

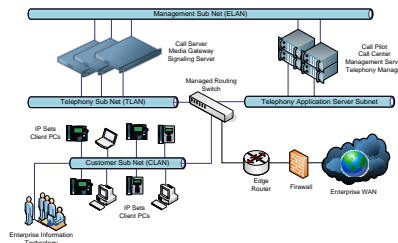
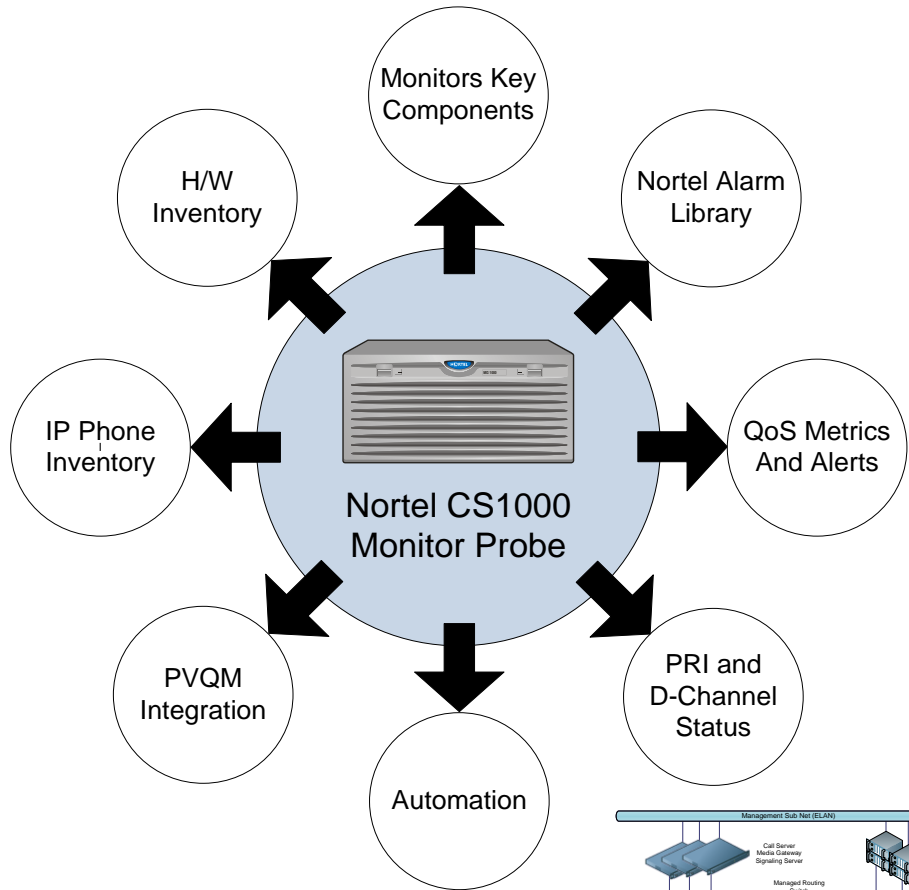


Nortel CS1000 Monitor Probe

A Teltronics iSLM IPT Monitoring Solution



Nortel CS1000 Monitor Probe

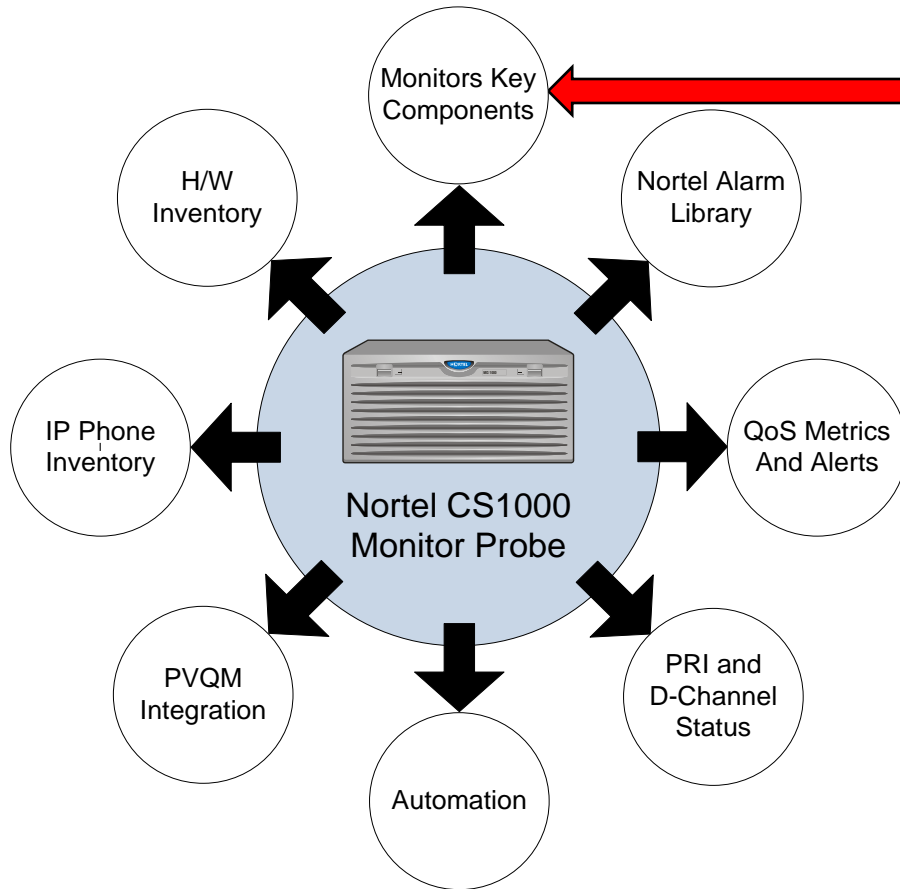


The Nortel CS1000 Monitor probe is a comprehensive monitoring solution that extends traditional monitoring capabilities to include overall system performance based on measurable service level objectives.

