®

SolarWinds ORION® Software Security Target

Version 1.9

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DOCUMENT INTRODUCTION

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1.8	July 14, 2014, Corrected audit records for FIA_ATD.1
1.9	August 19, 2014, Clarified the evaluated configuration

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ACRONYMS LIST

CC	**Common Criteria**
CIDR	**Classless Internet Domain Routing**
CLI	**Command Line Interface**
CLR	**Common Language Runtime**
CPU	**Central Processing Unit**
DBMS	**DataBase Management System**
DHCP	**Dynamic Host Configuration Protocol**
DNS	**Domain Name System**
EAL	**Evaluation Assurance Level**
EOC	**Enterprise Operations Console**
FoE	**ORION Failover Engine™**
FTP	**File Transfer Protocol**
GB	**GigaByte**
GHz	**GigaHertZ**
GUI	**Graphical User Interface**
HTTP	**HyperText Transfer Protocol**
HTTPS	**HTTP Secure**
ICMP	**Internet Control Message Protocol**
IIS	**Internet Information Services**
IMAP	**Internet Message Access Protocol**
IOS	**Internetwork Operating System**
IP	**Internet Protocol**
IPAM	**ORION IP Address Manager™**
IT	**Information Technology**
MAC	**Media Access Control**
MIB	**Management Information Base**
MOS	**Mean Opinion Score**
NCM	**ORION Network Configuration Manager™**
NPM	**ORION Network Performance Monitor™**
NTA	**ORION NetFlow Traffic Analyzer™**
OS	**Operating System**
POP	**Post Office Protocol**
SAM	**ORION Server & Application Monitor™**
SCP	**Secure CoPy**
SFTP	**Secure FTP**
SLA	**Service Level Agreement**
SNMP	**Simple Network Management Protocol**
SQL	**Structured Query Language**
SSH	**Secure SHell**
SSL	**Secure Socket Layer**
ST	**Security Target**
TCP	**Transmission Control Protocol**
TFTP	**Trivial File Transport Protocol**
TOE	**Target of Evaluation**
ToS	**Type of Service**

TSF	**TOE Security Function**
UDP	**User Datagram Protocol**
UDT	**ORION User Device Tracker™**
URL	**Uniform Resource Locator**
VNQM	**ORION VoIP & Network Quality Manager™**
VoIP	**Voice over IP**
WAN	**Wide Area Network**
WMI	**Windows Management Instrumentation**
WPM	**ORION Web Performance Monitor™**

1. Security Target Introduction

This Security Target (ST) describes the objectives, requirements and rationale for the SOLARWINDS® ORION® software TOE. The language used in this Security Target is consistent with the *Common Criteria for Information Technology Security Evaluation, Version 3.1* and all international interpretations through December 1, 2013. As such, the spelling of terms is presented using the internationally accepted English.

1.1 Security Target Reference

SolarWinds Orion Software Security Target, version 1.9, August 19, 2014.

1.2 TOE Reference

SolarWinds Orion Suite for Federal Government V1.0

This suite of individually-purchased products includes the following components: Network Performance Monitor (NPM) V10.6.0, Orion Server & Application Monitor (SAM) V6.0.0, Orion Network Configuration Manager (NCM) V7.2.0, Orion Netflow Traffic Analyzer (NTA) V3.11.0, Orion IP Address Manager (IPAM) V4.0.0, Orion VoIP & Network Quality Manager (VNQM) V4.1.0, Orion User Device Tracker (UDT) V3.0.1, Orion Web Performance Monitor (WPM) V2.0.1, Orion Enterprise Operations Console (EOC) V1.4.1, and Orion Failover Engine (FoE) V6.7.0.

1.3 Evaluation Assurance Level

Assurance claims conform to EAL2 (Evaluation Assurance Level 2) from the *Common Criteria for Information Technology Security Evaluation*, Version 3.1 Revision 4.

1.4 Keywords

Performance Monitor, Configuration Manager, Performance Manager, NetFlow Traffic Analyzer, Address Manager, Quality Manager

1.5 TOE Overview

1.5.1 Usage and Major Security Features

Orion is a set of software applications and services executing on one or more Windows servers. The applications monitor a configured set of network-attached devices and applications for status, performance and configuration settings. Depending on the size of the network, multiple instances of the applications may be deployed on different servers to provide adequate performance. For enhanced availability and robustness, a failover configuration may be deployed.

The Orion suite consists of the following network, application, system, and storage monitoring and management components:

Orion Network Performance Monitor - Orion Network Performance Monitor (Orion NPM) provides the ability to detect, diagnose, and resolve performance issues with a dynamic network. It delivers real-time views and dashboards to visually display network performance. Automated network discovery features enable network managers to keep up with evolving networks.

Orion Server & Application Monitor - Orion Server & Application Monitor (Orion SAM) brings agentless monitoring, alerting, and reporting capabilities to applications and servers.

Automatically discovers servers and applications and provides visibility into application performance and the underlying operating systems and servers they run on.

Orion Network Configuration Manager - Orion Network Configuration Manager (Orion NCM) notifies network managers in real-time when device configurations change, helping network managers determine which changes could potentially cause network issues. Orion NCM also provides nightly configuration backups, bulk configuration changes, user tracking, and inventory and compliance reporting.

Orion NetFlow Traffic Analyzer - Orion NetFlow Traffic Analyzer (Orion NTA) enables network managers to quantify exactly how a network is being used, by whom, and for what purpose. The application mapping feature correlates the traffic arriving from designated ports, source IPs, destination IPs, and protocols to application names network managers can recognize. Orion NTA provides a comprehensive view of the network traffic, enabling network managers to find the bottlenecks or identify the bandwidth hogs.

Orion IP Address Manager - Orion IP Address Manager (Orion IPAM) is an IP address management component that enables network managers to create, schedule, and share IP address space reports. Orion IPAM provides IP address management that is unified with performance monitoring data for a comprehensive view of network health.

Orion Voice & Network Quality Manager - Orion Voice & Network Quality Manager (Orion VNQM) delivers a network and VoIP monitoring solution for identifying site-specific and WAN-related performance issues from the perspective of each of the remote sites. With this Orion component, network managers can utilize Cisco IP SLA technology with automatic VNQM setup to monitor key WAN performance metrics, including Cisco VoIP jitter and MOS.

Orion User Device Tracker - Orion User Device Tracker (Orion UDT) delivers automated user and device tracking to monitor who and what are connecting to the network. Searches of the accumulated information can be performed on a user name, IP address, Hostname, or MAC address. UDT also provides the ability to send commands to network devices to shut down a port, but this functionality is not included in the evaluation.

Orion Web Performance Monitor - Orion Web Performance Monitor (Orion WPM) continuously monitors the performance of web servers and applications. Performance issues can be identified as DNS look-up, connection time, send time, time to first byte, or content download time.

Orion Enterprise Operations Console - Orion Enterprise Operations Console (Orion EOC) provides a consolidated command center to remotely monitor critical network infrastructure in multiple different physical locations. Orion EOC provides a consolidated command center to monitor the entire enterprise network and gives network managers unified visibility into remote Orion servers.

Orion Failover Engine - Orion Failover Engine (Orion FoE) monitors the health of the SolarWinds servers to ensure availability of the performance data of monitored elements in the IT infrastructure. If something should happen to a primary SolarWinds server, the Failover Engine automatically fails over to a remote server.

The Orion suite provides the following capabilities to network managers:

- Schedule network scans to identify new network devices or applications.

- Perform detailed monitoring & analysis of performance data from routers, switches, servers, and applications to identify peak performance issues.
- Monitor the health of critical applications.
- Remotely monitor WMI performance counters to identify and resolve application issues.
- Monitor the availability and responsiveness of critical DNS, IMAP4, and POP3 network services.
- Get a comprehensive view of network traffic on a single page, or drill down into any element's traffic.
- Break down the display of network traffic information by application.
- Identify network issues across the enterprise.
- Configure alerts for correlated events, sustained conditions, or complex combinations of device states.
- Generate reports for network performance, application performance and server availability.
- Schedule and automatically backup network device configurations on a regular basis for routers, switches, firewalls, and wireless access points.
- Receive real-time alerts when configurations change on monitored resources.
- Generate a detailed network inventory of all managed devices, including serial numbers, port details, and IP addresses.
- Perform remote IOS/firmware updates in real time or schedule them to run at a future time.
- Generate configuration change reports for monitored resources
- Establish unique accounts and specify which types of information are displayed for a particular user.
- Create a custom poller to monitor any SNMP-enabled device, collect detailed data from MIB tables, & monitor virtually any statistic available on network devices. This functionality is not evaluated.
- Install additional polling engines for large networks with a small number of NPM or SAM instances. This functionality is not evaluated.
- Install additional web servers to support a large number of network managers. This functionality is not evaluated.

Users may interact with the TOE via multiple interfaces. The EOC Web Console provides access to the EOC, and through it provides visibility to the overall TOE, which is especially useful when multiple Orion Servers are deployed. The Orion Web Console provides access to individual Orion Servers. All of these interfaces support connections from remote IT systems via web browsers.

User access to information via each of these interfaces is controlled by the roles configured for individual users by administrators. When a connection is established, the user is prompted for a username and password. User credential validation is performed by the TOE for the Orion Web Console interface, and by Windows for the EOC Web Console interface. In all cases, permitted user accounts must be defined within the TOE so that user-specific TOE parameters (e.g. role) can be associated with each user.

Orion Servers also provide user interfaces for configuration of specific parameters within the TOE via Windows application programs. These tasks are performed by invoking applications via the Windows Start menu. For the applications to configure NCM, users are required to provide valid credentials before performing any other action. For the other Windows applications providing TOE access, any user with access to these applications must first authenticate to Windows and is then assumed to be authorized to perform the configuration actions.

1.5.2 TOE type

Network Management

1.5.3 Required Non-TOE Hardware/Software/Firmware

The TOE consists of applications installed on multiple server types:

1. EOC Server - EOC installed on a dedicated server.
2. Orion Server - Orion Suite components (other than EOC) installed on a dedicated server. Any combination of components may be installed with each instance. Any combination is generically referred to as an Orion Server.
3. Failover Server – FoE components are installed on a dedicated secondary server(s) as well as on primary EOC Servers or Orion Servers. The passive server monitors the health of the active EOC Server or Orion Server, and the passive server automatically assumes the active role of any failed server. The components on the active EOC Server or Orion Server ensure that data files required by the passive EOC Server or Orion Server are supplied to the passive server for replication.

Table 1 - EOC Server Minimum Hardware and Software Requirements

Item	Requirements
Operating System	32-bit or 64-bit Microsoft Windows Server 2003 or Windows Server 2008 (including R2)
Web Server	Internet Information Service 6.0 or later
.NET Framework	Version 3.5 or later
CPU	3.0 GHz
Memory	2 GB
Available Disk Space	100 MB
DBMS	Microsoft SQL Server 2005 or SQL Server 2008. Express, Standard, or Enterprise

Table 2 - Orion Server Minimum Software Requirements

Item	Requirements
Operating System	Windows Server 2003 or 2008, including R2
Web Server	Microsoft IIS, version 6.0 and higher, in 32-bit mode
.NET Framework	Version 3.5 SP1 or later ASP .NET 2.0 Ajax Extension, Version 1 or later
SNMP Trap Services	Windows operating system management and monitoring tools
Web Browser	Microsoft Internet Explorer version 6 or higher with Active scripting, or Firefox 3.0 or higher

The hardware requirements for Orion Servers are dependent on the number of elements to be monitored and/or managed by the server.

Table 3 - Orion Server Minimum Hardware Requirements

Item	Requirements		
	<500 Elements	<2000 Elements	2000+ Elements
CPU	2.0 GHz	2.4 GHz	3.0 GHz
Memory	3 GB	4 GB	4 GB
Available Disk Space	2 GB	5 GB	20 GB

Note that there are no additional hardware or software requirements (beyond those for an EOC or Orion Server) when FoE is deployed.

In addition to these platforms, the database used by the TOE is installed on a dedicated server with the DBMS. Each Orion Server requires its own Database Server.

