

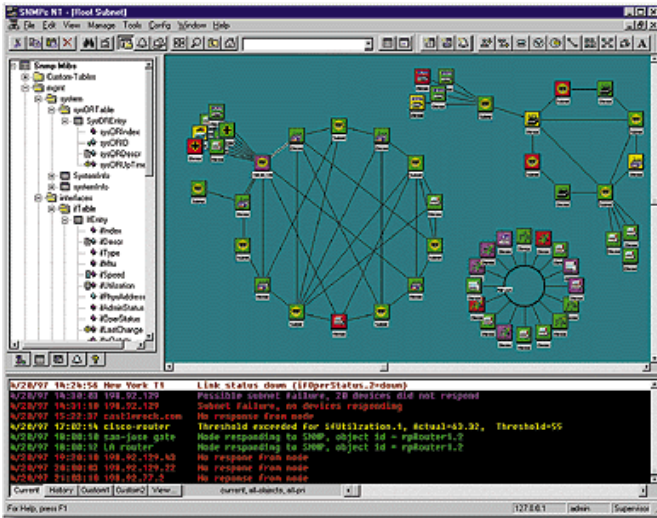
SNMPc NT- Distributed Network Management

White Paper

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Overview

With standalone management platforms, the user interface and all databases and polling engines reside on a single computer. This paradigm is useful for small networks with a single operator, but is not scaleable to larger networks because of the following problems:

A single computer cannot handle management of large networks

Polling over WAN links wastes expensive and limited bandwidth

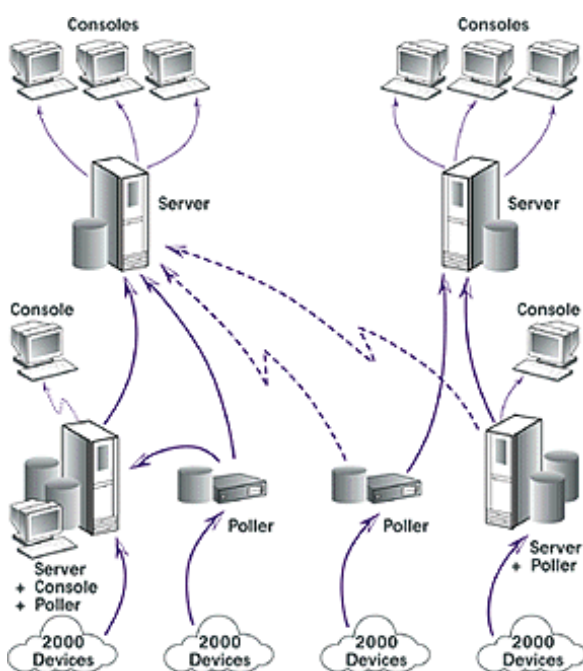
Multiple operators have to share the same console.

SNMPC NT resolves these issues using a scaleable distributed architecture. SNMPC NT employs multiple components running on different computers, and uses the latest Distributed Database technology to provide a high performance platform regardless of the size or configuration of your network. SNMPC NT components provide different management services. Servers maintain SNMP MIB, map, and event log databases, execute event programs, and generate scheduled reports.

Polling Agents discover local network devices and topology, poll device status, poll and save historical statistics, generate automatic and manual threshold alarms, and forward event and topology data to one or more Servers.

Consoles provide the user interface for a single Server and multiple Polling Agents. You can use the Console to display the Server Map and Event Log databases and to configure all aspects of the Server and its related Polling Agents.

Besides its distributed architecture, SNMPC NT incorporates a wide variety of advanced management features. These features include real time tabular and graphical displays, data export, event action filters, MIB import, device specific GUIs, RMON support, custom menus, pager notification, and a variety of programming interfaces.



Distributed Architecture

Distributed Discovery

Polling Agents perform discovery of locally attached network devices. Each Polling Agent uses discovery filters, based on IP or IPX addresses and device types, to limit the scope of the discovered topology. The discovery algorithm determines the device type, its network attachments, and supported protocols, including IP, IPX, SNMP, Telnet, and HTTP (WEB). Polling Agents use a variety of methods to discover devices, including SNMP request broadcasts, IPX RIP, ARP, and routing table lookups, and sequential address sweeps.

Multiple Polling forward topology data about newly discovered devices to one or more Servers, which automatically create and update a map database. By placing Polling Agents at each remote site the traffic associated with discovery does not waste expensive or limited WAN bandwidth.