The probe integrates with the iSLM product suite to support Nortel alarm processing, QoS metric collection and alarm checkpoints. It has additional automation and information gathering that will improve the mean time to repair. The probe has a database and dashboard wizard that supports collection and publishing of key system information and device status using the iSLM web publishing application.



Nortel CS1000 Monitor Probe



The Nortel CS1000 Monitor probe includes monitoring support for:

- The Call Server
- Signaling Servers
- Media Gateway Controllers
- Voice Gateway Media Controllers
- Network Routing Servers

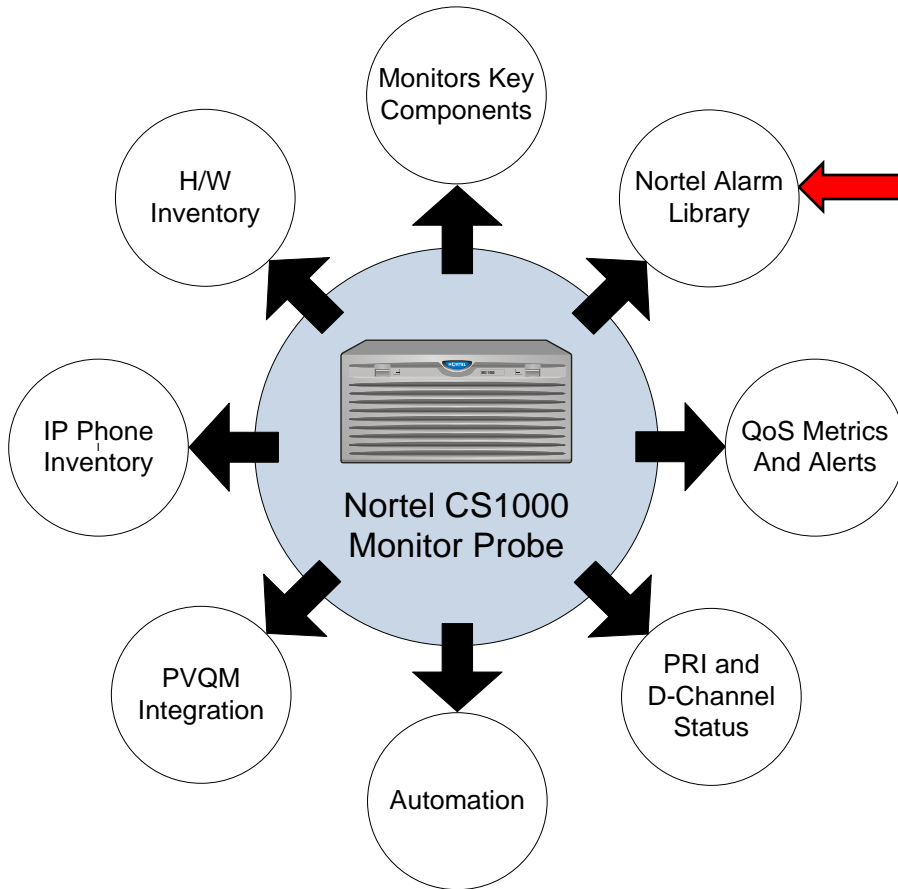
The probe is Agentless and can monitor up to ten CS1000 systems (assumes network accessibility)

The probe can be hosted on a Windows or Linux server

The probe is licensed on a per Call Server basis, and includes a discounted branch office license.



Nortel CS1000 Monitor Probe



The Nortel CS1000 Monitor probe supports the full System Message Library for versions 4.0 through 5.5

