.DAT

WOULD YOU LIKE TO SELECT ON DATE? (Y/N): N

WOULD YOU LIKE TO SELECT A DESTINATION AP NAME? (Y/N): no

WOULD YOU LIKE TO SELECT A DESTINATION APC NAME? (Y/N): n

WOULD YOU LIKE TO SELECT A SOURCE AP NAME? (Y/N):

WOULD YOU LIKE TO SELECT A SOURCE APC NAME? (Y/N):

WOULD YOU LIKE TO SELECT A MESSAGE CATEGORY? (Y/N):

NO SELECTION CRITERIA HAS BEEN ESTABLISHED
ALL RECORDS WILL BE SELECTED

WOULD YOU LIKE TO CONTINUE PROCESSING SELECTED CRITERIA? (Y/N): Y

WOULD YOU LIKE TO HAVE THE NTM LOG DISPLAYED? (Y/N): Y

PROCESSING IS COMPLETE

NUMBER OF RECORDS READ = 000000548
NUMBER OF MATCHES FOUND = 000000548

THE FOLLOWING FILE HAS BEEN CREATED CONTAINING 000025208 RECORDS - NTMRPT.DAT

WOULD YOU LIKE TO RUN THE NTM LOG UTILITY AGAIN? (Y/N): N

$
EXAMPLE TWO

Selects records from NTM14MAY.DAT having a destination APC name of "MRV" and time stamp in the range of 12:00:00 - 12:34:59.
Selected records are displayed online.
Output files NTMLOG.DAT and RPT14MAY.DAT are created.
RUN NTMUTIL

***** NTM LOG ANALYSIS UTILITY STARTED *****

PLEASE ENTER THE NAME OF THE NTM LOG FILE TO BE ANALYZED: NTM14MAY.DAT

WOULD YOU LIKE TO CREATE A FILE CONTAINING THE SELECTED NTM LOG RECORDS? (Y/N): Y

PLEASE ENTER THE OUTPUT NTM LOG FILE NAME: NEWLOG.DAT

WOULD YOU LIKE TO CREATE A FILE CONTAINING THE SELECTED NTM LOG RECORDS IN THE ONLINE DISPLAY FORMAT? (Y/N): Y

PLEASE ENTER THE FILE NAME: RPT14MAY.DAT

WOULD YOU LIKE TO SELECT ON DATE? (Y/N): Y

PLEASE ENTER THE FILE NAME: RPT14MAY.DAT

WOULD YOU LIKE TO SELECT ON DATE? (Y/N): Y

ENTER BEGINNING DATE (DD-MMM-YYYY): *
BEGINNING DATE DEFAULTS TO : 01-JAN-0001

ENTER ENDING DATE (DD-MMM-YYYY): *
ENDING DATE DEFAULTS TO : 31-DEC-9999

WOULD YOU LIKE TO SELECT ON TIME? (Y/N): Y

ENTER BEGINNING TIME (HH:MM:SS): 12
BEGINNING TIME DEFAULTS TO: 12:00:00

ENTER ENDING TIME (HH:MM:SS): 12:34
ENDING TIME DEFAULTS TO: 12:34:59

WOULD YOU LIKE TO SELECT A DESTINATION APC NAME? (Y/N): Y

WOULD YOU LIKE TO SELECT A DESTINATION APC NAME? (Y/N): Y

ENTER DESTINATION APC NAME (MAX - 3 CHAR):
DESTINATION APC NAME DEFAULTS TO : MRV

WOULD YOU LIKE TO SELECT A SOURCE AP NAME? (Y/N): Y

WOULD YOU LIKE TO SELECT A SOURCE APC NAME? (Y/N): Y

WOULD YOU LIKE TO SELECT A MESSAGE TYPE? (Y/N): Y

WOULD YOU LIKE TO SELECT A MESSAGE CATEGORY? (Y/N):
SELECTING ON THE FOLLOWING CRITERIA:

DATE RANGE: 01-JAN-0001 THRU 31-DEC-9999
TIME RANGE: 12:00:00.00 THRU 12:34:59.59
DESTINATION APC NAME: MRV

WOULD YOU LIKE TO CONTINUE PROCESSING SELECTED CRITERIA (Y/N):