Table 4 - Database Server Minimum Software Requirements

Item	Requirements
DBMS	SQL Server 2005 SP1 Express, Standard, or Enterprise; or SQL Server 2008 Standard, or Enterprise
Operating System	Any supported Windows OS
Additional Software	SQL Server System Common Language Runtime (CLR) Types Microsoft SQL Server Native Client Microsoft SQL Server Management Objects

The hardware requirements for Database Servers are dependent on the number of elements to be monitored and/or managed by the associated Orion Server.

Table 5 - Database Server Minimum Hardware Requirements

Item	Requirements		
	<500 Elements	<2000 Elements	2000+ Elements
CPU	2.0 GHz	2.4 GHz	3.0 GHz
Memory	2 GB	3 GB	4 GB

Item	Requirements		
	<500 Elements	<2000 Elements	2000+ Elements
Available Disk Space	2 GB	5 GB	20 GB

Credential validation for the EOC Web Console interface is performed by Windows locally or via Active Directory. The credentials supplied by the user to the TOE are passed to Windows for validation. If credential validation is successful, the same username is used to associate attributes with the user session in the TOE. Credential validation for the Orion Web Console is performed entirely by the TOE.

The evaluated configuration requires that IIS is configured to require secure (HTTPS) connections on all the servers hosting TOE components. This requirement protects any credentials supplied by remote users from disclosure.

When connecting to network devices, the TOE supports the use of SSH as well as Telnet. Files transferred from the network devices to the TOE may use SFTP or SCP. The SSL functionality used for these operations is provided by the operational environment.

1.6 TOE Description

The Orion software acts as a monitoring and management tool for use by network managers. It maintains a list of the managed elements in the network, monitors their operation, and alerts the network managers to specified conditions. Managed elements are network devices (e.g. routers and switches), servers or applications that can be monitored by standard mechanisms such as SNMP, ICMP, Syslog or WMI. NCM may be used to track configuration changes on the network devices for products that are able to download a copy of their current configuration parameters.

Users interact with the TOE via multiple mechanisms. The EOC Web Console and Orion Web Console are provided for remote interaction with the EOC and Orion functionality. Application programs to configure the TOE may also be invoked from the Windows Start menu by authorized users.

1.6.1 Physical Boundary

The TOE consists of the SolarWinds Orion software identified in section 1.2 executing on multiple dedicated Windows servers. The operating systems (including the network protocol stacks and cryptographic functionality), web servers and DBMS are outside the TOE boundary.

Figure 1 - Physical Boundary (Orion and EOC Servers)

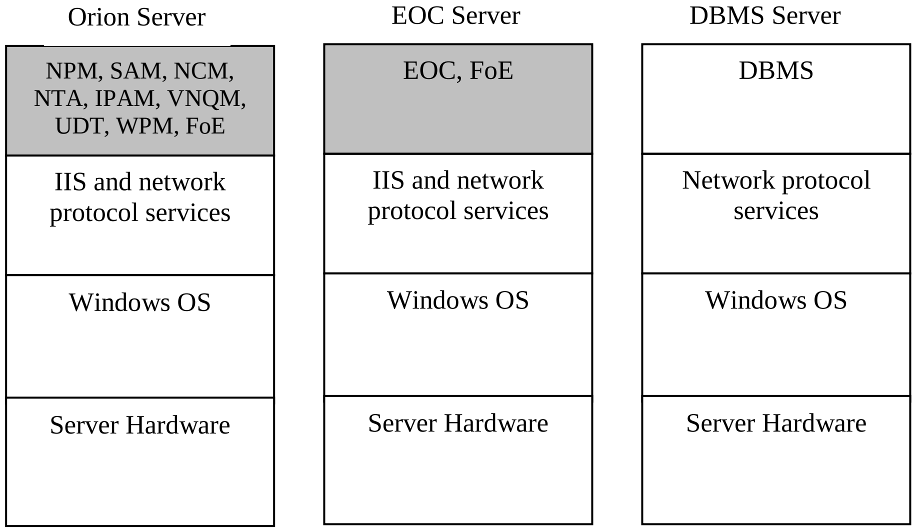
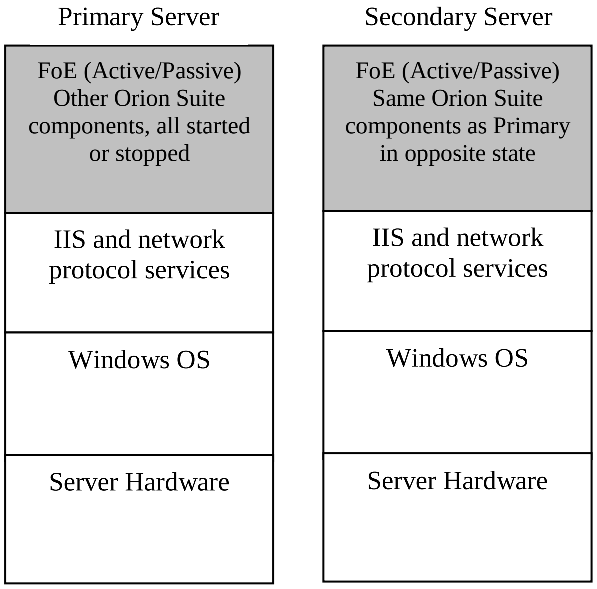

Orion Server
EOC Server
DBMS Server
NPM, SAM, NCM, NTA, IPAM, VNQM, UDT, WPM, FoE
EOC, FoE
DBMS
IIS and network protocol services
IIS and network protocol services
Network protocol services
Windows OS
Windows OS
Windows OS
Server Hardware
Server Hardware
Server Hardware

Figure 2 - Physical Boundary (FoE Detail)


Primary Server
Secondary Server
FoE (Active/Passive) Other Orion Suite components, all started or stopped
FoE (Active/Passive) Same Orion Suite components as Primary in opposite state
IIS and network protocol services
IIS and network protocol services
Windows OS
Windows OS
Server Hardware
Server Hardware

The SolarWinds ToolSet distributed as part of the Orion suite is not installed in the evaluated configuration and is not included in the physical boundary. All other parts of the Orion Suite distributed with the standard distribution mechanisms are included in the TOE boundary.

The physical boundary includes the following guidance documentation:

1. *SolarWinds® Enterprise Operations Console Administrator Guide*
2. *SolarWinds® Orion® Common Components Administrator Guide*

3. *SolarWinds® Orion® Network Performance Monitor Administrator Guide*
4. *SolarWinds® Orion® Network Performance Monitor Quick Start Guide*
5. *SolarWinds® Technical Reference SolarWinds Orion Web-Based Reports*
6. *SolarWinds® Server & Application Monitor Administrator Guide*
7. *SolarWinds® Network Configuration Manager Administrator Guide*
8. *SolarWinds® Orion® Network Configuration Manager QuickStart Guide*
9. *SolarWinds® IP Address Manager Administrator Guide*
10. *SolarWinds® NetFlow Traffic Analyzer Administrator Guide*
11. *SolarWinds® User Device Tracker Administrator Guide*
12. *SolarWinds® Orion® VoIP and Network Quality Manager Administrator Guide*
13. *SolarWinds® Web Performance Monitor Administrator Guide*
14. *SolarWinds® Failover Engine v6.7 Administrator Guide*
15. *SolarWinds® Technical Reference Orion® Failover Installation Walkthrough*
16. *SolarWinds® Technical Reference Preparing an Orion® Failover Engine Installation*
17. *SolarWinds® Orion® Common Criteria Supplement*

1.6.2 Logical Boundary

The TOE provides the following security functionality:

1. Audit - Audit records are generated for specific actions performed by users. The audit records are stored in the Orion database and may be viewed via the Orion Web Console by authorized administrators.
2. Identification and Authentication – When a connection is established to the EOC Web Console or Orion Web Console, the TOE prompts the user for login credentials. The credentials are validated by the TOE for the Orion Web Console. For the EOC Web Console, the credentials are first passed to Windows for validation.
3. Management – Management functionality is provided to authorized users. The functionality provided to individual users is determined by the user's role, which is one of the security attributes for users.
4. Network Monitoring – The status and performance of managed elements are monitored. The results are saved and may be viewed by authorized users. Access to data about the managed elements may be limited by view limitations. Alerts may be generated in respond to configured conditions detected about the managed elements.
5. Configuration Management – The configurations of network devices may be downloaded from the network device, saved in the TOE database, and compared to a reference configuration. If a configuration change is detected, an upload of a saved configuration for the network device may be triggered.
6. High Availability – When FoE is installed, Primary and Secondary servers constantly communicate to monitor health and synchronize data updates. In the event of the failure

of a TOE process, FoE automatically attempts to restart it. If that fails, or in the event of failure of the Primary, the Secondary server automatically assumes the active state and all communication is redirected to it. Since the Primary and Secondary are synchronized, full functionality can continue to be provided in the secure state.

1.7 Functionality Excluded From the Evaluation

The following functionality included in the Orion suite is not evaluated:

- Create a custom poller to monitor any SNMP-enabled device, collect detailed data from MIB tables, & monitor virtually any statistic available on network devices.
- Install additional polling engines for large networks with a small number of NPM or SAM instances.
- Install additional web servers to support a large number of network managers.
- External web sites are not added to Orion Web Console views.
- The "Check for product updates" function is not used.
- Custom device pollers are not configured. Pollers supplied with the TOE are included in the evaluation.
- Custom component monitors are not configured. Component monitors supplied with the TOE are included in the evaluation. Account limitations are tied to custom component monitors and are also not configured.
- Custom property functionality is not configured. Built-in properties are included in the evaluation.
- Advanced Alerts (which use custom properties) are not configured. Basic Alerts are included in the evaluation.
- The functionality to remotely manage interfaces in Network Devices.
- Custom NCM device templates are not configured. The default device templates supplied with the TOE are included in the evaluation.
- Customized views are not configured on Orion Web Consoles; default Views are used.
- View Limitations are not configured.
- Customized account limitations are not configured on Orion Web Consoles; predefined account limitations may be configured.
- Customized page views are not configured on EOC Web Consoles; default page views are used (the Allow User To Personalize Their Pages permission is not set).
- Each Orion Server may have any combination of NPM, SAM, NCM, NTA, IPAM, UDT, WPM, VNQM and/or FoE installed. Evaluation testing only includes scenarios with all components installed.

1.8 TSF Data

The following table describes the TSF data. The term Node is used to describe any network device monitored by the TOE.

