

**Network Manager Software Test  
Report – NetExpert™**

**NPLACE Suitability Testing**

**Informal Technical Report  
For The  
NPLACE Suitability Testing  
Of  
NetExpert**

June 30, 1997

Data Type: Informal Technical Data

Prepared By:

National Product Line Asset Center  
1000 Technology Drive, Suite 1000  
Fairmont, WV 26554

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Prepared for:

West Virginia High Technology Foundation (WVHTF)  
National Product Line Asset Center  
1000 Technology Drive, Suite 1000  
Fairmont, West Virginia 26554

Prepared By:

DSD Laboratories, Inc  
2500 Fairmont Ave., Room 200  
Fairmont, WV 26554

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Prepared for:

DSD Laboratories, Inc  
2500 Fairmont Ave., Room 200  
Fairmont, WV 26554

Prepared By:

ProLogic, Inc  
1000 Technology Drive, Suite  
Fairmont, WV 26554

## 1.0 SCOPE

### 1.1 Identification

This Software Test Report (STR) defines and records the test preparation and test results from suitability testing the NetExpert suite of network management applications developed and marketed by OSI. NetExpert was suitability tested against command center product line requirements and architectural constraints, utilizing a test network comprised of one SUN Ultra 1, and two SUN Sparc IPC's installed with Solaris 2.5.1. The results of the testing are fully documented in this report. The following products were tested during this testing phase.

Base Package:

<b>Part Name</b>	<b>Version/Part No.</b>	<b>Descriptive Name</b>	<b>Manufacturer</b>
TSN 3982-2	3.4a	Operator Workstation	OSI
TSN 3982-3	1.1	Data Archiver	OSI
TSN 3982-4	1.2	Visual Agent Server	OSI
TSN3982-5	1.2	Visual Agent Client	OSI
TSN3982-6	3.4a	SNMP Gateway	OSI
TSN3982-7	3.4a	Generic Gateway	OSI
TSN3982-9	3.4a	CMIP	OSI
TSN5097	3.4a	Shell-p Agent	OSI
Oracle	7.3.2	DataBase package	Oracle Corporation

The following optional module was also used during testing. The product can be requested through OSI, but the appropriate license to activate the module must be requested from Sherrill-Lubinski Corp. before it can be used.

<b>Part Name</b>	<b>Version/Part No.</b>	<b>Descriptive Name</b>	<b>Manufacturer</b>
SL-GMS	5.3	OO Graphic Modeling system	Sherrill-Lubinski Corporation

## 2.0 TEST RESULTS

The results obtained during testing of OSI's NetExpert product are shown in Table 2-1 of this document. The table contains the *Criteria Number*, *Criteria Description*, *Test Result*, *Conditional Explanation*, and *Test Method*.

- A **Yes** in the *Test Result* column indicates that the test team was able to confirm that the product met the criteria.
- A **Conditional** in the *Test Result* column indicates that the product meets the criteria under certain conditions or with restrictions. The following examples are scenarios that lead to this result:
  - Special/additional steps had to be employed for the product to meet the criteria.
  - The product did not fulfill the criteria completely.
  - An additional third party product must be obtained to meet the criteria.

The Conditional Explanation column indicates the reason a conditional result was given.

- A **No** in the *Test Result* column indicates that the product did not meet the criteria.

### 2.1 Test Method

Suitability testing of a product is accomplished by the following methods.

#### 2.1.1 Inspection (I)

Inspection consists of investigation, without the use of special equipment or procedures to determine compliance with requirements. Inspection may include comparison of requirements to the vendor supplied product, documentation, and/or information.

#### 2.1.2 Test (T)

Test is the evaluation of functional operation by use of equipment or instrumentation, simulation techniques, and the application of established principles and procedures to determine compliance. Test performance is the means of creating data for detailed analysis.

### 2.2 Test Details

NetExpert is a framework that allows users to build an enterprise-specific network management system. Before the system can be used to monitor a network, rules must be created and defined to identify relevant messages, devices must be specified and automated dialogs must be developed. The vendor's comments in the Product

Information Form (PIF) indicate that significant network knowledge and expertise is required to set up the NetExpert system. To inform the future developer of this up-front investment, and because a 3<sup>rd</sup> party data base product is required to run NetExpert, our answers are marked “conditional” throughout the document.