WOULD YOU LIKE TO HAVE THE NTM LOG DISPLAYED? (Y/N): Y
### SELECTED NTM LOG RECORD 00001

**DATE:** 14-MAY-1985  
**TIME:** 12:32:47.33  
**MESSAGE SERIAL NUMBER:** 0004525  
**PROCESSING CODE:** 1  
**MESSAGE CATEGORY:** E  
**AP PRIORITY:** 0  
**INTEGRITY CHECK FLAG:** 0  
**LOG REQUIREMENT:** 1  
**STATISTICS COLLECTION FLAG:** 1  
**BINARY/NATIVE FLAG:** N  
**TEST FLAG:** 0  
**MESSAGE PRIORITY:** 0  
**DELAY TRIGGER FLAG:** 0  
**MESSAGE TYPE:** TS  
**DELAY TIME TRIGGER:**  
**DEST AP NAME:** NTNTMONITV  
**DEST INSTANCE:** 00  
**ORIGINAL SOURCE:** NTNTMONITVOMRV  
**DEST APC NAME:** MRV  
**LOGICAL CHANNEL ID:** 001  
**CONTINUATION INDICATOR:** 0  
**SRC AP NAME:** NTNTMRVMPU  
**SRC INSTANCE:** 00  
**SRC APC NAME:** MRV

**YES** - FOR NEXT RECORD  
**NO** - TO STOP DISPLAYING  
**PRESS ENTER** - TO CONTINUE

### SELECTED NTM LOG RECORD 00001

**YES** - FOR NEXT RECORD  
**NO** - TO STOP DISPLAYING  
**PRESS ENTER** - TO CONTINUE

### END OF DATA

**YES** - FOR NEXT RECORD  
**NO** - TO STOP DISPLAYING  
**PRESS ENTER** - TO CONTINUE
SELECTED NTM LOG RECORD 000002  PAGE 000003

<table>
<thead>
<tr>
<th>DATE</th>
<th>14-MAY-1985</th>
<th>MESSAGE SERIAL NUMBER : 0004526</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIME</td>
<td>12:32:48.21</td>
<td>PROCESSING CODE : 1</td>
</tr>
<tr>
<td>LOG APC</td>
<td>MRV</td>
<td>MESSAGE CATEGORY : E</td>
</tr>
<tr>
<td>LOG STATUS</td>
<td>LV000</td>
<td>AP PRIORITY : 0</td>
</tr>
<tr>
<td>HEADER FORMAT</td>
<td>A</td>
<td>INTEGRITY CHECK FLAG : 0</td>
</tr>
<tr>
<td>HEADER LENGTH</td>
<td>092</td>
<td>LOG REQUIREMENT : 1</td>
</tr>
<tr>
<td>DATA LENGTH</td>
<td>0017</td>
<td>STATISTICS COLLECTION FLAG : 1</td>
</tr>
<tr>
<td>BINARY/NATIVE FLAG</td>
<td>N</td>
<td>TEST FLAG : 0</td>
</tr>
<tr>
<td>MESSAGE PRIORITY</td>
<td>0</td>
<td>DELAY TRIGGER FLAG : 0</td>
</tr>
<tr>
<td>MESSAGE TYPE</td>
<td>LV</td>
<td>DELAY TIME TRIGGER :</td>
</tr>
<tr>
<td>BEST AP NAME</td>
<td>NTNTMONITV</td>
<td>DELAY TRIGGER CONDITION :</td>
</tr>
<tr>
<td>BEST INSTANCE</td>
<td>00</td>
<td>ORIGINAL SOURCE:NTNTMONITV00MRV</td>
</tr>
<tr>
<td>BEST APC NAME</td>
<td>MRV</td>
<td>LOGICAL CHANNEL ID : 001</td>
</tr>
<tr>
<td>SRC AP NAME</td>
<td>NTNTMRVMPU</td>
<td>CONTINUATION INDICATOR : 0</td>
</tr>
<tr>
<td>SRC INSTANCE</td>
<td>00</td>
<td></td>
</tr>
<tr>
<td>SRC APC NAME</td>
<td>MRV</td>
<td></td>
</tr>
</tbody>
</table>