Table 6 - TSF Data Descriptions

TSF Data	Description
Data Related to Orion Servers or Orion Web Console	
Alert Configuration	Defines the conditions for generating Alerts, which may be triggered by the occurrence of an event or by the crossing of a threshold value for a monitored element. Attributes include: • Name • Enabled or disabled • Monitored property • Monitored objects • Trigger and reset conditions • Time of day • Suppression parameters • Actions, including notification destinations
Alerts	The set of Alerts that have been generated as a result of the Alert Configurations. Alerts are not shown by default once they have been acknowledged by an authorized user.
Application Monitor Templates	Define a group of component monitors modeling the total availability and performance level of an application. Attributes include: • Polling frequency • Polling timeout • Associated Component Monitors
Assigned Application Monitors	Define the assigned component monitors that are run at regular intervals, and then the status results from the component monitors are used to determine an overall status for an application.
Assigned Component Monitors	Define the assignment of application monitor templates to Network Devices hosting an application to be monitored.
Audit Trail Retention	Specifies the number of days that audit records are retained.
CLI Credential Sets	Define credentials used to communicate with Network Devices via Telnet or SSH to configure IP SLA Operations or obtain information about DHCP configurations.
Component Monitors	Define the mechanisms used to monitor the status and performance of an aspect of an application. Attributes include: • Protocol used to poll information concerning the application
Events	The set of Events that have occurred regarding managed elements, such as an interface status changing to up or down. Events are not shown by default once they have been cleared by an authorized user.
FoE Server Pair	Define a server pair for monitoring and synchronization of data updates. Attributes include: • Identity (Primary or Secondary) • Role (Active or Passive) • Public IP address • Channel IP address and port • Monitored Applications • Client port •

TSF Data	Description
Groups	Defines groupings of Network Devices, enabling the corresponding set of Network Devices to be selected for an operation. Groups may be used to create a hierarchical grouping of the Network Devices.
IPAM Addresses and Subnets	Define the IP address ranges or subnets that are monitored by the IPAM functionality. Attributes include: • Name • Address range or CIDR prefix • Scan interval • Automatic Scanning enabled/disabled
IPAM DHCP Scopes	Define the DHCP scopes configured in Cisco IOS and Microsoft DHCP servers that are monitored by the IPAM functionality. Parameters include: • Address range • DHCP Server • Scan parameters • Leases
IPAM DHCP Servers	Define the DHCP servers to be monitored. Parameters include: • IP address/Name • Monitoring protocols supported • Served scopes • Address usage
IPAM DNS Servers	Define the DNS servers to be monitored. Parameters include: • IP address/Name • Monitoring protocols supported • Configured zones
IPAM DNS Zones	Define the DNS zones configured in DNS servers that are monitored by the IPAM functionality. Parameters include: • Zone name • Zone members • DNS Server • Scan parameters
IPAM Settings	Define the operation of IPAM monitoring. Parameters include: • Subnet scan parameters • Device CLI credentials for Scope scans • Device SNMP credentials for Scope scans
NCM Compliance Report Configurations	Define the set of pattern searches that can be applied to configuration files to detect configured conditions. Properties include: • Name • Description • Rules (Patterns to search for, along woith severities) • Policies (Collections of Rules)
NCM Compliance Reports	Results of NCM Compliance Report Configurations applied to specific NCM Nodes.

TSF Data	Description
NCM Config Change Templates	Define scripts that can be executed on Nodes to perform common configuration functions. Attributes include: • Name • Description • Tags • Parameters for variables used in the script • Script commands
NCM Default Communication Parameters	Define the default parameters used when communicating with a managed Node. Parameters include: • Community String • SNMPv3 Settings • Login Information • Transfer Protocols • Transfer Ports
NCM Device Configuration Files	Contains the configuration information for a Node. This information may be obtained via download from a Node or by editing an existing configuration file. Configuration files may be designated as baseline configurations for a Node.
NCM Ignore List	Specifies a set of entities that are not added as Managed Devices even if they are found during discovery processes.
NCM Inventory Settings	Specify the statistics collected from Nodes during Inventory Jobs.
NCM Jobs	Define jobs configured to perform periodic operations against Nodes, such as downloading a configuration file or collecting inventory information. Parameters include: • Name • Type of job • Starting date/time • Ending date/time • Frequency • Windows credentials for local job execution • Selected Nodes • Download configuration file parameters • Command script • Results parameters
NCM Settings	Define the behavior of NCM with regard to change detection for Node configurations. Settings include: • Realtime Change Detection • Enable Realtime Config Change Notifications • Configuration Comparison Parameters • Email Notification Parameters • Syslog Receiver Parameters • SNMP Trap Receiver Parameters
NetFlow Sources	Define the interfaces in Network Devices that are monitored by the NTA functionality.

TSF Data	Description
Network Devices	Defines the set of Network Devices monitored by the TOE. Attributes include: • Hostname or IP Address • Dynamic IP Address • Monitor via ICMP only • External (applications are monitored, but not the device itself) • VMware parameters, including credentials • SNMP parameters, including credentials • Polling parameters • Management State (polled or not polled) • Interfaces • Interface Management Parameters (polled or not polled, what parameters are polled, alert when down, bandwidth) • Applications • Whether the Device is monitored by VNQM and/or NCM • SNMP Version • SNMP Parameters • Login Type (Device or User) • Device Login Credentials • Communication Protocols and Ports
NTA Settings	Define the operation of NTA monitoring. Parameters include: • Enable automatic addition of NetFlow sources • Enable data retention for traffic on unmonitored ports • Allow monitoring of flows from unmanaged interfaces • Application and Service Ports • Enable/disable each Application and Service Port • Limit monitoring to selected Destination or Source IP Address(es) • Monitored protocols • NetFlow collector ports • Types of Services • Name resolution parameters • IP address processing period • Data retention parameters • Chart parameters
Polling Settings	Define the behavior of polling of the managed elements and the amount of time collected data is retained.
Report Configurations	Define the Reports that are generated and made available for review via the Orion Web Console.
Reports	Pre-defined Reports may be viewed via the Orion Web Console.
SAM Settings	Configured information used for monitoring applications. The information includes: • Credential sets • Polling parameters • Data retention policies
SNMP Credential Sets	Define credentials used to communicate with Network Devices via SNMP to obtain information.
Syslogs	The set of Syslog messages that have been received from Network Devices. Syslogs are not shown by default once they have been cleared by an authorized user.

TSF Data	Description
Thresholds	Define values for devices that cause warning or error indicators to be displayed in the Orion Web Console. Threshold values may be set for: • CPU Load • Disk Usage • Percent Memory Used • Percent Packet Loss • Response Time • Availability • Node Warning Interval
Traps	The set of SNMP trap messages that have been received from Network Devices.
UDT AD Domain Controllers	Defines a list of Active Directory Domain Controllers that are monitored for user activity.
UDT Settings	Define the operation of UDT monitoring. Attributes include: • Polling intervals • Data retention periods • Thresholds • Credentials
UDT Watched Entities List	Defines a list of addresses, ports, and names to be tracked.
UDT White List	Defines a list of systems on the network that are considered trusted and a set of rules for adding devices to the list.
User Accounts	Define the user accounts attributes for users authorized to access Orion Servers via the Orion Web Console. Attributes include: • Username • Password • Enabled • Expiration Date • Disable Session Timeout • Allow Administrator Rights (Role) • Allow Node Management Rights • Allow Report Management • Allow Account to Clear Events and Acknowledge Alerts • Alert Sound • Views (restricts access to Views) • Account Limitations • Report Folder (restricts access to Reports) • Menu Bar Assignments (limits access to specific GUIs) • NCM Role • IPAM Role
Views	Define the views that may be invoked by users. Attributes include: • Resources included in the View
VNQM CallManager Nodes	Define the set of Cisco CallManager and CallManager Express devices to be monitored by the VNQM functionality.

TSF Data	Description
VNQM Operations	Define test measurements to be performed by the VNQM functionality on VNQM Nodes. Testing may be configured for DNS, FTP, HTTP, DHCP, TCP Connect, UDP Jitter, VoIP UDP Jitter, ICMP Echo, UDP Echo, ICMP Path Echo, or ICMP Path Jitter. Parameters include: • Measurement type • Frequency • Path type • VNQM Nodes • Warning threshold • Critical threshold
VNQM Settings	Define the operation of VNQM monitoring. Parameters include: • VoIP UDP Port • VoIP Jitter Codec • Test data collection interval • Test data retention period • MOS advantage factor • Type of Service (ToS) octet
VNQM VoIP Nodes	Define the set of VoIP devices that are monitored by the VNQM functionality.
(Orion) Web Console Settings	Defines parameters controlling the behavior of an Orion Web Console session. Settings include: • Session Timeout • Page Refresh Time • Status Rollup Mode
WPM Transaction Monitors	Define a set of HTTP message exchanges to a specified web server. Attributes include: • Sequence of HTTP messages • Target Web Server • Status (e.g. managed) • Timing threshold values
Data Related to EOC or EOC Web Console	
EOC User Accounts	Define the user account attributes for users authorized to access the EOC Web Console. Attributes include: • Username • Role • Accessible Orion Servers • Orion Server Credentials user-supplied or admin-supplied • Orion Server credentials
FoE Server Pair	Define a server pair for monitoring and synchronization of data updates. Attributes include: • Identity (Primary or Secondary) • Role (Active or Passive) • Public IP address • Channel IP address and port • Monitored Applications • Client port
Menu Bars	Define a set of Views available to a role.

TSF Data	Description
Orion Servers	Define the Orion Servers associated with the EOC. Attributes include: • Name • Hostname or IP Address • URL • Orion Server credentials • Polling interval • Enabled or disabled
Roles	Define the Views members assigned the role may access. Parameters include: • Name • Menu Bar

1.9 Evaluated Configuration

The evaluated configuration consists of the following:

1. One instance of the EOC, installed on a dedicated Windows server.
2. One or more instances of the Orion Server, each installed on a dedicated Windows server. Each Orion Server has NPM, SAM, NCM, NTA, IPAM, UDT, WPM and VNQM installed. FoE is installed, therefore the Orion Servers must be installed in redundant pairs.
3. For each instance of the Orion Server, a database (and DBMS) is installed on a separate dedicated Windows server.

The following installation and configuration options must be used:

1. IIS on all the dedicated Windows servers hosting TOE components is configured to accept HTTPS connections only.
2. The SolarWinds Toolset optional component is not installed.
3. Session timeouts are not disabled for user accounts, and the Session Timeout for web users is configured as a non-zero value.
4. Windows Account Login is not enabled for the Orion Web Console.
5. Enable Audit Trails is selected.
6. Access to the Windows applications to invoke the TOE is restricted in Windows to users authorized to perform those functions, in particular: backup and restore the database, manage TOE Alerts, manage FoE functionality, and manage Report configuration settings.
7. The Customize option is not configured for any menu bars for the Orion Web Console.
8. External web sites are not added to Orion Web Console views.
9. The “Check for product updates” function is disabled. Installing updates may update the component to a version that has not been evaluated.

10. Custom device pollers are not configured or evaluated. Pollers supplied with the TOE are included in the evaluation.
11. Custom component monitors are not configured or evaluated. Component monitors supplied with the TOE are included in the evaluation.
12. Custom property functionality is not configured or evaluated. Built-in properties are included in the evaluation and may be used to configure View limitations.
13. Advanced Alerts are not configured or evaluated. Basic Alerts are included in the evaluation.
14. Customized Views are not configured on the Orion Web Console.
15. View Limitations are not configured.
16. Custom account limitations are not configured.
17. The functionality to remotely manage interfaces in Network Devices is not evaluated.
18. Custom IPAM roles are not defined; the built-in IPAM roles are used exclusively.
19. Properties of IPAM-specific entities are not used to delegate access.
20. The SAM and WPM components allow for separately-configurable roles. The evaluated configuration requires the SAM and WPM component-specific roles to be configured the same as the Orion role (Administrator or User).
21. The NTA Database Maintenance option is enabled in order to have the TOE automatically compress and purge data according to the configured periods.
22. When importing User Accounts into the TOE, only individual accounts are imported. Windows Group Accounts are not imported.
23. Only Administrators assign passwords for User Accounts defined in the TOE. Non-Administrators are not permitted to change their own passwords.
24. The Orion Server Browser Integration parameter is not enabled for User Accounts, since the operations performed via this integration are outside the control of the TOE.
25. Reports are managed via the Orion Web Console rather than the Report Writer Windows application (legacy).
26. Custom NCM device templates are not configured or evaluated. The default device templates supplied with the TOE are included in the evaluation.
27. Custom Configuration Change Templates are not configured or evaluated. The default configuration change templates supplied with the TOE are included in the evaluation.
28. Real-time config change notification is not enabled in NCM since it is dependent on additional software beyond the scope of the evaluated components.
29. Per-device credentials are used rather than per-user device credentials.
30. The Allow User To Personalize Their Pages permission is not set for any EOC user accounts.   Therefore, only the default page views are included in the evaluation.

31. If TFTP is used to exchange configuration files with Nodes, the TFTP service is restricted to requests from authorized Nodes.

2. Conformance Claims

2.1 Common Criteria Conformance

Common Criteria version: Version 3.1 Revision 4, dated September 2012

Common Criteria conformance: Part 2 extended and Part 3 conformant

2.2 Security Requirement Package Conformance

EAL2 conformant.

The TOE does not claim conformance to any security functional requirement packages.

2.3 Protection Profile Conformance

The TOE does not claim conformance to any registered Protection Profile.