**Table 2.1 Test Results Table**

## ***NETEXPERT***

<b><i>Criteria</i></b>	<b><i>Criteria Description</i></b>	<b><i>Test Result</i></b>	<b><i>Conditional Explanation</i></b>	<b><i>Test Method</i></b>
1.1	The Network Manager should be capable of working in small (0-50 nodes), medium (50-150 nodes), and large (over 150 nodes) networks.	Conditional	All network elements, classes, and managed objects must be defined to NetExpert. Dialogs and rule sets must be built to filter the incoming information. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection
1.1.1	The NM should be capable of handling the magnitude of management information that could be generated in a large (i.e., over 150 nodes) network.	Conditional	All network elements, classes, and managed objects must be defined to NetExpert. Dialogs and rule sets must be built to filter the incoming information. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection
1.2	The NM should be able to provide a hierarchical view of all devices managed by the NM. This view should be represented as a hierarchical map that incorporates explodable icons, which can spawn a sub-map that represents another level of detail. At the lowest level, icons should represent specific devices from which status information can be accessed.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
1.3	The NM should allow grouping of devices based on functionality, location, security, or any other user-defined category, and perform management on those groups.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
1.4	The NM should support manager-to-manager transmissions of: Access control information. Device status change information. Network configuration changes. (Others?).	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection
1.5	The NM should provide for functionality which is contained in separate modules which allows the user to choose those functions required and avoid inclusion of non-required functions.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
1.5.1	The user of the NM software should be able to make software configuration changes (based on changes in the environment) without vendor technical support.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection

<b><i>Criteria</i></b>	<b><i>Criteria Description</i></b>	<b><i>Test Result</i></b>	<b><i>Conditional Explanation</i></b>	<b><i>Test Method</i></b>
1.6	The NM should be capable of distributing its manager/agent processes among multiple network devices.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection
1.7	The NM should be capable of running on multiple platforms.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection
2.1	The NM should support a graphical representation of the network. Comment: This requirement deals with the topology (e.g., token ring, star, bus, node, etc.) of any given level of geography.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
2.1.1	The NM should support the ability to provide a hierarchical map.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection
2.1.2	The NM should support the ability to represent unmanageable devices in the map.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
2.1.3	The NM should support the ability to show both physical and logical maps.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection
2.1.4	The NM should support the ability to tailor the icons that represent the network and network interfaces.	Conditional	Use NetExpert's Visual Agent to design a graphical representation of the managed environment. Must use the optional product SL-GMS (Sherrill-Lubinski Corp.) to create the graphical models. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection
2.2	The NM should provide an interface to access the information off of the Directory Server when one exists.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection
3.1	The NM should provide a means to identify and authenticate users via user identification and passwords.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
3.2	The NM should provide user access controls.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection
3.2.1	The NM should provide the capability to restrict access to applications.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
3.2.2	The NM should provide the capability to restrict access to files.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
3.2.3	The NM should provide the capability to restrict access to queues and other resources.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test

<i>Criteria</i>	<i>Criteria Description</i>	<i>Test Result</i>	<i>Conditional Explanation</i>	<i>Test Method</i>
4.1	If Unix-based, the NM should support current POSIX requirements (FIPS Pub 151).	Yes		Inspection
4.2	If Unix-based, the NM product should use the X-windows standard.	Yes		Inspection
4.3	If Unix-based, the NM should support the Open Software Foundation (OSF)/MOTIF graphical user style guide.	Yes		Inspection
5.1	The NM should provide the capability to define new managed object types. The definition should include attributes, including the range and types of values to which the attributes can be set.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
5.2	The NM should provide the capability to set SNMP parameters and process allocation.	Conditional	NetExpert provides a MIB loader that incorporates any known SNMP MIB into the DB. In addition, NetExperts supports SNMP GETS, SETS and TRAPS. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection
5.3	The NM should provide the capability to modify the relationships (i.e. roles) of network resources.	Conditional	Managed Objects and their relationships (such as parent-child) must be defined to NetExpert. These relationships can be modified by the operator. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
5.4	The NM should provide the capability to remotely examine device statistics, threshold values, and Local Area Network (LAN) connections.	Conditional	Dialogs and Rules must be designed and defined first. The message stream generated by the event (such as examining device stats) can then be parsed and passed onto IDEAS which will analyze the resulting message stream based on the analysis rules written. IDEAS is a NetExpert subsystem that receives filtered events from all managed objects. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
5.5	The NM should provide the capability to specify initialization and shutdown procedures for network devices.	Conditional	The NetExpert Operator must write dialogs that represent Unix commands for startup and shutdown of network devices. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection

<i>Criteria</i>	<i>Criteria Description</i>	<i>Test Result</i>	<i>Conditional Explanation</i>	<i>Test Method</i>
5.6	The NM should provide for graceful degradation and restoration of the network.	Conditional	Dialogs must be designed and defined first. The message stream generated by the event can then be parsed and passed onto IDEAS which will analyze the message stream based on the analysis rules written. IDEAS is a NetExpert subsystem that receives filtered events from all managed objects. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection
5.7	The NM should provide the capability to verify each user's authorization for performing either specific or categories of configuration management functions.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
5.8	The NM should be capable of reporting on configuration status.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection
5.8.1	The NM should provide the capability of agent systems to report configuration changes to their managers as these changes occur.	Conditional	Dialogs must be written to identify (i.e., parse for) configuration changes and to pass the resulting message stream onto IDEAS for analysis. IDEAS is a NetExpert subsystem that receives filtered events from all managed objects. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
5.8.2	The NM should provide the capability to poll their agents in order to determine each agent's (or agent system's) configuration status.	Conditional	For any device that requires polling, the operator can define a polling schedule using the dialog editor, or poll manually. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
6.1	The NM should provide the capability to monitor performance.	Conditional	Rules must be written to parse the message stream for performance data. This can then be passed onto IDEAS for monitoring and subsequent action taking. IDEAS is a NetExpert subsystem that receives filtered events from all managed objects. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection

<i>Criteria</i>	<i>Criteria Description</i>	<i>Test Result</i>	<i>Conditional Explanation</i>	<i>Test Method</i>
6.1.1	The NM should provide the capability to monitor the workload of networked devices (e.g., resource utilization).	Conditional	Dialogs must be written to request work load data (such as CPU usage, memory usage). Rules to parse the resulting data stream for analysis by IDEAS must then be written. IDEAS is a NetExpert subsystem that receives filtered events from all managed objects. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection
6.1.2	The NM should provide the capability to generate event reports as utilization approaches capacity.	Conditional	Thresholds, once defined for a particular event in the threshold window, can be used in the analysis window of the rule editor to generate reports or alerts. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
6.1.3	The NM should provide the capability to report on other (i.e. other than utilization capacity) events. The report should specify the event type.	Conditional	IDEAS is a NetExpert subsystem that receives filtered events from all managed objects. IDEAS then executes the user defined analysis rules (such as reporting on selected events). Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
6.2	The NM should provide the capability to execute performance tests and to collect the results from those tests inputted to the Diagnostic Testing Function provided under Fault Management.	Conditional	Dialogs must be designed and defined first. The message stream generated by the event (such as examining device stats) can then be parsed and passed onto IDEAS which then executes the user defined rules for that event to determine what actions to take. IDEAS is a NetExpert subsystem that receives filtered events from all managed objects. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection
6.3	The NM should provide the capability of monitoring resource allocations for any resource on the network.	Conditional	Rules must be written to parse a device's data stream for resource parameters (such as disk capacity). This can then be passed onto IDEAS for monitoring and action taking. IDEAS is a NetExpert subsystem that receives filtered events from all managed objects. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection

<i>Criteria</i>	<i>Criteria Description</i>	<i>Test Result</i>	<i>Conditional Explanation</i>	<i>Test Method</i>
6.4	The NM should provide the capability to set or modify resource attribute values.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
6.5	The NM should provide the capability to allow NM operators to specify performance tuning methods.	Conditional	Raw data coming from a gateway must be parsed and analyzed in IDEAS. IDEAS is a NetExpert subsystem that receives filtered events from all managed objects. IDEAS then executes the user defined rules for that event to determine what performance tuning actions to take. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection
6.6	The NM should provide the capability to generate performance reports based on user specified criteria.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
6.6.1	The NM should provide the capability to specify the format of all reports.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
6.7	The NM should provide the capability to test resource capacity.	Conditional	Dialogs must be written to duplicate the Unix commands. Rules to parse the response and to pass this onto IDEAS for analysis (such as comparing to a pre-set threshold) must be written. IDEAS is a NetExpert subsystem that receives filtered events from all managed objects. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection
7.1	The NM should provide the capability to monitor the events and errors.	Conditional	Dialogs, rules, and events must be defined. IDEAS will then process the resulting data stream as specified in the analysis part of the rules. IDEAS is a NetExpert subsystem that receives filtered events from all managed objects. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
7.2	The NM should provide the capability to log events and errors, to record reports within the managed system that generated the event, (e.g., logging) or error, and then retrieve these reports remotely.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test

<i>Criteria</i>	<i>Criteria Description</i>	<i>Test Result</i>	<i>Conditional Explanation</i>	<i>Test Method</i>
7.3	The NM should provide the capability to forecast anticipated faults by allowing the user to set thresholds, which represent performance limits of networked devices.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
7.4	The NM should provide the capability to activate diagnostic and testing procedures.	Conditional	Must write dialogs to perform pre-defined diagnostics/tests. Once done, the tests can be started automatically at specified time intervals, or manually. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection
7.5	The NM should provide the capability to report results from Diagnostic and Testing procedures.	Conditional	The results from the diagnostic testing must be parsed and reported based on rules written for IDEAS. IDEAS is a NetExpert subsystem that receives filtered events from all managed objects. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection
7.6	The NM should provide the capability to analyze the results of diagnostic testing.	Conditional	The results from diagnostic testing must be parsed and analyzed in IDEAS based on rules written with the rule editor. IDEAS is a NetExpert subsystem that receives filtered events from all managed objects. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection
7.7	The NM should provide the capability to report failures.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
7.8	The NM should provide the capability to terminate failures.	Conditional	New thresholds can be set and used in the analysis panel of the rule editor to trigger failure reports. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
7.9	The NM should provide Diagnostic Tests.	Conditional	Dialogs must be written for each diagnostic test to be performed. Next, rules must be written to parse the message stream for relevant data. This is then forwarded to IDEAS for analysis and further action. IDEAS is a NetExpert subsystem that receives filtered events from all managed objects. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection

<i>Criteria</i>	<i>Criteria Description</i>	<i>Test Result</i>	<i>Conditional Explanation</i>	<i>Test Method</i>
7.9.1	The diagnostic tests should include Connectivity Tests.	Conditional	Dialogs and Rules must be designed and defined first. The message stream generated by the event (such as performing connectivity tests) must then be parsed and passed onto IDEAS for analysis (based on the analysis rules written). IDEAS is a NetExpert subsystem that receives filtered events from all managed objects. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
7.9.2	The diagnostic tests should include Data Saturation Tests.	Conditional	Dialogs and Rules must be designed and defined first. The message stream generated by the event (such as performing data saturation tests) must then be parsed and passed onto IDEAS for analysis (based on the analysis rules written). IDEAS is a NetExpert subsystem that receives filtered events from all managed objects. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection
7.9.3	The diagnostic tests should include Data Integrity Tests.	Conditional	Dialogs and Rules must be designed and defined first. The message stream generated by the event (such as performing data integrity tests) must then be parsed and passed onto IDEAS for analysis (based on the analysis rules written). IDEAS is a NetExpert subsystem that receives filtered events from all managed objects. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection
7.9.4	The diagnostic tests should include Protocol Integrity Tests.	Conditional	Dialogs and Rules must be designed and defined first. The message stream generated by the event (such as performing protocol integrity tests) must then be parsed and passed onto IDEAS for analysis (based on the analysis rules written). IDEAS is a NetExpert subsystem that receives filtered events from all managed objects. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection

<i>Criteria</i>	<i>Criteria Description</i>	<i>Test Result</i>	<i>Conditional Explanation</i>	<i>Test Method</i>
7.9.5	The diagnostic tests should include Connection Saturation Tests.	Conditional	Dialogs and Rules must be designed and defined first. The message stream generated by the event (such as performing connection saturation tests) must then be parsed and passed onto IDEAS for analysis (based on the analysis rules written). IDEAS is a NetExpert subsystem that receives filtered events from all managed objects. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection
7.9.6	The diagnostic tests should include Response Time Tests.	Conditional	Dialogs and Rules must be designed and defined first. The message stream generated by the event (such as performing response time tests) must then be parsed and passed onto IDEAS for analysis (based on the analysis rules written). IDEAS is a NetExpert subsystem that receives filtered events from all managed objects. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection
7.9.7	The diagnostic tests should include Imaging Loopback Tests.	Conditional	Dialogs and Rules must be designed and defined first. The message stream generated by the event (such as performing imaging loopback tests) must then be parsed and passed onto IDEAS for analysis (based on the analysis rules written). IDEAS is a NetExpert subsystem that receives filtered events from all managed objects. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection
7.10	The NM should provide the capability to request dumps.	Conditional	Dialogs need to be written to "request dumps". Rules need to be written to parse the information coming back and to pass it onto IDEAS for analysis. IDEAS is a NetExpert subsystem that receives filtered events from all managed objects. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection

<b><i>Criteria</i></b>	<b><i>Criteria Description</i></b>	<b><i>Test Result</i></b>	<b><i>Conditional Explanation</i></b>	<b><i>Test Method</i></b>
7.10.1	The NM should provide the capability to request statistic blocks.	Conditional	Dialogs must be written to request a set of statistics. Rules must then be written to parse the responses and forward them to IDEAS for analysis and action. IDEAS is a NetExpert subsystem that receives filtered events from all managed objects. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection
7.10.2	The NM should provide the capability to request operational status information of managed network devices.	Conditional	Dialogs must be defined for the particular status information to be generated. Events can then be defined in the rule editor to parse the desired information out and pass it onto IDEAS for analysis and action. IDEAS is a NetExpert subsystem that receives filtered events from all managed objects. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
7.11	The NM should provide the capability to track corrections to fault conditions.	Conditional	Scripts must be written to track events that result in fault corrections. These can be sent to a log file for archiving. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection
8.1	The NM should provide the capability to the NM operator (or security officer) to permit or disallow access to security related parts of the network.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
8.2	The NM should provide the capability to archive and retrieve security related information.	Conditional	Alerts can be generated using analysis rules. Rules must be written to parse on messages from the security log. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
8.2.1	The NM should provide the capability to create and delete security logs or audit trails.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
8.2.2	The NM should provide the capability to read from and write to security logs or audit trails.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
8.2.3	The NM should provide the capability to start and suspend logging or auditing activities.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test

<b><i>Criteria</i></b>	<b><i>Criteria Description</i></b>	<b><i>Test Result</i></b>	<b><i>Conditional Explanation</i></b>	<b><i>Test Method</i></b>
8.2.4	The NM should provide the capability to monitor audit trails or security logs to identify security violation activity.	Conditional	Unix commands must be written to continuously monitor the security log/audit trails for possible security violations. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
8.2.5	The NM should provide reporting and notification of violations or attempted violations.	Conditional	Scripts must be written to ID security violations which can then be analyzed in IDEAS for alert display and reporting. IDEAS is a NetExpert subsystem that receives filtered events from all managed objects. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
9.1	The NM should be capable of recording and generating accounting information.	Conditional	Message data passed back from each device must be parsed and analyzed using rule scripts. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection
9.1.1	The NM should be able to gather information regarding the duration of communications resource usage.	Conditional	Dialogs must be written to capture the lengths of communications usage. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection
9.1.2	The NM should be able to gather information regarding the number of service data units used.	Conditional	The SNMP Trap Daemon can request protocol data units using SNMP GET commands. The response must then be parsed in the rule editor and sent to IDEAS. IDEAS is a NetExpert subsystem that receives filtered events from all managed objects. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection
9.1.3	The NM should be able to gather information regarding the quality of service provided.	Conditional	Events generated by the device (such as CPU%) can be compared to operator-defined thresholds. Rule scripts written are then interpreted in IDEAS to determine the actions to take. IDEAS is a NetExpert subsystem that receives filtered events from all managed objects. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test