YES - NO - PRESS ENTER - FOR NEXT RECORD TO STOP DISPLAYING TO CONTINUE: Y

SELECTED NTM LOG RECORD 000003  PAGE 000005

<table>
<thead>
<tr>
<th>DATE</th>
<th>14-MAY-1985</th>
<th>MESSAGE SERIAL NUMBER : 0004527</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIME</td>
<td>12:32:48.66</td>
<td>PROCESSING CODE : 1</td>
</tr>
<tr>
<td>LOG APC</td>
<td>MRV</td>
<td>MESSAGE CATEGORY : G</td>
</tr>
<tr>
<td>LOG STATUS</td>
<td>00000</td>
<td>AP PRIORITY :</td>
</tr>
<tr>
<td>HEADER FORMAT</td>
<td>A</td>
<td>INTEGRITY CHECK FLAG :</td>
</tr>
<tr>
<td>HEADER LENGTH</td>
<td>092</td>
<td>LOG REQUIREMENT :</td>
</tr>
<tr>
<td>DATA LENGTH</td>
<td>00000</td>
<td>STATISTICS COLLECTION FLAG :</td>
</tr>
<tr>
<td>BINARY/NATIVE FLAG</td>
<td>N</td>
<td>TEST FLAG :</td>
</tr>
<tr>
<td>MESSAGE PRIORITY</td>
<td>1</td>
<td>DELAY TRIGGER FLAG :</td>
</tr>
<tr>
<td>MESSAGE TYPE</td>
<td>AL</td>
<td>DELAY TIME TRIGGER :</td>
</tr>
<tr>
<td>DEST AP NAME</td>
<td>NTNTMRVMPU</td>
<td>DELAY TRIGGER CONDITION :</td>
</tr>
<tr>
<td>DEST INSTANCE</td>
<td></td>
<td>ORIGINAL SOURCE:NTNTMONITV00MRV</td>
</tr>
<tr>
<td>DEST APC NAME</td>
<td>MRV</td>
<td>LOGICAL CHANNEL ID : MRV</td>
</tr>
<tr>
<td>SRC AP NAME</td>
<td>NTNTMONITV</td>
<td>CONTINUATION INDICATOR : 0</td>
</tr>
<tr>
<td>SRC INSTANCE</td>
<td>00</td>
<td></td>
</tr>
<tr>
<td>SRC APC NAME</td>
<td>MRV</td>
<td></td>
</tr>
</tbody>
</table>

YES - NO - PRESS ENTER - FOR NEXT RECORD TO STOP DISPLAYING TO CONTINUE: NO

A-12
PROCESSING IS COMPLETE

NUMBER OF RECORDS READ = 000000095
NUMBER OF MATCHES FOUND = 000000027

THE FOLLOWING FILE HAS BEEN CREATED CONTAINING 000000027 RECORDS - NEWLOG.DAT

THE FOLLOWING FILE HAS BEEN CREATED CONTAINING 00001242 RECORDS - RPT14MAY.DAT

WOULD YOU LIKE TO RUN THE NTM LOG UTILITY AGAIN? (Y/N): N

$
EXAMPLE THREE

Select message type "AL" records having a date in the range of 22-FEB-1985 thru 31-DEC-9999 and a time range of 14:00:00 - 14:35:59.

Selected records are written to NTMUTIL.DAT and formatted on file NTMRPT.DAT.
RUN NTMUTIL

***** NTM LOG ANALYSIS UTILITY STARTED *****

PLEASE ENTER THE NAME OF THE NTM LOG FILE TO BE ANALYZED:
NTMLOG.DAT;1

WOULD YOU LIKE TO CREATE A FILE CONTAINING THE SELECTED
NTM LOG RECORDS? (Y/N): Y

PLEASE ENTER THE OUTPUT NTM LOG FILE NAME:
DEFAULT OUTPUT NTM LOG FILE NAME: NTMUTIL.DAT

WOULD YOU LIKE TO CREATE A FILE CONTAINING THE SELECTED
NTM LOG RECORDS IN THE ONLINE DISPLAY FORMAT? (Y/N): Y

PLEASE ENTER THE FILE NAME:
DEFAULT FILE NAME: NTMRPT.DAT

WOULD YOU LIKE TO SELECT ON DATE? (Y/N): Y
ENTER BEGINNING DATE (DD-MMM-YYYY): 22-FEB-1985

INVALID BEGINNING MONTH - FWE

ENTER BEGINNING DATE (DD-MMM-YYYY): 22-FEB-1985
ENTER ENDING DATE (DD-MMM-YYYY): 22-FEB-1985

INVALID ENDING DATE - 22-FEB-1985

ENTER ENDING DATE (DD-MMM-YYYY): *
ENDING DATE DEFAULTS TO : 31-DEC-9999

WOULD YOU LIKE TO SELECT ON TIME? (Y/N): Y
ENTER BEGINNING TIME (HH:MM:SS): AA

INVALID BEGINNING TIME - AA

ENTER BEGINNING TIME (HH:MM:SS): 14:
BEGINNING TIME DEFAULTS TO: 14:00:00
ENTER ENDING TIME (HH:MM:SS): 14:35
ENDING TIME DEFAULTS TO: 14:35:59

WOULD YOU LIKE TO SELECT A DESTINATION AP NAME? (Y/N):

WOULD YOU LIKE TO SELECT A DESTINATION APC NAME? (Y/N):