3. Security Problem Definition

3.1 Introduction

This chapter defines the nature and scope of the security needs to be addressed by the TOE. Specifically this chapter identifies:

A) assumptions about the environment,

B) threats to the assets, and

C) organisational security policies.

This chapter identifies assumptions as A.*assumption*, threats as T.*threat* and organisational security policies as P.*policy*.

3.2 Assumptions

The specific conditions listed in the following subsections are assumed to exist in the TOE environment. These assumptions include both practical realities in the development of the TOE security requirements and the essential environmental conditions on the use of the TOE.

Table 7 - Assumptions

A.Type	Description
A.ACCESS	The TOE has access to all the IT System data it needs to perform its functions.
A.ASCOPE	The TOE is appropriately scalable to the IT Systems the TOE monitors.
A.DATABASE	Access to the database used by the TOE via mechanisms outside the TOE boundary is restricted to use by authorized users.
A.ENVIRON	The TOE will be located in an environment that provides physical security, uninterruptible power, and temperature control required for reliable operation.
A.INSTALL	The Administrator will install and configure the TOE according to the administrator guidance.
A.NETWORK	There will be a network that supports communication between distributed components of the TOE. This network functions properly.
A.NOEVILADMIN	Administrators are non-hostile and follow the administrator guidance when using the TOE. Administration is competent and on-going.

3.3 Threats

The threats identified in the following subsections are addressed by the TOE and the Operational Environment.

Table 8 - Threats

T.Type	Description
T.INTERCEPT	An unauthorized network entity may intercept, modify, or inject data exchanged between distributed TOE components to compromise the operation of the TOE or gain unauthorized access to TSF data.
T.MASQUERADE	A user or process may masquerade as another entity in order to gain unauthorized access to data or TOE resources.
T.TSF_COMPROMISE	A user or process may cause, through an unsophisticated attack, TSF data to be modified.

T.Type	Description
T.UNIDENT_ACTIONS	The administrator may not have the ability to notice potential security violations such as attempts by users to gain unauthorized access to the TOE, thus limiting the administrator's ability to identify and take action against a possible security breach.

3.4 Organisational Security Policies

An organisational security policy is a set of rules, practices, and procedures imposed by an organisation to address its security needs.

Table 9 - Organisational Security Policies

P.Type	Organisational Security Policy
P.ACCACT	Users of the TOE shall be accountable for their actions within the TOE.
P.ACCESS	All data collected and produced by the TOE shall only be used for authorized purposes.
P.ANALYZ	Analytical processes and information to derive conclusions about element or network problems must be applied to data received from managed elements and appropriate notification to users generated.
P.DBMONITOR	The Administrator shall monitor disk space usage of the databases used by the TOE and take proactive steps to protect against data loss. The TOE will be configured to monitor the databases and alert the Administrator to high disk usage levels.
P.DISCLOSURE	Credentials passed between the TOE and remote users will be protected from disclosure.
P.HIGHAVAIL	The TOE shall be able to continue providing all of its functionality to authorized users in a secure manner in the event of a failure of a single TOE component.
P.INTGTY	Data collected and produced by the TOE shall be protected from modification.
P.MANAGE	The TOE shall only be managed by authorized users.
P.PASSWORDS	Passwords for User Accounts defined in the TOE are only configured by Administrators.

4. Security Objectives

This section identifies the security objectives of the TOE and the TOE's Operational Environment. The security objectives identify the responsibilities of the TOE and the TOE's Operational Environment in meeting the security needs. Objectives of the TOE are identified as *O.objective*. Objectives that apply to the operational environment are designated as *OE.objective*.

4.1 Security Objectives for the TOE

The TOE must satisfy the following objectives.

Table 10 - Security Objectives for the TOE

O.Type	Description
O.AUDITS	The TOE must record audit records for data accesses and use of the System functions.
O.AUDIT_REVIEW	The TOE will provide the capability to view audit and system data information in a human readable form.
O.CONFIG	The TOE will provide functionality to store, upload, and compare configuration files for administrator-specified network nodes.
O.MANAGE	The TOE will provide all the functions and facilities necessary to support the administrators in their management of the security of the TOE.
O.MONITOR	The TOE will monitor the performance and status of the configured Managed Elements and generate alerts when configured conditions are detected.
O.PASSWORDS	The TOE will permit Administrators to configure passwords for User Accounts defined in the TOE. Users may not configure passwords, even for their own account.
O.REDUNDANT	The TOE will support redundant TOE configurations to enable full functionality to be provided in the event of a failure of any single TOE component while maintaining a secure state.
O.TOE_ACCESS	The TOE will provide mechanisms that control a user's logical access to the TOE.

4.2 Security Objectives for the Operational Environment

The TOE's operational environment must satisfy the following objectives.

Table 11 - Security Objectives of the Operational Environment

OE.Type	Description
OE.COMM	The Operational Environment will protect communication between the TOE and systems outside the TOE boundary from disclosure.
OE.CRYPTO	The Operational Environment will provide cryptographic functionality needed to provide confidentiality with the protocols used for communication with remote IT Systems.
OE.DATABASE	Those responsible for the TOE must ensure that access to the TOE database via mechanisms outside the TOE boundary (e.g., DBMS) is restricted to authorized users only.

OE.Type	Description
OE.DBMONITOR	The Administrator shall monitor disk space usage of the databases used by the TOE and take proactive steps to protect against data loss. The TOE will be configured to monitor the databases and alert the Administrator to high disk usage levels.
OE.ENVIRON	The Administrator will install the TOE in an environment that provides physical security, uninterruptible power, and temperature control required for reliable operation.
OE.INSTALL	The Administrator will install and configure the TOE according to the administrator guidance.
OE.INTROP	The TOE is interoperable with the IT Systems it monitors.
OE.NETWORK	The Administrator will install and configure a network that supports communication between the distributed TOE components. The administrator will ensure that this network functions properly.
OE.NOEVILADMIN	Administrators are non-hostile and follow the administrator guidance when using the TOE. Administration is competent and on-going.
OE.SSL	The Operational Environment will require incoming connections to the Orion Web Console and EOC Web Console to use SSL/TLS.
OE.TIME	The Operational Environment will provide reliable timestamps.
OE.WINDOWSACCESS	Users invoking the Orion Server functionality via Windows application programs must successfully perform identification and authentication functions with Windows first, and access to the applications that invoke ORION Server functionality must be limited to users authorized to invoke TOE management functionality.

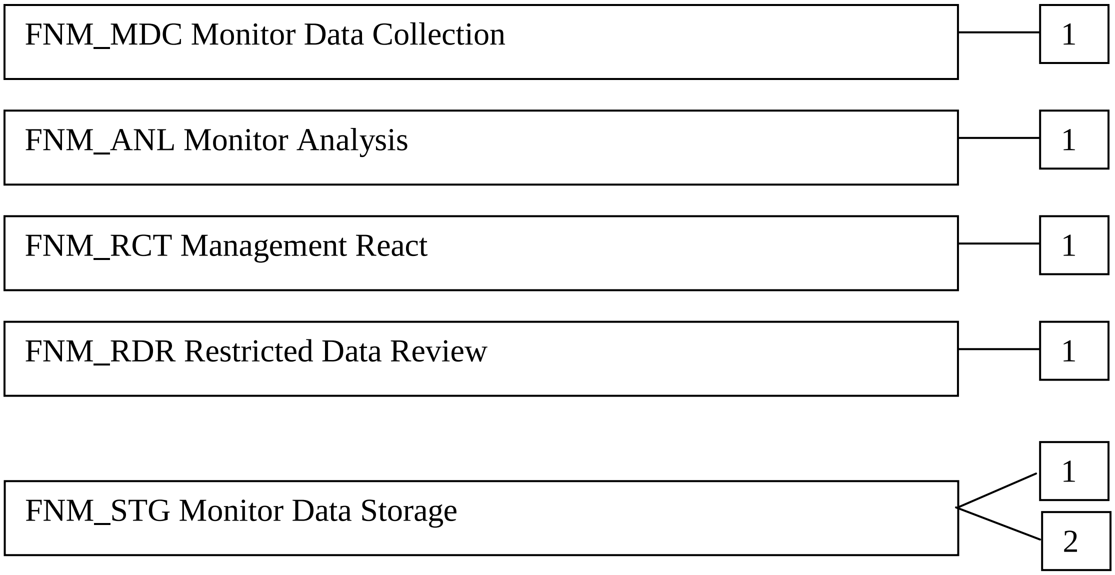
5. Extended Components Definition

5.1 Extended Security Functional Components

5.1.1 Class FNM: Network Management

All of the components in this section are derived from the U.S. Government Protection Profile Intrusion Detection System System For Basic Robustness Environments.

This class of requirements addresses the data collected and analyzed by network management systems. The audit class of the CC (FAU) was used as a model for creating the IDS class in the Protection Profile, and the IDS class was used as a model for these requirements. The purpose of this class of requirements is to address the unique nature of network management data and provide for requirements about analyzing, reviewing and managing the data.   This document uses the term “Monitor data” to refer to the information collected and saved by the collection and analysis functions specified herein.


FNM_MDC Monitor Data Collection
1
FNM_ANL Monitor Analysis
1
FNM_RCT Management React
1
FNM_RDR Restricted Data Review
1
FNM_STG Monitor Data Storage
1
2

5.1.1.1 FNM_MDC Monitor Data Collection

Family Behaviour:

This family defines the requirements for the TOE regarding receipt of information related to the status and performance of managed elements.

Component Levelling:

FNM_MDC Monitor Data Collection
1

FNM_MDC.1 Monitor Data Collection provides for the functionality to require TSF controlled processing of data received from managed elements regarding their status or performance.

Management:

The following actions could be considered for the management functions in FMT:

a) Management of the configuration information for real-time feeds.

Audit:

There are no auditable events foreseen.

FNM_MDC.1 Monitor Data Collection

Hierarchical to: No other components.

Dependencies: None

FNM_MDC.1.1 The TSF shall be able to store configuration, status and performance information received via real-time feeds and/or polling.

5.1.1.2 FNM_ANL Monitor Analysis

Family Behaviour:

This family defines the requirements for the TOE regarding analysis of information related to status and performance received from managed elements.

Component Levelling:

FNM_ANL.1 Monitor Analysis provides for the functionality to require TSF controlled analysis of data received from managed elements regarding their status or performance.

Management:

The following actions could be considered for the management functions in FMT:

a) Configuration of the analysis to be performed.

Audit:

The following actions should be auditable if FAU_GEN Security audit data generation is included in the ST:

a) Minimal: Enabling and disabling of any of the analysis mechanisms.

FNM_ANL.1 Monitor Analysis

Hierarchical to: No other components.

Dependencies: FNM_MDC.1 Monitor Data Collection

FNM_ANL.1.1 The TSF shall perform the following analysis function(s) on all status and performance information received from managed elements:

a) Status changes;

b) Threshold values exceeded;

c) Configuration changed; and

d) Configured conditions satisfied.

5.1.1.3 FNM_RCT Management React

Family Behaviour:

This family defines the requirements for the TOE regarding reactions to the analysis of information related to status and performance received from managed elements.

Component Levelling:

FNM_RCT.1 Management React provides for the functionality to require TSF controlled reaction to the analysis of data received from managed elements regarding information related to status and performance.

Management:

The following actions could be considered for the management functions in FMT:

a) the management (addition, removal, or modification) of actions.

Audit:

There are no auditable events foreseen.

FNM_RCT.1 Management React

Hierarchical to: No other components.

Dependencies: FNM_ANL.1 Monitor Analysis

FNM_RCT.1.1 The TSF shall perform the configured alert action(s) when conditions specified by an administrator are detected.

5.1.1.4 FNM_RDR Restricted Data Review

Family Behaviour:

This family defines the requirements for the TOE regarding review of the monitor data collected by the TOE.

Component Levelling:

FNM_RDR.1 Restricted Data Review provides for the functionality to require TSF controlled review of the monitor data collected by the TOE.

Management:

The following actions could be considered for the management functions in FMT:

a) maintenance (deletion, modification, addition) of the group of users with read access right to the monitor data records.