Distributed Polling

Each Polling Agent is responsible for monitoring the discovered devices using ICMP, IPX Configuration, and SNMP requests. Polling Agents maintain the status of each device monitor alarm thresholds. Polling Agents also save long term MIB statistics in a local database. Status changes and alarms are forwarded to SNMPc NT Servers and to other management platforms. As with discovery, the use of multiple pollers limits WAN link usage and lowers the processing requirements of Server computers.

Multiple Login Consoles

You can run the SNMPc NT console application from any Windows NT workstation using a local or remote TCP/IP connection. You can run several consoles logged into different SNMPc NT servers from the same computer or multiple consoles on different computers all logged into the same server. Each console can have complete read-write access, independent of other console sessions.

SNMPc NT Scalability

Workgroup Management

In a Workgroup environment several operators manage a small number of devices on a LAN. To support this environment you can install a single Polling Agent and Server on one computer. You can install several consoles on different workstations (including on the server or polling station) to provide access for each operator.

If your workgroup has a larger than average number of devices you can use additional Polling Agents on multiple computers to spread the workload. You can also use Consoles from WAN connected workstations to access the Server from home or a satellite office.

In this configuration the management domain spans a larger area and includes one or more WAN connected subnetworks. There are no operators at the remote sites but local polling at these sites will cut down on WAN data transfers. Each remote site uses one or more Polling Agents to discover and monitor devices local to that site. The central site uses one Server and multiple Consoles.

Multiple Management Domains with Centralized Oversight

This scenario is like the last one, but in this case there are operators at each remote site who need to manage their local devices. Each remote site has one or more Polling Agents, one Server, and multiple Consoles. Each Polling Agent reports topology and event data to both the local and centralized Server. Each local poller also saves historical data that you can view from a local Console or from Consoles logged into to the central Server.

Because the central Server gets topology and statistics from all Polling Agents, it has a more global view of the network and can correlate traffic patterns and events across the entire network.

Multiple Overlapping Management Domains

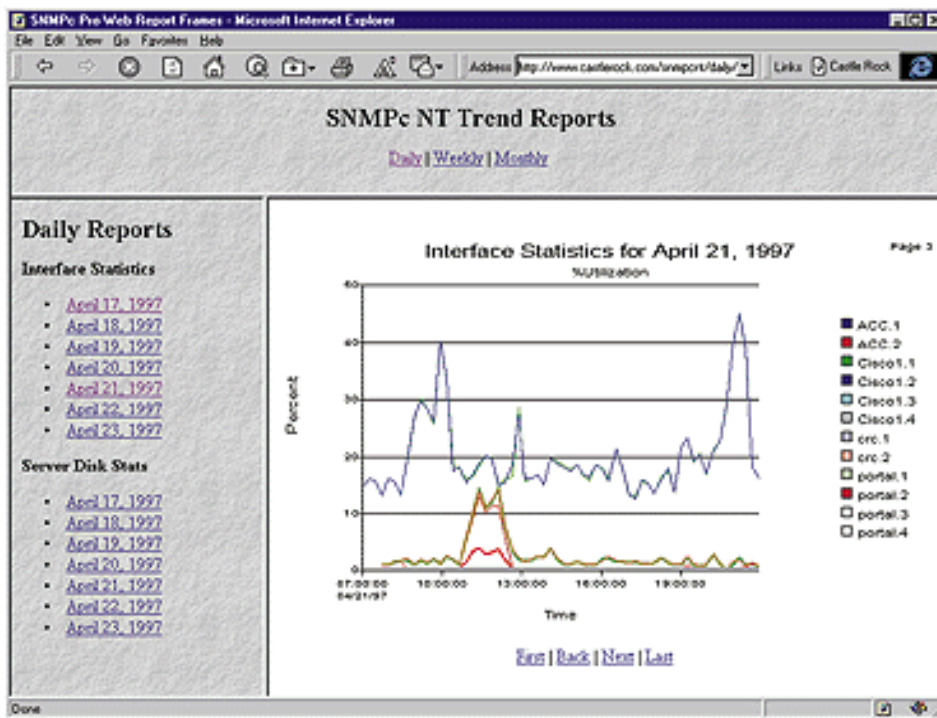
Since each SNMPc NT Polling Agent supports several Servers, you can easily extend the above configurations to support centralized oversight by several management Servers. Each Server can manage the entire network or overlapping network domains. In a loosely coupled set of Workgroup configurations each Workgroup Server could also manage a subset of the devices managed by other Workgroups.

Trend Reporting

Scheduled Printed and WEB Reports

SNMPc NT automatically generates scheduled daily, weekly, and monthly statistic reports. Report formats include graph, bar chart, distribution, and summary, and can be exported to a variety of destinations, including printers, files, or a WEB server.