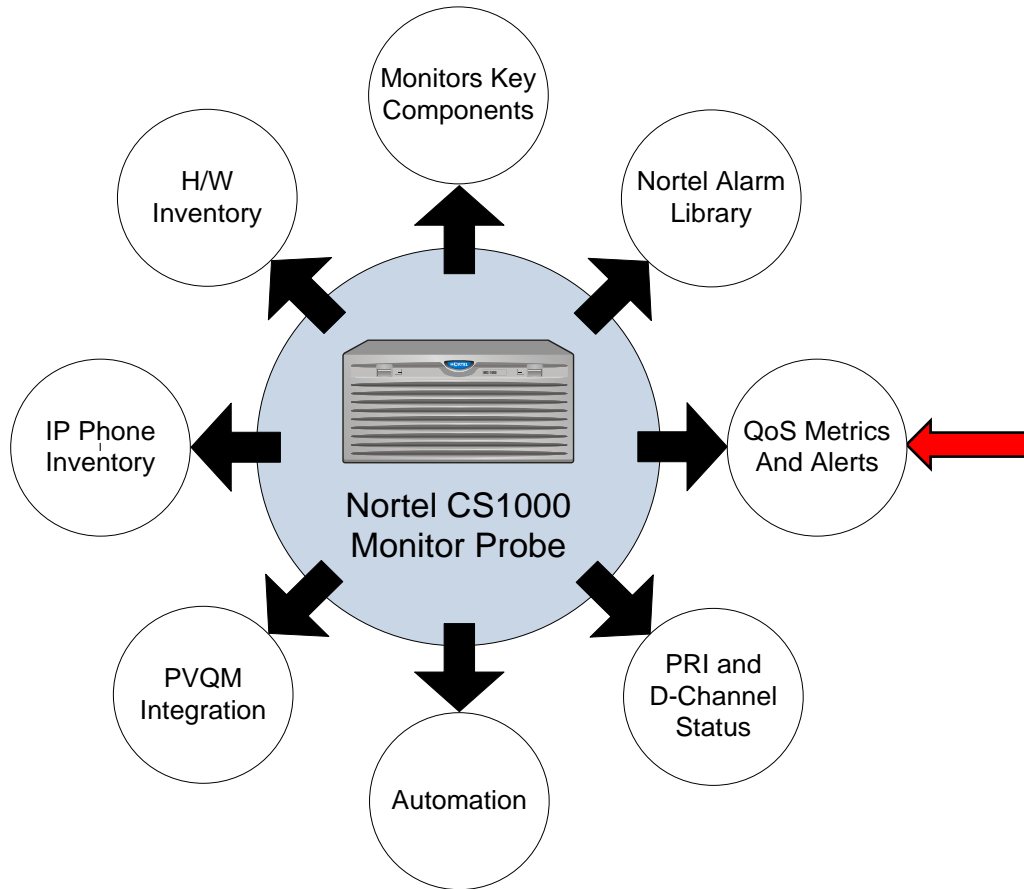
The built-in library includes over 15,000 system messages that include:

- System Message code
- Description
- Nortel Severity
- Corrective action (25% coverage)
- Nortel Critical to Monitor Indicator

- Alarm processing for all Nortel SNMP trap versions
- User defined filter and alarm format



Nortel CS1000 Monitor Probe



The Nortel CS1000 Monitor probe supports QoS metrics for:

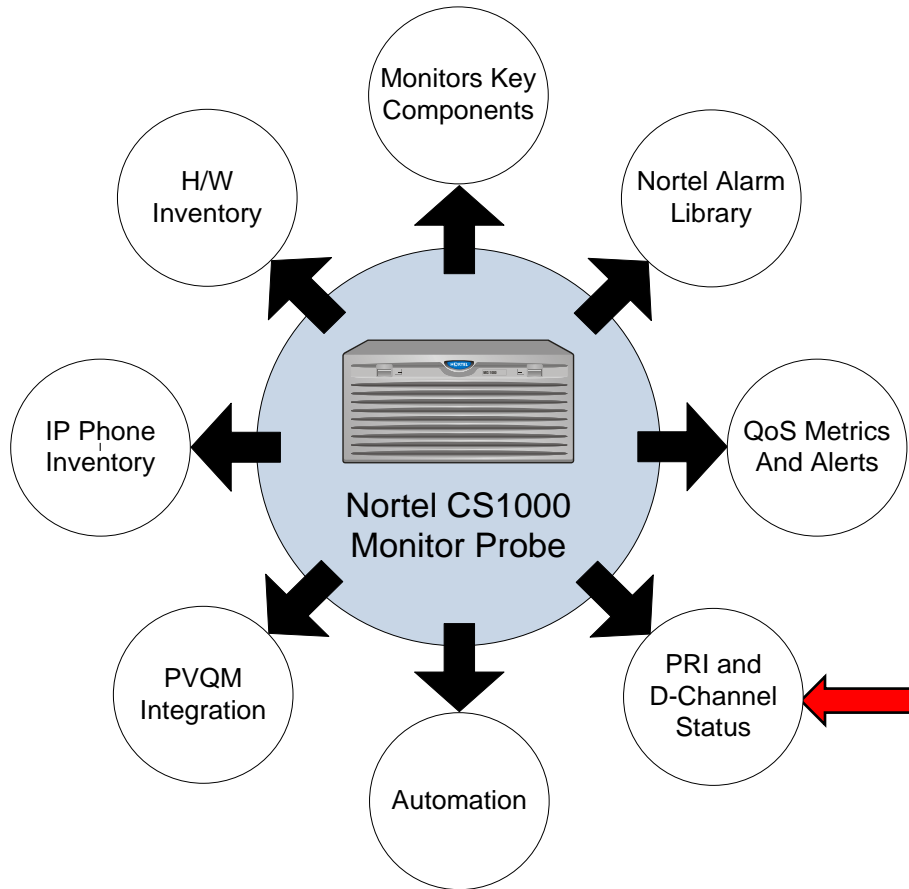
- CPU Utilization
- Disk Utilization
- Memory Utilization
- Processes Running
- Network Interface Traffic
- System Message Volume

All metrics include the ability to set checkpoints for immediate alarm notification.