Audit:

The following actions should be auditable if FAU_GEN Security audit data generation is included in the ST:

a) Basic: Attempts to read monitor data that are denied.

b) Detailed: Reading of information from the monitor data records.

FNM_RDR.1 Restricted Data Review

Hierarchical to: No other components.

Dependencies: FNM_MDC.1 Monitor Data Collection

FNM_ANL.1 Monitor Analysis

FNM_RDR.1.1 The TSF shall provide [assignment: *authorised users*] with the capability to read [assignment: *list of Monitor data*] from the Monitor data.

FNM_RDR.1.2 The TSF shall provide the Monitor data in a manner suitable for the user to interpret the information.

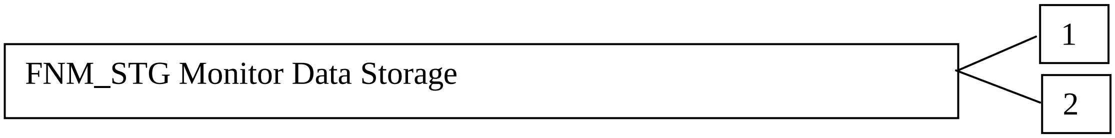
FNM_RDR.1.3 The TSF shall prohibit all users read access to the Monitor data, except those users that have been granted explicit read-access.

5.1.1.5 FNM_STG Monitor Data Storage

Family Behaviour:

This family defines the requirements for the TOE to be able to create and maintain a secure monitor data trail.

Component Levelling:



FNM_STG.1 Guarantee of Monitor Data Availability requires that the monitor data be protected from unauthorised deletion and/or modification.

FNM_STG.2 Prevention of Monitor Data Loss defines the actions to be taken if the monitor data storage capacity has been reached.

Management: FNM_STG.1

The following actions could be considered for the management functions in FMT:

a) maintenance of the parameters that control the monitor data storage capability.

Management: FNM_STG.2

The following actions could be considered for the management functions in FMT:

a) maintenance (deletion, modification, addition) of actions to be taken in case monitor data storage capacity has been reached.

Audit: FNM_STG.1

There are no auditable events foreseen.

Audit: FNM_STG.2

The following actions should be auditable if FAU_GEN Security audit data generation is included in the ST:

a) Basic: Actions taken if the storage capacity has been reached.

FNM_STG.1 Guarantee of Monitor Data Availability

Hierarchical to: No other components.

Dependencies: FNM_MDC.1 Monitor Data Collection

FNM_ANL.1 Monitor Analysis

FNM_STG.1.1 The TSF shall protect the stored Monitor data from unauthorised deletion via operations under the control of the TSF.

FNM_ STG.1.2 The TSF shall protect the stored Monitor data from modification via operations under the control of the TSF.

Application Note: Authorised deletion of data is not considered a modification of Monitor data in this context. This requirement applies to the actual content of the Monitor data, which should be protected from any modifications.

FNM_STG.2 Prevention of Monitor data loss

Hierarchical to: No other components.

Dependencies: FNM_MDC.1 Monitor Data Collection

FNM_ANL.1 Monitor Analysis

FNM_STG.2.1 The TSF shall [selection: *'ignore Monitor data', 'prevent Monitor data, except those taken by the authorised user with special rights', 'overwrite the oldest stored Monitor data'*] if the storage capacity has been reached.

5.2 Extended Security Assurance Components

None

6. Security Requirements

This section contains the functional requirements that are provided by the TOE. These requirements consist of functional components from Part 2 of the CC.

The CC defines operations on security requirements. The font conventions listed below state the conventions used in this ST to identify the operations.

Assignment: indicated in italics

Selection: indicated in underlined text

Assignments within selections: indicated in italics and underlined text

Refinement: indicated with bold text

Iterations of security functional requirements may be included. If so, iterations are specified at the component level and all elements of the component are repeated. Iterations are identified by numbers in parentheses following the component or element (e.g., FAU_ARP.1(1)).

6.1 TOE Security Functional Requirements

The functional requirements are described in detail in the following subsections. Additionally, these requirements are derived verbatim from Part 2 of the *Common Criteria for Information Technology Security Evaluation* with the exception of completed operations.

6.1.1 Security Audit (FAU)

6.1.1.1 FAU_GEN.1 Audit Data Generation

FAU_GEN.1.1 The TSF shall be able to generate an audit record of the following auditable events:

a) Start-up and shutdown of the audit functions;

b) All auditable events for the not specified level of audit; and

c) *The events in the following table*.

Table 12 - Auditable Events

SFR	Event	Details
FAU_GEN.1	Changes to the Enable Audit Trail setting	Old and new setting values
FIA_ATD.1	User account creation and deletion	User account
FIA_UAU.2	Successful login	User identity, IP address of the remote system
FIA_UID.2	Successful login	User identity, IP address of the remote system
FMT_MTD.1	Modifications to the values of system parameters	Parameter changed, old and new values
	Creation, modification and deletion of monitoring entities (e.g. Node, Application Template)	Action, entity type, entity name, associated Node (if applicable), old and new values (for Node properties)
	Node managed or unmanaged	Action, Node

FAU_GEN.1.2 The TSF shall record within each audit record at least the following information:

a) Date and time of the event, type of event, subject identity (if applicable), and the outcome (success or failure) of the event; and

b) For each audit event type, based on the auditable event definitions of the functional components included in the PP/ST, *no additional information*.

6.1.1.2 FAU_SAR.1 Audit Review

FAU_SAR.1.1 The TSF shall provide *all Orion Administrators* with the capability to read *all data* from the audit records.

FAU_SAR.1.2 The TSF shall provide the audit records in a manner suitable for the user to interpret the information.

6.1.1.3 FAU_SAR.2 Restricted Audit Review

FAU_SAR.2.1 The TSF shall prohibit all users read access to the audit records, except those users that have been granted explicit read-access.

6.1.2 Identification and Authentication (FIA)

6.1.2.1 FIA_ATD.1 User Attribute Definition

Refinement Rationale: The TOE provides multiple access mechanisms for users. The security attributes defined for the users vary based upon the mechanism, with the exception of Orion Windows Applications where the only attribute (the role) is implied. Therefore, iterations for this SFR are specified for individual access mechanisms. The collection of iterations addresses the user attribute definitions for the TOE access mechanisms.

6.1.2.1.1 FIA_ATD.1(1) User Attribute Definition (Orion Web Console)

FIA_ATD.1.1(1) The TSF shall maintain the following list of security attributes belonging to individual users **of the Orion Web Console**:

1. *Username*
2. *Password*
3. *Account enabled status*
4. *Account expiration date*
5. *Allow administrator rights (role)*
6. *Allow Node management*
7. *Allow Report management*
8. *Allow account to clear Events, acknowledge Alerts and Syslogs*
9. *Alert sound*
10. *Menu Bar assignments*
11. *Report folder*
12. *NCM Role*

Application Note: Different security attributes are maintained for different TOE access mechanisms. This iteration applies to security attributes for users of the Orion Web Console.

6.1.2.1.2 FIA_ATD.1(2) User Attribute Definition (EOC Web Console)

FIA_ATD.1.1(2) The TSF shall maintain the following list of security attributes belonging to individual users **of the EOC Web Console**:

1. *Username*
2. *Role*
3. *Accessible Orion Servers*
4. *Orion Server Credentials user-supplied or admin-supplied*
5. *Orion Server Credentials*

Application Note: Different security attributes are maintained for different TOE access mechanisms. This iteration applies to security attributes for users of the EOC Web Console.

6.1.2.2 FIA_UAU.2 User Authentication Before any Action

Refinement Rationale: This SFR applies to password validation for the Orion Web Console. Password validation for the EOC Web Console is performed by Windows; Windows is responsible for the complete I&A process for Windows applications that invoke the TOE.

FIA_UAU.2.1 The TSF shall require each **Orion Web Console** user to be successfully authenticated before allowing any other TSF-mediated actions on behalf of that user.

6.1.2.3 FIA_UAU.7 Protected Authentication Feedback

FIA_UAU.7.1 The TSF shall provide only *dots* to the user while the authentication is in progress.

6.1.2.4 FIA_UID.2 User Identification Before any Action

Refinement Rationale: This SFR applies to users accessing the TOE via the Orion Web Console or the EOC Web Console. The TOE does not perform any identification for users accessing the TOE via Orion Windows applications on servers on which Orion Server components are installed. Identification must be performed by Windows prior to the users invoking the applications, as specified in OE.WINDOWSACCESS.

FIA_UID.2.1 The TSF shall require each **Orion Web Console and EOC Web Console** user to be successfully identified before allowing any other TSF-mediated actions on behalf of that user.

6.1.2.5 FIA_USB.1 User-Subject Binding

Refinement Rationale: The TOE provides multiple access mechanisms for users. The security attributes bound to a session for the users vary based upon the mechanism. Therefore, iterations for this SFR are specified for each access mechanism. The collection of iterations addresses the user attribute definition for all TOE access mechanisms.

6.1.2.5.1 FIA_USB.1(1) User-Subject Binding (Orion Web Console)

FIA_USB.1.1(1) The TSF shall associate the following user security attributes with subjects acting on behalf of that **Orion Web Console** user:

1. *Username*
2. *Allow administrator rights (role)*
3. *Allow Node management rights*
4. *Allow Report management rights*
5. *Allow account to clear Events, acknowledge Alerts and Syslogs*
6. *Alert sound*
7. *Menu Bar assignments*
8. *Report folder*
9. *NCM Role*
10. *IPAM Role*

FIA_USB.1.2(1) The TSF shall enforce the following rules on the initial association of user security attributes with subjects acting on the behalf of **Orion Web Console** users: *attributes are bound from the configured parameters for the identified user account*.

FIA_USB.1.3(1) The TSF shall enforce the following rules governing changes to the user security attributes associated with subjects acting on the behalf of **Orion Web Console** users: *User permissions (e.g. Allow administrator rights, NCM Role, IPAM Role) are dynamically retrieved and re-bound as interactions are invoked; Menu Bar assignments are re-bound whenever a Menu Bar parameter is selected by the user; other subject attributes do not change during a session*.

Application Note: Different security attributes are bound for different TOE access mechanisms. This iteration applies to security attributes for users of the Orion Web Console.

6.1.2.5.2 FIA_USB.1(2) User-Subject Binding (EOC Web Console)

FIA_USB.1.1(2) The TSF shall associate the following user security attributes with subjects acting on behalf of that **EOC Web Console** user:

1. *Username*
2. *Role*
3. *Accessible Orion Servers*
4. *Orion Server Credentials user-supplied or admin-supplied*
5. *Orion Server credentials*

FIA_USB.1.2(2) The TSF shall enforce the following rules on the initial association of user security attributes with subjects acting on the behalf of **EOC Web Console** users: *attributes are bound from the configured parameters for the identified user account*.

FIA_USB.1.3(2) The TSF shall enforce the following rules governing changes to the user security attributes associated with subjects acting on the behalf of **EOC Web Console** users: *subject attributes do not change during a session*.

Application Note: Different security attributes are bound for different TOE access mechanisms. This iteration applies to security attributes for users of the EOC Web Console.

6.1.2.5.3 FIA_USB.1(3) User-Subject Binding (Orion Windows Applications)

FIA_USB.1.1(3) The TSF shall associate the following user security attributes with subjects acting on behalf of that **Orion Windows applications** user:

1. *Role (Windows Application Administrator)*

FIA_USB.1.2(3) The TSF shall enforce the following rules on the initial association of user security attributes with subjects acting on the behalf of **Orion Windows applications** users: *the role is implied by use of the access mechanism*.

FIA_USB.1.3(3) The TSF shall enforce the following rules governing changes to the user security attributes associated with subjects acting on the behalf of **Orion Windows applications** users: *subject attributes do not change during a session*.

Application Note: Different security attributes are bound for different TOE access mechanisms. This iteration applies to security attributes for users of the Orion Windows applications.