<i>Criteria</i>	<i>Criteria Description</i>	<i>Test Result</i>	<i>Conditional Explanation</i>	<i>Test Method</i>
9.1.4	The NM should be able to gather information regarding the reason for communications termination.	Conditional	Rules must be written to capture the reason for communications termination (such as power outage) and pass this onto IDEAS for analysis. IDEAS is a NetExpert subsystem that receives filtered events from all managed objects. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection
9.2	The NM should provide the capability of specifying accounting information to be	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
9.2.1	The NM should provide the capability to specify accounting information based on the definition of a managed object.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
9.2.2	The NM should provide the flexibility for the inclusion of optional attributes for accounting (Accounting Management).	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
9.2.3	The NM should provide the flexibility for new attributes to be specified by the NM operator.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
9.3	The NM should allow for standard procedures to retrieve accounting information and to manage the disposition of the accounting information.	Conditional	Rules and dialogs must be written to represent this business situation. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Inspection
9.4	The NM should provide the capability for NM operators to select the format the accounting information is to be presented to users, operators, and administrators.	Conditional	The Visual Agent front end can be used to define custom views that show in detail the managed objects and the information captured that is to be presented to the operator. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
9.5	The NM should support the ability to read accounting limits for communications resources.	Conditional	Thresholds can be defined by the operator. These must be incorporated into the analysis rules for IDEAS to take action on. IDEAS is a NetExpert subsystem that receives filtered events from all managed objects. Also, a database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
9.5.1	The NM should support the ability to set accounting limits for communications resources.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test

<i>Criteria</i>	<i>Criteria Description</i>	<i>Test Result</i>	<i>Conditional Explanation</i>	<i>Test Method</i>
9.5.2	The NM should support the ability to change accounting limits for communications resources.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
9.6	The NM should provide the capability to allow the NM operator to define metrics and accounting information units for accountable resources.	Conditional	A database product, such as Oracle, Informix, or Sybase (we used Oracle) is required.	Test
10.1	The NM should be a COTS or GOTS product.	Yes		Inspection
10.1.1	The NM should have been used to satisfy NM requirements for at least one year in a multiplatform environment.	Yes		Inspection
10.2	The NM should have proven performance, reliability, and availability characteristics (e.g., mean time between failure, response time to user inputs) and the vendor should be able to provide data supporting characteristic values claimed.	Yes		Inspection
10.3	The NM should have user manuals.	Yes		Inspection
10.3.1	The NM should have training support.	Yes		Inspection
10.3.2	The NM vendor should provide or make available product upgrades, new versions, updates, patches, bug fixes, and maintenance releases to users, including options for implementing the changes and associated costs for the various kinds of changes.	Yes		Inspection
10.4	The NM should have proven conformance to Human Factors Engineering (HFE) requirements applicable to an operational command center. (Ref, USAF Human Factors Engineering Guidelines)	No		Inspection
10.5	The NM should provide programmatic interfaces to support detailed NM requirements.	Yes		Inspection
10.6	The NM should have a proven and demonstrable installed base, where the network manager products have been installed in DoD or non-DoD applications in which products could be demonstrated.	Yes		Inspection

<i>Criteria</i>	<i>Criteria Description</i>	<i>Test Result</i>	<i>Conditional Explanation</i>	<i>Test Method</i>
10.7	The NM should be structured into separate functional priced items to allow users to choose the desired capabilities of the product base that satisfy their particular requirements.	Yes		Inspection