Nortel CS1000 Monitor Probe

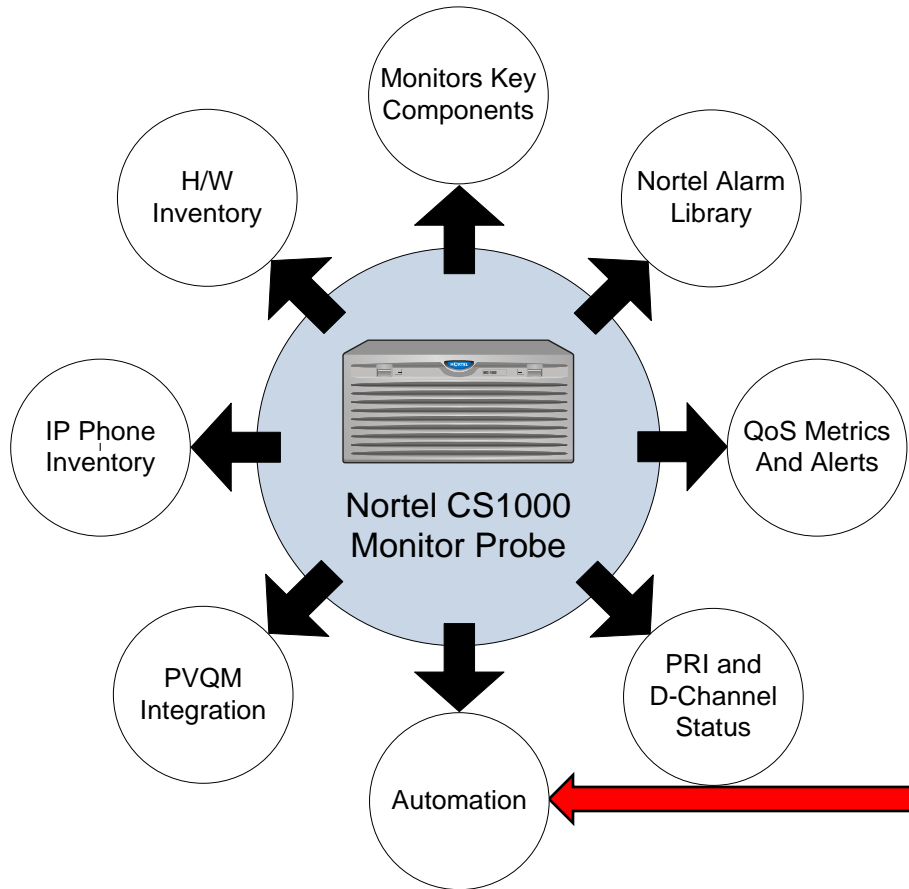


The Nortel CS1000 Monitor probe supports PRI and D-Channel Status:

The probe interacts with the Signaling Server command line interface to extract current PRI and D-Channel status. Data is sent downstream and stored in a SQL database. The status detail is presented using a dashboard accessible through a standard web browser.



Nortel CS1000 Monitor Probe



The Nortel CS1000 Monitor probe supports Event Driven Automation:

DTA Detect and Clear:

Looks for specific DTA events followed by matching clear events within a defined time window. Event notification based on event sequences received. Looks for rapid up/down/up conditions. Logs in to confirm normal operation reporting actual status

Clear T1 Counters:

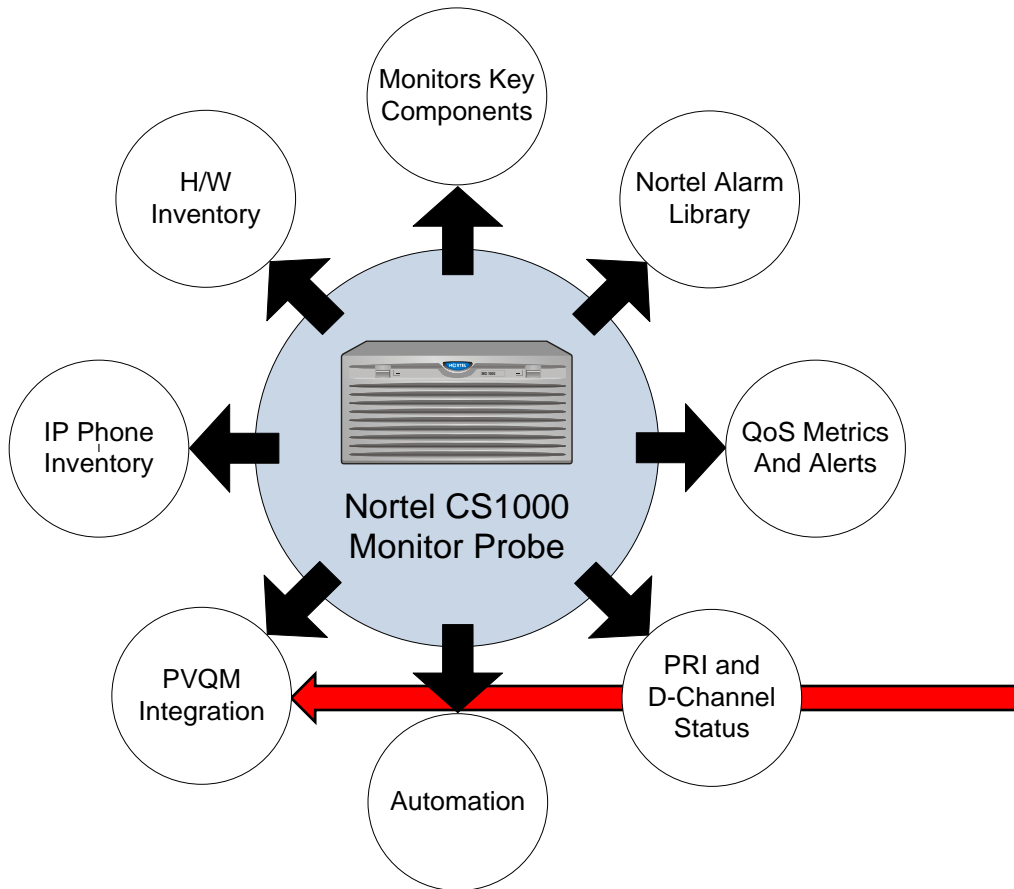
Detects events and will login and attempt to clear a problem and associated counters, reporting the results.