6.1.3 Security Management (FMT)

6.1.3.1 FMT_MTD.1 Management of TSF Data

Application Note: The TOE provides multiple management access mechanisms for users. The TSF data privileges for the users vary based upon the mechanism. Therefore, iterations for this SFR are specified for each access mechanism. The collection of iterations addresses the TSF data privileges for all TOE access mechanisms. If a TSF data item is not included in the table accompanying the SFR iteration, then no access to that TSF data item is provided via the TOE access mechanism.

6.1.3.1.1 FMT_MTD.1(1) Management of TSF Data (Orion Server TSF Data (Other Than NCM-Specific and IPAM-Specific))

FMT_MTD.1.1(1) The TSF shall restrict the ability to query, modify, delete, clear, *create, acknowledge* the *Orion Server TSF data (other than NCM-specific and IPAM-specific) specified in the following table* to *users with the roles and permissions specified in the following table*.

Application Note: Different TSF data privileges are enforced for different TOE access mechanisms. This iteration applies to TSF data (other than NCM-specific and IPAM-specific) for Orion Servers. Access limitations for the NCM-specific and IPAM-specific data is controlled via an additional security attribute (NCM or IPAM role) assigned to individual user accounts and is addressed in separate iterations of this SFR.

Application Note: Orion Administrators are authorized Orion Web Console user accounts with the Allow Administrator Rights parameter value set.

Table 13 - Orion Server TSF Data Detail

TSF Data	Windows Application Administrator	Orion Administrator	Orion User
Alert Configuration	Query, Modify	None	None

TSF Data	Windows Application Administrator	Orion Administrator	Orion User
Alerts	None	Query. Acknowledge if the "Allow Account to Clear Events and Acknowledge Alerts" account parameter is set	Query. Acknowledge if the "Allow Account to Clear Events and Acknowledge Alerts" account parameter is set
Application Monitor Templates	None	Query and Modify	None
Assigned Application Monitors	None	Query and Modify	None
Assigned Component Monitors	None	Query and Modify	None
Audit Trail Retention	None	Query and Modify	None
CLI Credential Sets	None	Query Create, Modify and Delete if the "Allow Node Management Rights" account parameter is set	Query
Component Monitors	None	Query and Modify	None
Events	None	Query. Acknowledge if the "Allow Account to Clear Events and Acknowledge Alerts" account parameter is set	Query. Acknowledge if the "Allow Account to Clear Events and Acknowledge Alerts" account parameter is set
FoE Server Pair	Query, Modify	None	None
Groups	None	Query, Create, Modify and Delete if the "Allow Node Management Rights" account parameter is set	Query
IPAM Settings	None	Query, Create, Modify and Delete	None
NCM Jobs	None	Query	
NCM Ignore List	None	Query. Modify if the "Allow Node Management Rights" account parameter is set	Query. Modify if the "Allow Node Management Rights" account parameter is set
NCM Settings	None	Query, Modify	None
NetFlow Sources	None	Query, Create, Modify and Delete	Query
Network Devices	None	Query. Create, Modify and Delete if the "Allow Node Management Rights" account parameter is set	Query. Create, Modify and Delete if the "Allow Node Management Rights" account parameter is set
NTA Settings	None	Query and Modify	None
Polling Settings	None	Query and Modify	None

TSF Data	Windows Application Administrator	Orion Administrator	Orion User
Report Configurations	Query, Create, Modify and Delete	Query, Create, Modify and Delete if the "Allow Report management" account parameter is set	Query, Create, Modify and Delete if the "Allow Report management" account parameter is set
Reports	None	Query, limited to Reports in the folder configured for the user account	Query, limited to Reports in the folder configured for the user account
SAM Settings	None	Query and Modify	None
Syslogs	None	Query. Acknowledge if the "Allow Account to Clear Events and Acknowledge Alerts" account parameter is set	Query. Acknowledge if the "Allow Account to Clear Events and Acknowledge Alerts" account parameter is set
Thresholds	None	Query and Modify	None
Traps	None	Query	Query
UDT AD Domain Controllers	None	Query, Create, Modify and Delete	None
UDT Settings	None	Query and Modify	None
UDT Watched Entities List	None	Query and Modify	Query
UDT White List	None	Query and Modify	None
User Accounts	None	Query, Create, Modify and Delete	None
Views	None	Query. Modify if the "Allow Account to Clear Events and Acknowledge Alerts" account parameter is set	Query. Modify if the "Allow Account to Clear Events and Acknowledge Alerts" account parameter is set
VNQM CallManager Nodes	None	Query, Create, Modify and Delete	Query
VNQM Operations	None	Query, Create, Modify and Delete	Query
VNQM Settings	None	Query, Create, Modify and Delete	None
VNQM VoIP Nodes	None	Query, Create, Modify and Delete	Query
(Orion) Web Console Settings	None	Query and Modify	None
WPM Transaction Monitors	None	Query, Create, Modify and Delete	Query

6.1.3.1.2 FMT_MTD.1(2) Management of TSF Data (NCM-Specific TSF Data on Orion Servers (Accessed via the Orion Web Console))

FMT_MTD.1.1(2) The TSF shall restrict the ability to query, modify, delete, *create, execute, upload and download* the *NCM-specific TSF data on Orion Servers (accessed via the Orion Web Console) specified in the following table* to *users with the roles specified in the following table*.

Application Note: Different TSF data privileges are enforced for different TOE access mechanisms. This iteration applies to TSF data specific to NCM functionality on Orion Servers, since access limitations to this information are controlled via a specific security attribute (NCM role) configured for individual user accounts.

Table 14 - NCM-Specific TSF Data Detail

TSF Data	Administrator	Engineer	Web Downloader	Web Uploader	Web Viewer	None
NCM Compliance Report Configurations	Query, Create, Modify, and Delete	Query, Create, Modify, and Delete	Query, Create, Modify, and Delete	Query, Create, Modify, and Delete	None	None
NCM Compliance Reports	Query	Query	Query	Query	Query	None
NCM Config Change Templates	Query, Create, Modify, Delete, and Execute	Query, Create, Modify, Delete, and Execute	None	Query, Create, Modify, Delete, and Execute	None	None
NCM Default Communication Parameters	Modify	None	None	None	None	None
NCM Device Configuration Files	Download, Upload, Query, Modify	Download, Upload, Query, Modify	Download, Query	Download, Upload, Query, Modify	Query	None

6.1.3.1.3 FMT_MTD.1(3) Management of TSF Data (IPAM-Specific TSF Data on Orion Servers (Accessed via the Orion Web Console))

FMT_MTD.1.1(3) The TSF shall restrict the ability to query, modify, delete, *create, and scan,* the *IPAM-specific TSF data on Orion Servers (accessed via the Orion Web Console) specified in the following table* to *users with the roles specified in the following table*.

Application Note: Different TSF data privileges are enforced for different TOE access mechanisms. This iteration applies to TSF data specific to IPAM functionality on Orion Servers, since access limitations to this information are controlled via a specific security attribute (IPAM role) configured for individual user accounts.

Table 15 - IPAM-Specific TSF Data Detail

TSF Data	Admin	Power User	Operator	Read Only	Hide
IPAM Addresses and Subnets	Query, Create, Modify, Delete, Scan	Query, Create, Modify, Delete, Scan	Query, Modify	Query	None
IPAM DHCP Scopes	Query, Create, Modify, Delete, Scan	Query, Create, Modify, Delete, Scan	Query, Modify	Query	None
IPAM DHCP Servers	Query, Create, Modify, Delete, Scan	Query, Create, Modify, Delete, Scan	Query, Modify	Query	None
IPAM DNS Servers	Query, Create, Modify, Delete, Scan	Query, Create, Modify, Delete, Scan	Query, Modify	Query	None
IPAM DNS Zones	Query, Create, Modify, Delete, Scan	Query, Create, Modify, Delete, Scan	Query, Modify	Query	None
SNMP Credential Sets	Query, Create, Modify, Delete	Query	None	None	None

6.1.3.1.4 FMT_MTD.1(4) Management of TSF Data (EOC Server TSF Data)

FMT_MTD.1.1(4) The TSF shall restrict the ability to query, modify, delete, *create*, *access* the *EOC Server TSF data specified in the following table* to *users with the roles and permissions specified in the following table*.

Application Note: Different TSF data privileges are enforced for different TOE access mechanisms. This iteration applies to TSF data for EOC Servers.

Table 16 - EOC Server TSF Data Detail

TSF Data	Windows Application Administrator	Administrator	All Other Roles
EOC User Accounts	None	Query, Create, Modify, and Delete	None
FoE Server Pair	Query, Modify	None	None
Menu Bars	None	Query, Create, Modify, Delete, and Access	Access
Orion Servers	None	Query, Create, Modify, Delete, and Access	Access
Roles	None	Query, Create, Modify, and Delete	None

6.1.3.2 FMT_SMF.1 Specification of Management Functions

FMT_SMF.1.1 The TSF shall be capable of performing the following management functions:

1. *User Account management*
2. *TOE settings management*

3. *Managed Element management*
4. *Alert management*
5. *Alert, Event, Syslog, and Trap review*
6. *FoE Server Pair management*
7. *Device configuration management*.

6.1.3.3 FMT_SMR.1 Security Roles

FMT_SMR.1.1 The TSF shall maintain the roles

1. *Orion Web Console user:*
   a. *Orion Administrator*
   b. *Orion User*
2. *NCM user role for accessing NCM-specific data via the Orion Web Console:*
   a. *Administrator*
   b. *Engineer*
   c. *Web Downloader*
   d. *Web Uploader*
   e. *Web Viewer*
3. *IPAM user role for accessing IPAM-specific data via the Orion Web Console:*
   a. *Admin*
   b. *Power User*
   c. *Operator*
   d. *Read Only*
   e. *Hide*
4. *EOC Web Console user:*
   a. *Administrator*
   b. *Guest*
   c. *Other roles created by an Administrator*
5. *Orion Windows application user:*
   a. *Windows Application Administrator.*

FMT_SMR.1.2 The TSF shall be able to associate users with roles.

6.1.4 Network Management (FNM)

6.1.4.1 FNM_MDC.1 Monitor Data Collection

FNM_MDC.1.1 The TSF shall be able to store configuration, status and performance information received via real-time feeds and/or polling.

6.1.4.2 FNM_ANL.1 Monitor Analysis

FNM_ANL.1.1 The TSF shall perform the following analysis function(s) on all status and performance information received from managed elements:

1. Status changes;
2. Threshold values exceeded;
3. Configuration changed; and
4. Configured conditions satisfied.

6.1.4.3 FNM_RCT.1 Management React

FNM_RCT.1.1 The TSF shall perform the specified alert action(s) when conditions specified by an administrator are detected.

6.1.4.4 FNM_RDR.1 Restricted Data Review

Application Note: *Different Monitor data privileges are enforced for different TOE access mechanisms and categories of data. The first iteration applies to all Monitor data specific on a specific Orion Server instance other than configuration files uploaded from monitored devices. The second iteration deals specific with device configuration files since access privileges are based on NCM roles and not all Orion user accounts have an NCM role assigned.. The third iteration specifies access from EOC, since individual EOC user accounts may be configured to have access to different subsets of Orion servers.*

6.1.4.4.1 FNM_RDR.1(1) Restricted Data Review (Authorized Orion Web Console Users)

FNM_RDR.1.1(1) The TSF shall provide *authorized Orion Web Console users* with the capability to read *Monitor data other than device configuration data* from the Monitor data.

FNM_RDR.1.2(1) The TSF shall provide the Monitor data in a manner suitable for the user to interpret the information.

FNM_RDR.1.3(1) The TSF shall prohibit all users read access to the Monitor data, except those users that have been granted explicit read-access.

6.1.4.4.2 FNM_RDR.1(2) Restricted Data Review (Authorized Orion Web Console Users That Have NCM Roles Configured)

FNM_RDR.1.1(2) The TSF shall provide *authorized Orion Web Console users that have NCM roles configured* with the capability to read *device configuration data* from the Monitor data.

FNM_RDR.1.2(2) The TSF shall provide the Monitor data in a manner suitable for the user to interpret the information.

FNM_RDR.1.3(2) The TSF shall prohibit all users read access to the Monitor data, except those users that have been granted explicit read-access.