SNMPc NT report setup is very simple. After selecting a group of nodes and a MIB profile, then the reporting style, destination, and schedule, SNMPc NT automatically programs all remote polling agents. You can use the included TrendView application or a WEB browser to view reports from any workstation.



Trend Analysis

Saving long term statistics is of little use if the result is mountains of data to peruse. SNMPc NT helps you find interesting traffic patterns before they become problems.

SNMPc NT can search for the top set of variables polled by a variety of criteria, including greatest rate of increase, greatest value, and greatest deviation from baseline. Using searches in scheduled reports shows the problem areas in your network, before polling

generates threshold alarms.

Automatic Alarms

Once history polling is setup, Polling Agents monitor all variables for a learning period and calculate a baseline for typical patterns during each hour of a week. Thereafter, the Polling Agents compare the actual polled data to the baseline and generate alarms when variables deviate excessively from the baseline. Polling Agents automatically adjust baselines as traffic patterns change. You can also manually configure alarm thresholds for any polled variable.

Real-time MIB Displays

SNMPc NT supports real-time displays of MIB variable data in tabular or graphical format. Table or graph displays can include multiple devices and variables from different standard and private MIBs, including derived expressions such as Utilization, Volume, and Percent Errors. You can select any variable cells, table rows or columns, for graphical display. You can modify and set any MIB variable directly from Table display using "in-place" editing.



The Graph Display shows data as a line graph, pie chart, bar chart, or distribution. The Graph display also shows the minimum, maximum, and average values for each variable

Event Management

SNMPc NT changes the color of map objects and performs other actions based on received events. Event Action Filters select the action to take when an event occurs. SNMPc NT can ignore or log an event, set the event priority, forward the event to other managers as an SNMP Trap, display a Alarm dialog box, or execute an application program. Event Filters can limit the number of similar event generated within a period of time, or completely ignore duplicate events.

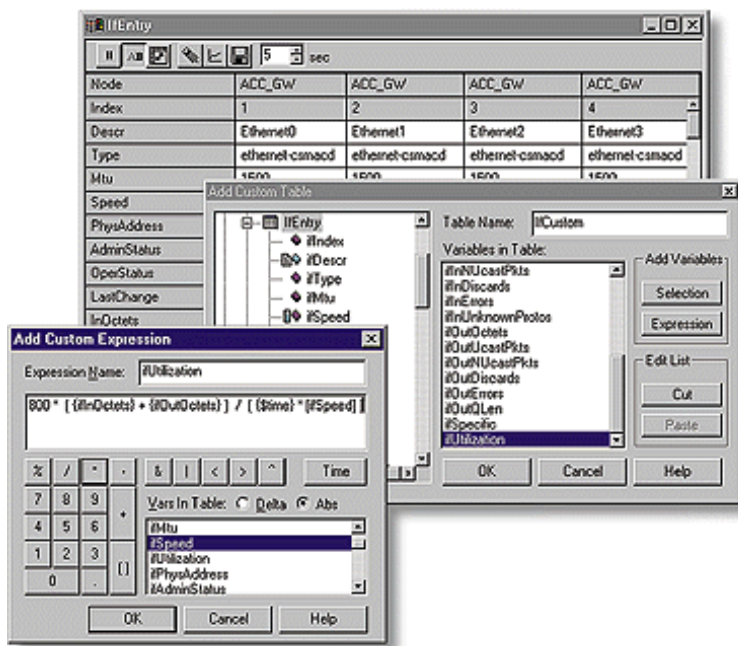
You can view events using the Log Tool Window. Each log view shows current or historical events for one or more devices and event priorities.

Customization

MIB Expressions

The most common request from our customers is to report network utilization as a percent of bandwidth. Monitoring utilization makes it easy to see when you need to upgrade WAN links, for instance. Other interesting information includes errors as a percent of total packets and total network volume. SNMPc NT supports these derived data types with MIB Expressions.

You can use any of the predefined MIB Expressions, or create your own, to automatically view interesting information in a format you can understand. You can add MIB expressions MIB source files, or create them dynamically with the MIB Expression Calculator.



MIB Compiler

The built-in MIB compiler accepts any MIB in ASN.1 format. Many standard and Enterprise Specific MIBs are preinstalled and ready to use. Once compiled, you can use MIB definitions with any SNMPc NT MIB functions, including the table or graph displays and long term statistics polling.