Enable I/O Devices:

Detects a faulty I/O device and attempts to re-enable it, reporting the results.



Nortel CS1000 Monitor Probe



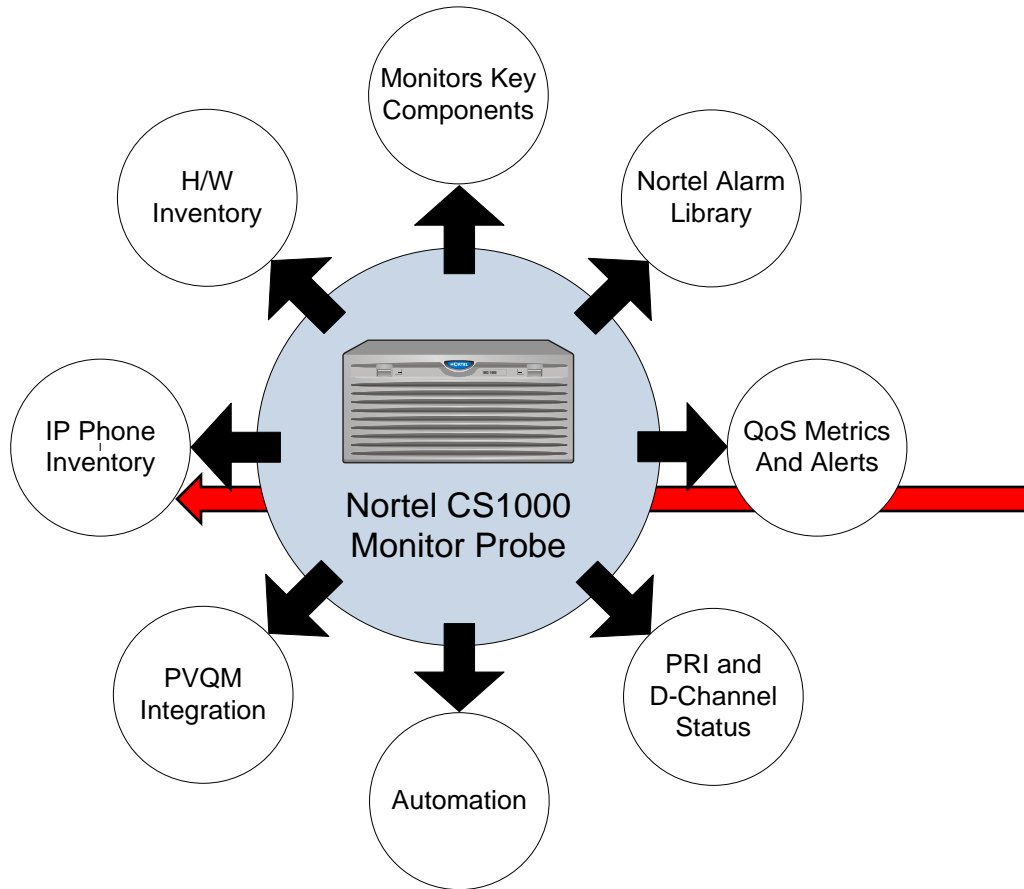
The Nortel CS1000 Monitor probe supports PVQM Integration:

The Nortel PVQM option provides VoIP quality of service summary details. The probe extracts QoS metrics from the PVQM SNMP MIB and converts them to iSLM QoS metrics. Voice Quality alarms are included in the Nortel System Message Library.

| <input checked="" type="checkbox"/> Quality of Service (QoS) | | |
|--|-------------------------------------|-------------------------------------|
| QoS Interval (hours): | Intra Zone | Inter Zone |
| Number of Successful Calls | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Number of Blocked Calls | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Average Bandwidth Usage % | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Peak Bandwidth Usage % | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Number of Bandwidth Usage Threshold Violations | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Number of Measuring Interval samples | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Number of Warning R-Factor occurrences | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Number of Warning Latency occurrences | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Number of Warning Packet Loss occurrences | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Number of Warning Jitter occurrences | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Number of Warning Echo Return Loss occurrences | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Number of Unacceptable R-Factor occurrences | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Number of Unacceptable Latency occurrences | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Number of Unacceptable Packet Loss occurrences | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Number of Unacceptable Jitter occurrences | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Number of Unacceptable Echo Return Loss occurrences | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |



Nortel CS1000 Monitor Probe



The Nortel CS1000 Monitor probe supports IP Phone Inventory:

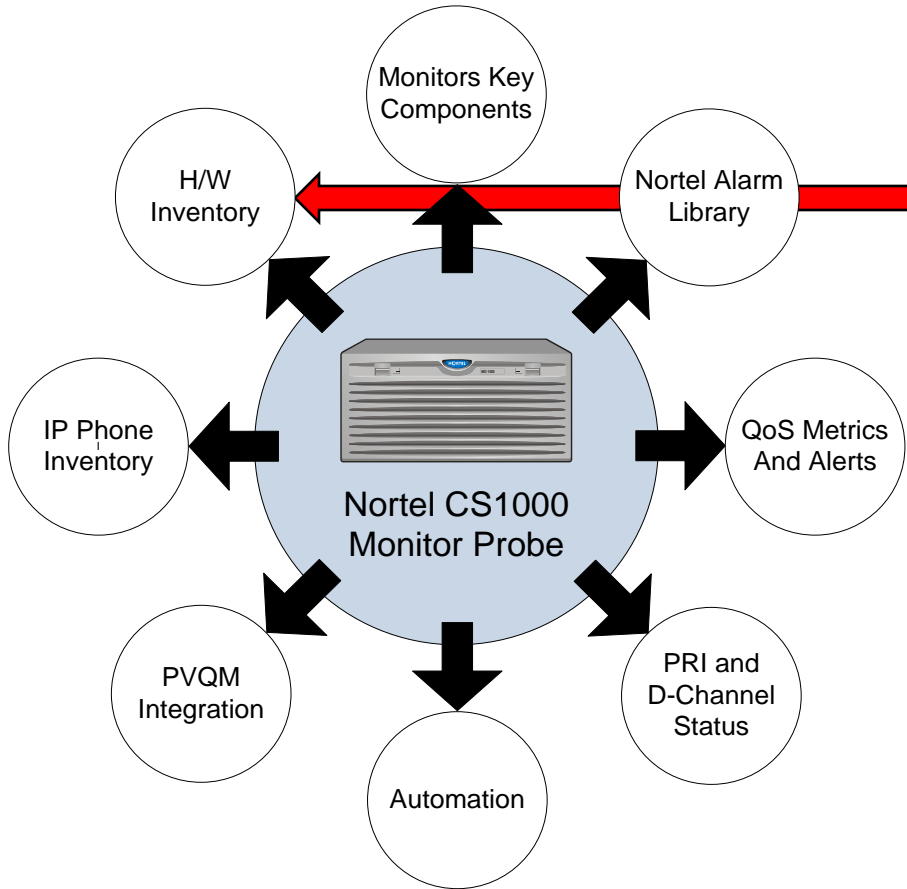
Signaling Servers are consulted and IP Phone inventory is collected and sent to a SQL database. The IP telephone inventory details are presented using a dashboard accessible through a standard web browser.

| Phone Inventory Details Include | |
|---------------------------------|-------------------|
| DN | Registration Type |
| User Name | Phone State |
| Phone Type | Zone |
| IP Address | Uptime |
| Location | Availability |
| DES | Model |
| TN | Hardware ID (MAC) |
| Signaling Server | Firmware Version |





Nortel CS1000 Monitor Probe



The Nortel CS1000 Monitor probe supports Hardware and Software Inventory:

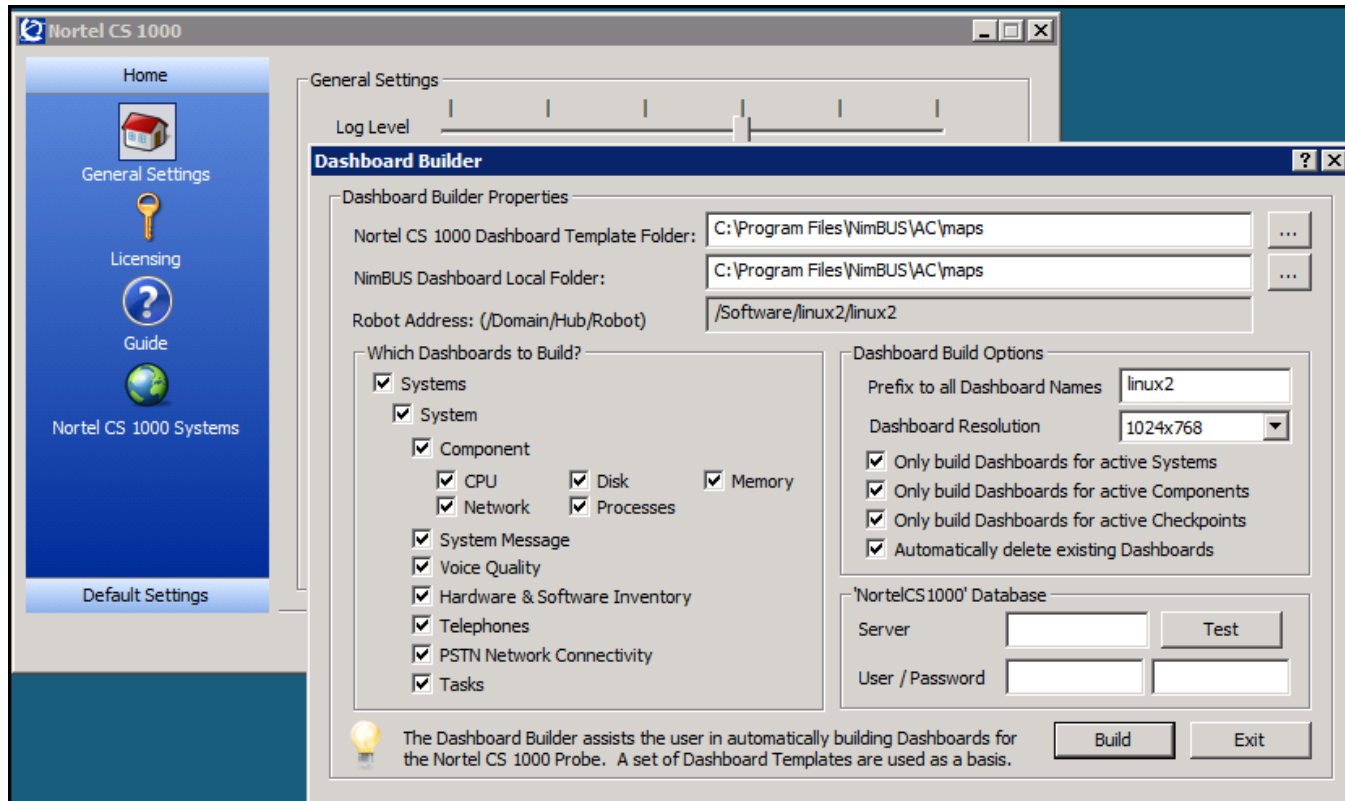
System components are consulted using the command line interface to retrieve useful hardware and software information. Inventory information is collected and sent to a SQL database. The hardware and software inventory details are presented using a dashboard accessible through a standard web browser.