WOULD YOU LIKE TO SELECT A SOURCE AP NAME? (Y/N):
WOULD YOU LIKE TO SELECT A SOURCE APC NAME? (Y/N):

WOULD YOU LIKE TO SELECT A MESSAGE TYPE? (Y/N):
ENTER MESSAGE TYPE (MAX - 2 CHAR): AL

WOULD YOU LIKE TO SELECT A MESSAGE CATEGORY? (Y/N):

SELECTING ON THE FOLLOWING CRITERIA:

DATE RANGE: 22-FEB-1985 THRU 31-DEC-9999
TIME RANGE: 14:00:00 THRU 14:35:59
MESSAGE TYPE: AL

WOULD YOU LIKE TO HAVE THE NTM LOG DISPLAYED? (Y/N):

PROCESSING IS COMPLETE

NUMBER OF RECORDS READ = 0000000034
NUMBER OF MATCHES FOUND = 0000000002

THE FOLLOWING FILE HAS BEEN CREATED CONTAINING 000000092 RECORDS - NTMUTIL.DAT

THE FOLLOWING FILE HAS BEEN CREATED CONTAINING 000000092 RECORDS - NTMRPT.DAT

WOULD YOU LIKE TO RUN THE NTM LOG UTILITY AGAIN? (Y/N): N
Purpose

This utility enables necessary tables to be added or deleted with minimum effort as requirements dictate.

Initial Choices

1. HOST 1. ADD
2. APC 2. CHANGE
3. AP 3. DELETE
4. DIRECTORY 4. VIEW
5. EXIT

ADD

When adding a host or APC (Cluster), the program does not verify that the 3-character logical name chosen is unique, only that it does not contain imbedded blanks. When adding a new AP or directory name, the program will check to insure that the name is unique and does not contain imbedded blanks.

CHANGE

Portions of the change function are present but inoperative. When this function is added, these edit features should be included:

HOST TABLE - Logical host name remains unique. Physical host name is valid.

APC TABLE - Cluster name remains unique. Logical host name is unique and valid (matches entry IS host table).

AP TABLES - Parameters within the APTTBL are valid.

DIRECTORY - Prefix or disk is valid. Name is unique and has no imbedded blanks.
DELETE

When deleting a host, all associated clusters and APs are also deleted. When deleting a cluster, all associated APs are deleted. When deleting an AP, all entries in the ACTTBL, APITBL, and APTTBL are also deleted. When deleting a directory entry, each entry is deleted individually.

ADD, CHANGE, DELETE, or VIEW

With all functions comments and prompts are present to lead the user through the necessary program steps.

VIEW

This function displays the current tables on the screen in an easily readable format. For the view AP function, the user must select one of four choices:

1. ACT - Authority Table
2. API - AP Information
3. APT - Characteristics
4. AUT - Authority Table
APPENDIX C

ERRLOG UTILITY

Purpose

This utility provides a tool to list and format the ERRLOG file, which makes it somewhat easier to analyze. Date and time can be entered to analyze. Date and time can be entered to analyze specific ERRLOG entries.

Program Prompts

FILE NAME TO BE ANALYZED?  DEFAULT - ERRLOG.DAT

OUTPUT FILE TO BE CREATED? YES/NO IF YES A FILENAME WILL BE REQUESTED.

SELECTION CRITERIA? DATE/TIME IF ERRLOG FOR A SPECIFIC TIME RANGE IS DESIRED IT CAN BE ENTERED AT THIS TIME.

Destination Application Name? YES/NO IF THE REPLY IS 'Y' ENTER 10 CHARACTER DESTINATION APPLICATION NAME. DEFAULT IS NTNTMONITV.

Destination Cluster Name? IF THE REPLY IS 'Y' ENTER A 3 CHARACTER APPLICATION CLUSTER NAME. DEFAULT IS 'MRV'.

Source Application Name? YES/NO IF THE REPLY IS 'Y' ENTER A 10 CHARACTER SOURCE APPLICATION PROGRAM NAME. DEFAULT IS 'NTNTMONITV'.

Source Application Program Cluster Name? IF THE REPLY IS 'Y' ENTER A 3 CHARACTER SOURCE PROGRAM APPLICATION CLUSTER NAME. DEFAULT IS 'MRV'.

Would you like to continue? IF THE REPLY IS 'Y' PROGRAM CONTINUES. 'N' PROGRAM TERMINATES.
IS THE ERRLOG TO BE DISPLAYED? IF THE REPLY IS 'Y' FORMATTED OUTPUT APPEARS ON TERMINAL. 'N' NO TERMINAL OUTPUT.
END
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Dtic