Custom Tables

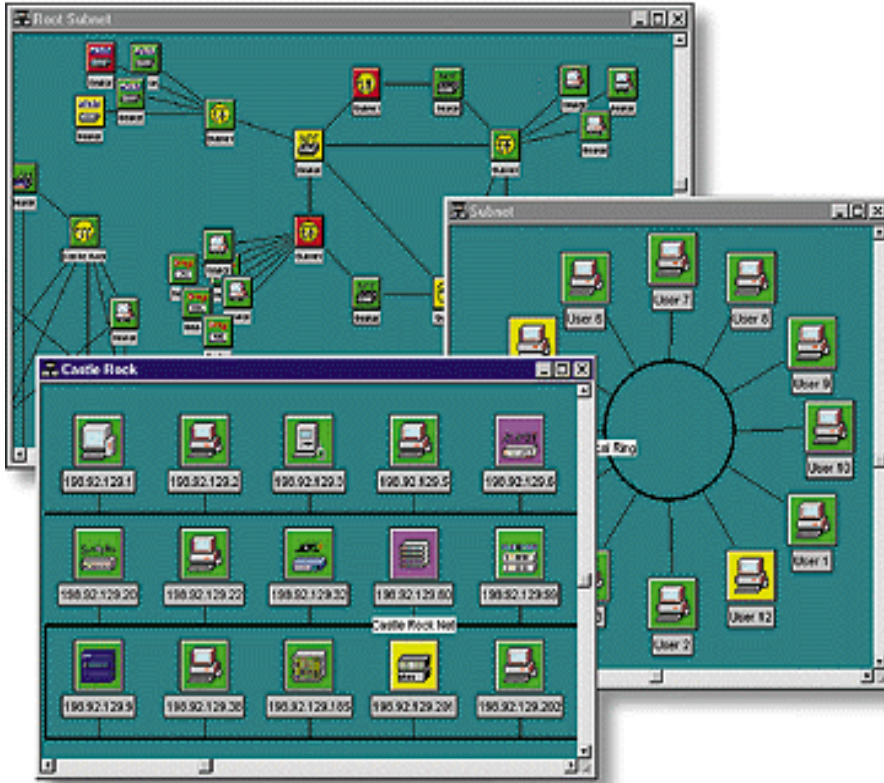
You can dynamically create custom tables using the MIB navigation tool window. Custom tables can be subsets of existing MIB tables, or can include variables from tables in different MIBs. You can use MIB Expressions to include derived data types such as Utilization, Volume, and Percent Errors.

Custom Menus

User defined custom menus directly perform SNMPc NT commands without having to select MIB objects. Custom menus can display a MIB table; edit, graph or chart any set of MIB variables; set an SNMP MIB variable; or run an application program. SNMPc NT automatically enables or disables Custom Menus depending on the protocol attributes supported by the selected objects.

Advanced Network Mapping

SNMPc NT supports a multi-level hierarchical map. Each hierarchy can represent cities, buildings, or subnetworks. Imported bitmaps of geographic maps or floor plans, along with manual or automatic network placement, lets you create a layout that closely matches the actual network.



SNMPc NT can automatically lay out each map network as a tree, ring, or snaked bus topology. Each map object uses a device specific or user selected icon, and the object color indicates the device status. You can start any device specific application by double clicking map icons.

The Map Navigation Tool Window displays the map as a tree for direct selection of objects. The Navigation tree also displays the worst status of each subnet to quickly locate failing devices.

The map window Full Zoom feature automatically moves and zooms the view so that all devices are always visible in the window. The Pan/Zoom

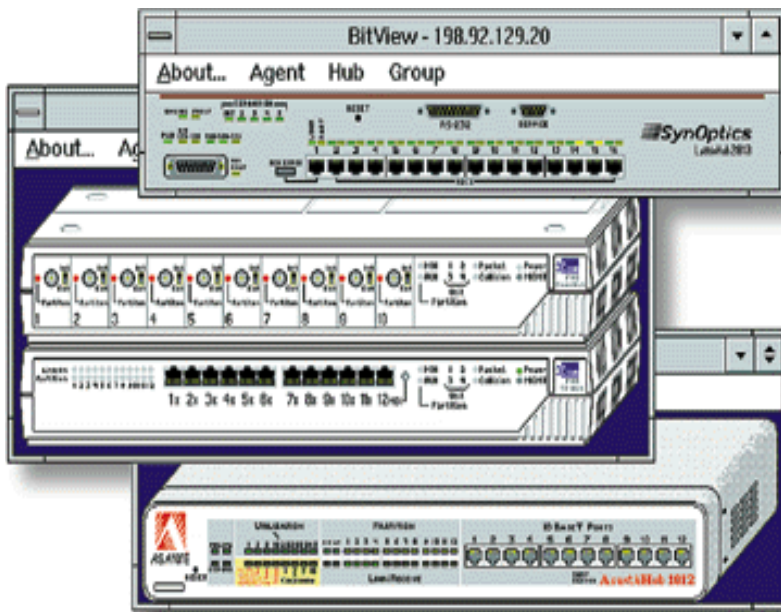
feature lets you select a region to zoom into from the complete set of devices in a view.