| Software Inventory | Hardware Inventory |
|--------------------|--------------------|
| In-service PEPs | Description |
| PRS/CR | Name |
| Reference | Class |
| Name | Manufacturer |
| Filename | H/W revision |
| SpecIns | S/W revision |
| Dependency List | Firmware revision |
| MDP | Serial Number |



CS1000 Dashboards

The Nortel CS1000 probe includes a built in dashboard builder that utilizes CS1000 specific dashboard templates that are included with the probe. Once a system is configured and operational a user can build selected dashboards using the dashboard GUI (shown below). Once the dashboards are built they are easily published for viewing and use.





Dashboard Examples

The screenshot displays two overlapping browser windows of the NimBUS Dashboard Viewer. The primary window shows a dashboard for 'Sarasota - SS' with the following components:

- Component Panel:** A vertical sidebar on the left with a traffic light icon and categories for 'CPU, Disk and Memory' and 'Other'. It includes icons for a CPU chip and a refresh cycle.
- CPU Section:** A circular gauge for 'Current CPU Usage' (0-100%), 'System Details' (Number of Processors: 1), and two line graphs for '% CPU Used (Last 7 days)' and '% CPU Used (Last month)'. A 'CPU' label is oriented vertically.
- Network Interface Section:** A vertical sidebar on the left with a network icon and the label 'Network Interface'. It includes a table for 'Interface Details' for the 'fei0' interface, a 'Status' indicator (lightbulb icon), and an 'Events' icon (speaker icon).
- Network Performance Graphs:** Three line graphs showing '% Utilization (IN - Blue, OUT - Green, BOTH - Red)' for the last 24 hours, and three bar graphs for 'Processed Packets (Last 24 hours)', 'Error Packets (Last 24 hours)', and 'Discarded Packets (Last 24 hours)'. All graphs show data from 18:00 to 12:00.

Here are some sample dashboards from an active CS1000 system. They are designed to show comprehensive details about the monitored devices.



Dashboard Examples

Sarasota

System Name: Sarasota System Messages Monitored: Yes
System Version: v5.5 Voice Quality Monitored: No
Probe Start Time: 2009/03/10 08:04:27 Number of Components: 5

System

Call Server **Network Routing Service(s)** **Media Gateway Controller(s)**

Signaling Server(s)

Other

System Messages Voice Quality HW & SW Inventory Telephones Task

Alarm List Window (Filtered List)

| Host Name | Source | Message |
|---------------|---------------|--|
| 192.168.21.40 | 192.168.21.40 | Sarasota - CS : The Outbound processed packets on interfac |
| 192.168.21.40 | 192.168.21.40 | Sara |
| 192.168.21.40 | 192.168.21.40 | Sara |
| 192.168.21.40 | 192.168.21.40 | Sara |
| 192.168.21.53 | 192.168.21.53 | Sara |
| 192.168.21.52 | 192.168.21.52 | Sara |
| 192.168.21.52 | 192.168.21.52 | Sara |
| 192.168.21.52 | 192.168.21.52 | Sara |
| 192.168.21.53 | 192.168.21.53 | Sara |
| 192.168.21.40 | 192.168.21.40 | Sara |
| 192.168.21.53 | 192.168.21.53 | Sara |
| 192.168.21.40 | 192.168.21.40 | Sara |
| 192.168.21.40 | 192.168.21.40 | Sara |
| 192.168.21.40 | 192.168.21.40 | Sara |

Alarm Details

ID: OY38530487-01810 Host Name: 192.168.21.40
Source: 192.168.21.40 Probe: nortel_cs1000
Domain: Software Robot: linux2
Nas: islm Hub: linux2
Subsystem: Network (1.1.3)

Message: Severity: Major

Sarasota - CS : The Inbound processed packets on interface 'fei0' is (13 Pkts/s), which is above the error threshold (10 Pkts/s).