6.1.4.4.3 FNM_RDR.1(3) Restricted Data Review (Authorized EOC Web Console Users)

FNM_RDR.1.1(3) The TSF shall provide *authorized EOC Web Console users* with the capability to read *Monitor data from Orion Servers the user is authorized to access* from the Monitor data.

FNM_RDR.1.2(3) The TSF shall provide the Monitor data in a manner suitable for the user to interpret the information.

FNM_RDR.1.3(3) The TSF shall prohibit all users read access to the Monitor data, except those users that have been granted explicit read-access.

6.1.4.5 FNM_STG.1 Guarantee of Monitor Data Availability

FNM_STG.1.1 The TSF shall protect the stored Monitor data from unauthorised deletion via operations under the control of the TSF.

FNM_ STG.1.2 The TSF shall protect the stored Monitor data from modification via operations under the control of the TSF.

Application Note: *Authorised deletion of data is not considered a modification of Monitor data in this context. This requirement applies to the actual content of the Monitor data, which should be protected from any modifications.*

6.1.4.6 FNM_STG.2 Prevention of Monitor Data Loss

FNM_STG.2.1 The TSF shall ignore Monitor data if the storage capacity has been reached.

6.1.5 Protection of the TSF (FPT)

6.1.5.1 FPT_FLS.1 Failure with Preservation of Secure State

FPT_FLS.1.1 The TSF shall preserve a security state when the following types of failures occur: *failure of any single TOE component (application, service or server).*

Application Note: *In a deployed instance of the TOE, this functionality applies to any TOE component for which a Failover Engine has also been deployed.*

6.1.6 Resource Utilisation (FRU)

6.1.6.1 FRU_FLT.2 Limited Fault Tolerance

FRU_FLT.2.1 The TSF shall ensure the operation of all the TOE's capabilities when the following failures occur: *failure of any single TOE component*.

Application Note: *In a deployed instance of the TOE, this functionality applies to any TOE component for which a Failover Engine has also been deployed.*

6.1.7 TOE Access (FTA)

6.1.7.1 FTA_SSL.3 TSF-Initiated Termination

FTA_SSL.3.1 The TSF shall terminate an interactive session after a *configured inactivity time for Orion Web Console users, unless the inactivity timer functionality is disabled for the user account*.

6.2 TOE Security Assurance Requirements

The TOE meets the assurance requirements for EAL2. These requirements are summarised in the following table.

Table 17 - EAL2 Assurance Requirements

Assurance Class	Component ID	Component Title
Development	ADV_ARC.1	Security architecture description
	ADV_FSP.2	Security-enforcing functional specification
	ADV_TDS.1	Basic design
Guidance Documents	AGD_OPE.1	Operational user guidance
	AGD_PRE.1	Preparative procedures
Life-Cycle Support	ALC_CMC.2	Use of a CM system
	ALC_CMS.2	Parts of the TOE CM coverage
	ALC_DEL.1	Delivery procedures
Tests	ATE_COV.1	Evidence of coverage
	ATE_FUN.1	Functional testing
	ATE_IND.2	Independent testing - sample
Vulnerability Assessment	AVA_VAN.2	Vulnerability analysis

6.3 CC Component Hierarchies and Dependencies

This section of the ST demonstrates that the identified SFRs include the appropriate hierarchy and dependencies. The following table lists the TOE SFRs and the SFRs each are hierarchical to, dependent upon and any necessary rationale.

Table 18 - TOE SFR Dependency Rationale

SFR	Hierarchical To	Dependency	Rationale
FAU_GEN.1	No other components.	FPT_STM.1	Satisfied by OE.TIME
FAU_SAR.1	No other components.	FAU_GEN.1	Satisfied
FAU_SAR.2	No other components.	FAU_SAR.1	Satisfied
FIA_ATD.1	No other components.	None	n/a
FIA_UAU.2	FIA_UAU.1	FIA_UID.1	Satisfied by FIA_UID.2
FIA_UAU.7	No other components.	FIA_UAU.1	Satisfied by FIA_UAU.2
FIA_UID.2	FIA_UID.1	None	n/a
FIA_USB.1	No other components.	FIA_ATD.1	Satisfied
FMT_MTD.1	No other components.	FMT_SMF.1, FMT_SMR.1	Satisfied, Satisfied
FMT_SMF.1	No other components.	None	n/a
FMT_SMR.1	No other components.	FIA_UID.1	Satisfied by FIA_UID.2

SFR	Hierarchical To	Dependency	Rationale
FNM_MDC.1	No other components.	None	n/a
FNM_ANL.1	No other components.	FNM_MDC.1	Satisfied
FNM_RCT.1	No other components.	FNM_ANL.1	Satisfied
FNM_RDR.1	No other components.	FNM_MDC.1, FNM_ANL.1	Satisfied, Satisfied
FNM_STG.1	No other components.	FNM_MDC.1, FNM_ANL.1	Satisfied, Satisfied
FNM_STG.2	No other components.	FNM_MDC.1, FNM_ANL.1	Satisfied, Satisfied
FPT_FLS.1	No other components.	None	n/a
FRU_FLT.2	FRU_FLT.1	FPT_FLS.1	Satisfied
FTA_SSL.3	No other components.	None	n/a

7. TOE Summary Specification

7.1 Security Functions

7.1.1 Audit

Relevant SFRs: FAU_GEN.1, FAU_SAR.1, FAU_SAR.2

The TOE generates audits for the events specified in the table included with FAU_GEN.1. Startup and shutdown of the audit function is controlled by changes to the Enable Audit Trail setting; the evaluated configuration requires this value to be set at all times. The following fields are included in all audit log records, although not all fields are populated in all records:

- Date/time
- Message (details of the event)
- User performing the action

Audit records are stored in plaintext in the Orion database for the time period configured via the Audit Trails Retention parameter, and are automatically deleted when the retention period expires.

Audit records may be viewed via the Orion Web Console using the Message Center View by Administrators. Users are not permitted to read audit records.

7.1.2 Identification and Authentication

Relevant SFRs: FIA_ATD.1(all iterations), FIA_UAU.2, FIA_UAU.7, FIA_UID.2, FIA_USB.1(all iterations), FTA_SSL.3

The TOE provides the following access mechanism for users to interact with the TOE:

1. Orion Web Console
2. EOC Web Console
3. Orion Windows applications invoked on servers hosting TOE components

The first two mechanisms are accessed via web browsers from remote IT systems, while the last is accessed by users from the local keyboard/display on the servers hosting the TOE components.

When a connection is established to the Orion Web Console, the TOE collects a username and password from the user. A dot ("•") is echoed for each character supplied for the password (FIA_UAU.7). Once the credentials are supplied, they are validated by the TOE (FIA_UID.2, FIA_UAU.2). If the credentials are not valid, the user account is not enabled, or the user account has expired, an error message is displayed and the user may try again. If the credentials are valid, the security attributes configured for the supplied username (FIA_ATD.1) are bound to the session (FIA_USB.1) and the user is given access to the management functions. The attributes bound to the session are specified in FIA_USB.1(1). Sessions are automatically terminated after the configured inactivity time (FTA_SSL.3).

When a connection is established to the EOC Web Console, the TOE collects a username and password from the user. A dot ("•") is echoed for each character supplied for the password (FIA_UAU.7). Once the credentials are supplied, they are passed to the host operating system (Windows) for validation. If the credentials are not valid, an error message is displayed and the user may try again. If the credentials are valid, the supplied username is checked against the user accounts defined for the EOC Web Console (FIA_UID.2). If the account is not defined, an error message is displayed and the user may try again. If the user account is defined, the security attributes configured for the supplied username (FIA_ATD.1) are bound to the session (FIA_USB.1) and the user is given access to the management functions. The attributes bound to the session are specified in FIA_USB.1(2).

When the Orion Server is invoked via a Windows application, the TOE does not perform any I&A function. The user is required to have been identified by Windows (per OE.WINDOWSACCESS). The role bound to all users of this access mechanism is set to the Windows Application Administrator role (FIA_USB.1(3)).

When a user of the EOC Web Console accesses data from an Orion Server, credentials for the user are automatically sent to the server on behalf of the user. If the user account is configured to use the configured credentials, the credentials used are those configured for the user account. Otherwise, the user is prompted for the credentials to send. A dot ("•") is echoed for each character supplied for the password (FIA_UAU.7).

When a user of the EOC Web Console or Orion Web Console accesses configuration data (related to NCM) for a Node, the NCM role configured for the Orion Server user account is bound to the session.

7.1.3 Management

Relevant SFRs: FMT_MTD.1(all iterations), FMT_SMF.1, FMT_SMR.1

Management functionality is available to authorized users through the Orion Web Console, the EOC Web Console, and Windows applications invoked on the Orion Servers. FoE functionality is only managed via the FoE Application Manager (a Windows application) regardless of whether FoE is being used on an Orion Server or an EOC Server. The management functionality available to users is specified in FMT_SMF.1. The functionality made available to individual users is dependent on their security attributes (including role), which vary based upon the TOE access mechanism being used. The roles are specified in FMT_SMR.1, and the access privileges available and associated security attributes are specified in FMT_MTD.1.

7.1.4 Network Monitoring

Relevant SFRs: FNM_ANL.1, FNM_MDC.1, FNM_RCT.1, FNM_RDR.1(all iterations), FNM_STG.1, FNM_STG.2

Network monitoring is performed against Managed Elements by Orion Servers. The types of monitoring is dependent on the TOE components installed on the Orion Servers, and may include nodes, interfaces, servers, applications, IP address space, network flows, and SLAs.

Performance monitoring is performed by sending ICMP and/or SNMP messages to the Managed Elements to determine configuration information and retrieve status and statistics information (FNM_MDC.1). Status information may also be determined from Syslog and/or SNMP Trap messages received from the Managed Elements, or via WMI exchanges to determine information about servers and applications.

Information collected from the managed elements is analyzed (FNM_ANL.1). The results of the analysis are available to users of the TOE via Views (FNM_RDR.1). Events are generated to record status changes or configured threshold values being met concerning the managed elements (FNM_ANL.1), and Alerts may be generated based upon conditions detected on the managed elements (FNM_RCT.1). Alerts may cause notifications to be sent to configured destinations, scripts to be executed on the managed elements, or configuration files to be uploaded to the managed elements.

The results of the analysis are available to users of the TOE via Views (FNM_RDR.1). Views may be accessed via the Orion Web Console, which provides information concerning Managed Elements configured in a specific Orion Server instance; or the EOC Web Console, which provides aggregated information from one or more Orion Server instances, depending on the configuration for individual EOC Web Console users.

Access privileges for status and analysis information maintained by the Orion Server is determined by the user account privileges configured for each authorized Orion Server user account.

The information collected from the managed elements, as well as the analysis results, is saved in the TOE database and may be reviewed by authorized users (FNM_STG.1, FNM_STG.2). The TOE does not provide any direct database access to Orion Web Console or EOC Web Console users, and the mediated access does not provide any mechanism to modify the Monitor data. The only mechanism provided to delete Monitor data is via the configuration of data retention policies by authorized administrators.

In the unlikely event that the storage capacity of the database is exhausted, the existing information in the database is maintained and new Monitor data is discarded.

7.1.5 Configuration Management

Relevant SFRs: FMT_MTD.1(2), FNM_ANL.1, FNM_RCT.1

The TOE downloads configuration files from network nodes either on command by an authorized NCM user or according to scheduled NCM jobs (FMT_MTD.1(2)). Configuration files may also be uploaded to network nodes on command by an authorized NCM user or according to scheduled NCM jobs (FMT_MTD.1(2)).

When configuration files are downloaded, they may be compared to previously downloaded files to detect changes (FNM_ANL.1). Syslog messages received from the network nodes may also be analyzed to detect configuration changes (FNM_ANL.1). Detection of a configuration change can trigger the upload of a configuration file to a network node (FNM_RCT.1).