Supp.Key: /Software/linux2/linux2/nortel_cs1000/Sa... Count: 67

Time Received: Mar 31 2009 17:35:00
Time Origin: Mar 31 2009 16:22:46
Time Arrival: Mar 31 2009 16:29:01

Origin: linux2
User Tag 1: User Tag 2:

Buttons: Accept, Assign..., Unassign, Acknowledge, History, Notes, Previous, Next, Help

CS1000 dashboards provide drilldown functionality that includes access to alarm details and alarm history as well as individual component status pages.



TELTRONICS

Ideas that Communicate



Service Level Reporting

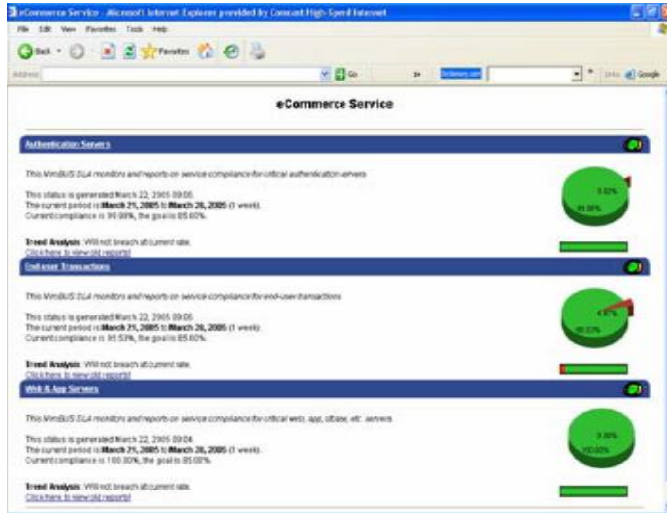
Service Level Agreements (SLAs) can be defined that utilize QoS metrics collected from CS1000 components. Once defined, the performance of an SLA is monitored by the iSLM application and notifications are provided if a SLA breach is eminent or if a breach has occurred. SLA and QoS reports can also be published in addition to CS1000 dashboards.

The SLA report examples on the next slide demonstrates the drill down capabilities of the SLA reports. They provide a high-level summary that supports several layers of detail down to the individual metric that may be causing the SLA to be out of compliance.

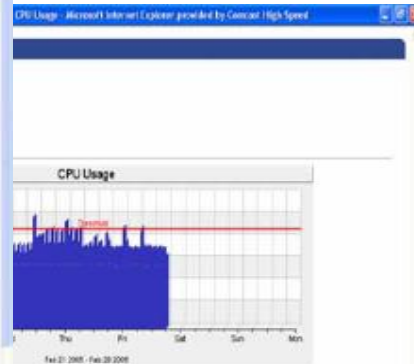


Service Level Reporting

Grouped SLAs with Real-time Compliance Indicators



Drill down to see grouped SLOs with Real-time Compliance Indicators

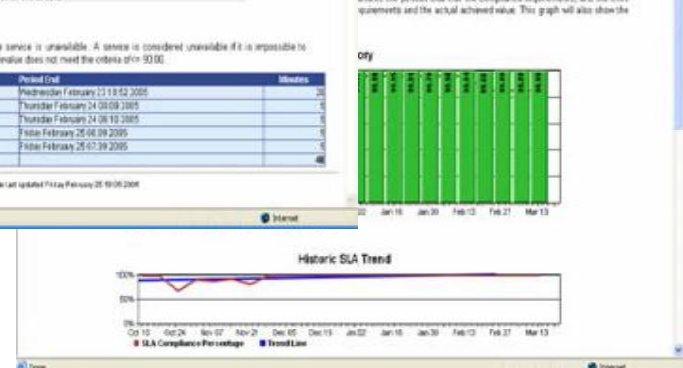


| Server | Description | Weight (%) | Achieved (%) | Expected SLA |
|--------------------|--|------------|--------------|--------------|
| Web Server | This SLO monitors the Web Server performance and availability to ensure it does not compromise the eCommerce Service SLA. All functional subsystems of this web server that could potentially degrade the application will be monitored. | auto | 91.93 | 95.00 |
| Database Server | This SLO monitors the Database Server performance and availability to ensure it does not compromise the eCommerce Service SLA. All functional subsystems of this database server that could potentially degrade the application will be monitored. | auto | 91.72 | 95.00 |
| Web Access Server | This SLO monitors the Web Access Server performance and availability to ensure it does not compromise the eCommerce Service SLA. All functional subsystems of this web access server that could potentially degrade the application will be monitored. | auto | 91.58 | 95.00 |
| Application Server | This SLO monitors the Application Server performance and availability to ensure it does not compromise the eCommerce Service SLA. All functional subsystems of this application server that could potentially degrade the application will be monitored. | auto | 91.58 | 95.00 |

Drill down on SLOs to see performance trends and constraint violations

| Period Start | Period End | Minutes |
|----------------------------------|----------------------------------|---------|
| Wednesday February 23 19:32 2005 | Wednesday February 23 19:52 2005 | 20 |
| Thursday February 24 00:04 2005 | Thursday February 24 00:09 2005 | 5 |
| Thursday February 24 00:05 2005 | Thursday February 24 00:10 2005 | 5 |
| Friday February 25 00:34 2005 | Friday February 25 00:39 2005 | 5 |
| Friday February 25 01:34 2005 | Friday February 25 01:39 2005 | 5 |

Select the SLA 'History' tab to view past SLA compliance performance





Thank you.