7.1.6 High Availability

Relevant SFRs: FMT_MTD.1(1), FMT_MTD.1(4), FMT_SMF.1, FMT_SMR.1, FPT_FLS.1, FRU_FLT.2

For any TOE component for which a Failover Engine (FoE) is deployed, failure of any single TOE component (application, service or complete server) does not result in loss of any TOE functionality and the TOE continues to operate in a secure state.

FoE components on the primary and secondary servers continuously communicate to determine the health of the primary system and to exchange data updates. Upon detection of any TOE component failure, the FoE functionality on an active server automatically attempts to restart any failed application or service that is a TOE component, and the FoE functionality on a passive server automatically assumes the role of a failed or isolated active server.

When failure of any TOE component occurs, the TOE maintains a secure state – all security policies continue to be enforced (FPT_FLS.1). The FoE functionality permits the TOE to continue to provide all of its functionality in a secure manner (FRU_FLT.2).

Failover to the passive server may also be manually initiated by authorized administrators (FMT_MTD.1(1), FMT_MTD.1(4), FMT_SMF.1, FMT_SMR.1).

8. Rationale

This chapter provides the rationale for the selection of the IT security requirements, objectives, assumptions and threats.

8.1 Rationale for IT Security Objectives

This section of the ST demonstrates that the identified security objectives are covering all aspects of the security needs. This includes showing that each threat, assumption and organisational security policy is addressed by a security objective.

The following table identifies for each threat and assumption, the security objective(s) that address it.

Table 19 - Threats, Assumptions, and Organisational Security Policies to Security Objectives Mapping

	O.AUDITS	O.AUDIT_REVIEW	O.CONFIG	O.MANAGE	O.MONITOR	O.PASSWORDS	O.REDUNDANT	O.TOE_ACCESS	OE.COMM	OE.CRYPTO	OE.DATABASE	OE.DBMONITOR	OE.ENVIRON	OE.INSTALL	OE.INTROP	OE.NETWORK	OE.NOEVILADMIN	OE.SSL	OE.TIME	OE.WINDOWSACCESS
A.ACCESS															X					
A.ASCOPE														X						
A.DATABASE											X									
A.ENVIRON													X							
A.INSTALL														X						
A.NETWORK																X				
A.NOEVILADMIN																	X			
P.ACCACT	X							X											X	
P.ACCESS				X				X												X
P.ANALYZ			X		X															
P.DBMONITOR												X								
P.DISCLOSURE									X	X								X		
P.HIGHAVAIL							X													
P.INTGTY				X																
P.MANAGE								X												X
P.PASSWORDS						X														
T.INTERCEPT										X										
T.MASQUERADE								X	X											X
T.TSF_COMPROMISE				X																
T.UNIDENT_ACTIONS	X	X																	X	

The following table describes the rationale for the threats, assumptions and organisational security policies to security objectives mapping.

Table 20 - Threats, Assumptions and Organisational Security Policies to Security Objectives Rationale

x.TYPE	Security Objectives Rationale
A.ACCESS	The **OE.INTROP** objective ensures the TOE has the needed access.
A.ASCOPE	The **OE.INSTALL** objective ensures the TOE is installed per the vendor guidance, which addresses scalability.
A.DATABASE	The **OE.DATABASE** objective ensures that access to any mechanisms outside the TOE boundary that may be used to access the database is configured by the administrators such that only authorized users may utilize the mechanisms.
A.ENVIRON	**OE.ENVIRON** addresses this assumption by restating it as an objective for the Administrator to satisfy.
A.INSTALL	**OE.INSTALL** addresses this assumption by restating it as an objective for the Administrator to satisfy.
A.NETWORK	**OE.NETWORK** addresses this assumption by restating it as an objective for the Administrator to satisfy.
A.NOEVILADMIN	**OE.NOEVILADMIN** addresses this assumption by restating it as an objective for the Administrator to satisfy.
P.ACCACT	The **O.AUDITS** objective implements this policy by requiring auditing of all data accesses and use of TOE functions. The **OE.TIME** objective supports this policy by providing a time stamp for insertion into the audit records. The **O.TOE_ACCESS** objective supports this objective by ensuring each user is identified and authenticated.
P.ACCESS	**O.MANAGE** defines the access privileges to the data for the supported roles. **O.TOE_ACCESS** requires the TOE to control access based upon the user's role. **OE.WINDOWSACCESS** requires Windows to restrict access to Orion Server functionality via Windows applications to users authorized to invoke TOE functionality.
P.ANALYZ	**O.CONFIG** requires the TOE to be able to compare configuration files for managed elements to detect unexpected changes. **O.MONITOR** requires the TOE to analyze information collected from the managed elements to detect conditions specified by administrators.
P.DBMONITOR	**OE.DBMONITOR** addresses this policy by restating it as an objective for the Administrator to satisfy.
P.DISCLOSURE	**OE.COMM** addresses the policy by requiring the environment to supply functionality to protect the communication between remote systems and TOE components. **OE.CRYPTO** addresses the policy by requiring the environment to provide cryptographic functionality in support of data protection protocols such as SSL. **OE.SSL** addresses the policy by requiring the environment to provide SSL as a data protection protocol.
P.HIGHAVAIL	**O.REDUNDANT** requires the TOE to support redundant configurations capable of providing full TOE functionality after failure of a single TOE component while maintaining a secure state.
P.INTGTY	**O.MANAGE** requires the TOE to define the required functionality, which also implicitly defines the lack of functionality for modification of collected data.

x.TYPE	Security Objectives Rationale
P.MANAGE	**O.TOE_ACCESS** requires the TOE to control access based upon the user's role, which requires the TOE to bind a role to each user's session. **OE.WINDOWSACCESS** requires Windows to restrict access to Orion Server functionality via Windows applications to users authorized to invoke TOE functionality.
P.PASSWORDS	**O.PASSWORDS** addresses this policy by requiring the TOE to provide functionality for Administrators, but not non-Administrators, to configure passwords.
T.INTERCEPT	**OE.CRYPTO** mitigates the threat by requiring the environment to provide cryptographic functionality in support of secure communication channels.
T.MASQUERADE	**O.TOE_ACCESS** mitigates this threat by controlling the logical access to the TOE and its resources. By constraining how and when authorized users can access the TOE this objective helps mitigate the possibility of a user attempting to login and masquerade as an authorized user. **OE.COMM** mitigates this threat by protecting sesnitive data from disclosure when it is transferred between remote systems and the TOE. **OE.WINDOWSACCESS** requires Windows to identify and authenticate users before they access Orion Server functionality via Windows applications.
T.TSF_COMPROMISE	**O.MANAGE** is necessary because an access control policy is not specified to control access to TSF data. This objective is used to dictate who is able to view and modify TSF data.
T.UNIDENT_ACTIONS	The **O.AUDITS** objective helps to mitigate this threat by recording actions for later review. The **O.AUDIT_REVIEW** objective helps to mitigate this threat by providing the Administrator with the ability to review the actions taken by administrators. The **OE.TIME** helps to mitigate this threat by ensuring that correct timestamps are available for audit records.

8.2 Security Requirements Rationale

8.2.1 Rationale for Security Functional Requirements of the TOE Objectives

This section provides rationale for the Security Functional Requirements demonstrating that the SFRs are suitable to address the security objectives.

The following table identifies for each TOE security objective, the SFR(s) that address it.

Table 21 - SFRs to Security Objectives Mapping

	O.AUDITS	O.AUDIT_REVIEW	O.CONFIG	O.MANAGE	O.MONITOR	O.PASSWORDS	O.REDUNDANT	O.TOE_ACCESS
FAU_GEN.1	X							
FAU_SAR.1		X						
FAU_SAR.2		X						

	O.AUDITS	O.AUDIT_REVIEW	O.CONFIG	O.MANAGE	O.MONITOR	O.PASSWORDS	O.REDUNDANT	O.TOE_ACCESS
FIA_ATD.1				X				X
FIA_UAU.2								X
FIA_UAU.7								X
FIA_UID.2								X
FIA_USB.1								X
FMT_MTD.1			X	X		X		
FMT_SMF.1				X				
FMT_SMR.1				X		X		
FNM_MDC.1			X		X			
FNM_ANL.1			X		X			
FNM_RCT.1					X			
FNM_RDR.1			X	X	X			
FNM_STG.1			X		X			
FNM_STG.2			X		X			
FPT_FLS.1							X	
FRU_FLT.2							X	
FTA_SSL.3								X

The following table provides the detail of TOE security objective(s).

Table 22 - Security Objectives to SFR Rationale

Security Objective	SFR and Rationale
O.AUDIT	**FAU_GEN.1** requires the TOE to generate audit log records for a specified set of security-relevant events.
O.AUDIT_REVIEW	**FAU_SAR.1** requires the TOE to provide authorized users with a mechanism to review audit logs. **FAU_SAR.2** requires the TOE to prevent unauthorized users from reading the audit logs.
O.CONFIG	**FMT_MTD.1(2)** defines the roles that may perform configuration management operations with the managed elements. **FNM_ANL.1** requires the TOE be able to compare configuration files for managed elements. **FNM_MDC.1** requires the TOE be able to upload, download, and compare configuration files for managed elements. **FNM_RDR.1(2)** requires that configuration file comparisons (analysis results) be able to be viewed in human readable form. **FNM_STG.1** requires the TOE to protect configuration files from modification or unauthorized deletion. **FNM_STG.2** defines the behavior of the TOE if space in the database is not available to save a configuration file.

Security Objective	SFR and Rationale
O.MANAGE	**FIA_ATD.1** define the security attributes that must be able to be managed for users of the TOE. **FMT_MTD.1** define the data access privileges associated with each role. **FMT_SMF.1** defines the specific security management functions to be supported. **FMT_SMR.1** defines the specific security roles to be supported. **FNM_RDR.1** requires the TOE to provide information collected from managed elements to be displayed in human readable form.
O.MONITOR	**FNM_MDC.1** requires the TOE be able to collect and save information about the managed elements **FNM_ANL.1** requires the TOE to be able to analyze the information collected about the managed elements. **FNM_RCT.1** requires the TOE be able to generate alerts upon detection of configured conditions concerning the managed elements. **FNM_RDR.1** requires that data collected about the managed elements and analysis results be able to be viewed in human readable form. **FNM_STG.1** requires the TOE to protect configuration files from modification or unauthorized deletion. **FNM_STG.2** defines the behavior of the TOE if space in the database is not available to save a configuration file.
O.PASSWORDS	**FMT_MTD.1(1)** defines the access privileges for Administrators and non-Administrators, stating that only Administrators may configure passwords. **FMT_SMR.1** defines the specific security roles to be supported.
O.REDUNDANT	**FRU_FLT.2** requires the TOE to continue to provide full functionality in the event of failure of a single TOE component. **FPT_FLS.1** requires the TOE to maintain a secure state when a TOE component failure occurs.
O.TOE_ACCESS	**FIA_ATD.1** defines the attributes of users, including a userid that is used by the TOE to determine a user's identity and enforce what type of access the user has to the TOE (e.g., the TOE associates a userid with a role). **FIA_UID.2** requires that a user be identified to the TOE in order to access TOE functionality or data. **FIA_UAU.2** requires that a user of the Orion Web Console be authenticated by the TOE before accessing TOE functionality or data. **FIA_UAU.7** provides that the authentication data provided by the user is not echoed back in plaintext, thus serving to protect that data. **FIA_USB.1** defines the attributes that are bound to user sessions for the access mechanisms provided by the TOE. **FTA_SSL.3** requires the TOE to automatically terminate user sessions that are inactive, which protects against unauthorized users gaining access via a "forgotten" session.

8.2.2 Security Assurance Requirements Rationale

The TOE stresses assurance through vendor actions that are within the bounds of current best commercial practice. The TOE provides, primarily via review of vendor-supplied evidence, independent confirmation that these actions have been competently performed.

The general level of assurance for the TOE is:

A) Consistent with current best commercial practice for IT development and provides a product that is competitive against non-evaluated products with respect to functionality, performance, cost, and time-to-market.

B) The TOE assurance also meets current constraints on widespread acceptance, by expressing its claims against EAL2 from part 3 of the Common Criteria.