Applications

Multi-Vendor Graphical Device Views

The HubView and BitView scripting applications display a graphical image for multi-slot routers, bridges and hubs. HubView and BitView display ports using different icon types, and LEDs show port activity and status. Device specific custom menus and mouse commands perform SNMPc NT commands on the currently selected slot or port, or other graphical element.

SNMPc NT includes device scripts for all devices that conform to standard MIBs and for dozens of private MIB devices, including Cisco, Bay, and 3com devices. You can easily develop HubView or BitView scripts to graphically manage any SNMP device.



MIB Browser

SNMPc NT includes a general purpose MIB browser for displaying and setting individual MIB variables. The MIB Browser can also read all variables supported by a device and export the variable names and values to a file.

RMON User Interface

SNMPc NT includes complete support for any RMON-I compliant probe. You can configure all aspects of a probe. You can download Histories and view them as graphs, pies, or charts. The Matrix program shows Host conversations in a matrix graph. High level packet capture filters use protocol or application type and source or

destination addresses. SNMPc NT saves captured packets to disk in industry standard formats.

Support Applications

SNMPc NT includes Tftp server and client applications, and a Bootp server application, to aid in downloading IP addresses and executable images into devices. SNMPc NT also includes a copy of the Notify!Connect pager notification application from ExMachina. Notify!Connect works with any numeric or alphanumeric pager to immediately alert you when important events occur.

Programming

SNMPc NT Programming Interface

The SNMPc NT architecture uses a simple DLL based API that provides complete distributed management capabilities to any application. This API has a small number of common functions that operate on instances of object classes. Each object has a set of attributes that you can read and modify.

Object classes map onto functional groups, including Session, Map, Log, SNMP, MIB, Event Filter, Custom Menus, and others. Classes also exist for creating high level objects such as map views, log views, MIB tables, and MIB graphs.

You can easily create programs that run as Polling Agent, Server, or Console components.

WinSNMP Programming Interface

SNMPc NT supports the WinSNMP de-facto standard API for SNMP based programming under Windows. SNMPc NT includes a runtime DLL and trap receiving program, as well as the include files, libraries and documentation required to develop WinSNMP applications.

DDE Programming Interface

SNMPc NT also supports the SNMPc 4.0 Windows DDE based API. You can use this API from Visual Basic programs and from many standard Windows programs such as Microsoft Excel. Commands can query the Map and Mib databases, perform low-level MIB operations, download MIB tables, and execute SNMPc NT commands. HubView and BitView were both developed using the DDE API. Many SNMPc 4.0 OEMs and resellers have also developed DDE based applications for SNMPc 4.0 that will run under SNMPc NT.

Solution Costing

Option 1	1 Unit	2-4 Units	5+ units
SNMPc NT Distributed Network Manager	£ 1950.00	£ CALL	£ CALL
One days installation and training	£995.00		
Additional Consoles	£750.00		
Additional Pollers	£750.00		
One Years Maintenance & Technical Support			

Network Services

With even the best will in the world it is often impossible, due to limited resources, to proactively manage and install your network infrastructure as effectively as you would like. Constantly evolving technological advances and oversubscribed IT support staff place enormous demands on today's IT and network managers.

Our team of skilled professionals are on hand to assist you with every aspect of network operational assessment and improvement. Most importantly, we are able to deliver services that are the envy of many other service providers – borne out by the fact that we act as specialist consultants to some of the most respected and major international organisations in the UK and overseas.

In order to ease the headaches, it is often simpler and more cost effective to call upon the services of a company whom you can trust. We have the necessary skillsets and expertise to act as additional resources, working in harmony with your existing IT support team.

Key Service Areas

- Â Installation & Configuration of Products
- Â Trouble-shooting & network consultancy
- Â On-site health-check
- Â Remote network monitoring & support
- Â Internet security reviews & Firewall specification
- Â Product & technology training
- Â Internet & Year 2000 audits
- Â Hardware & software audits
- Â Network design & documentation
- Â Cabling certification & installation

What Can We Do To Help?

Through its team of consultants, Network Services can ease the installation and configuration of LANdecoder32 to ensure the analysers are set up for maximum performance. Full product training and help in compiling the name tables in LANdecoder32 can also be provided.

Summary

Networks Unlimited are able to satisfy the requirements of all aspects of pre and post sales supply of network management solutions. We are able to offer full training on all products supplied by us, together with implementation, installation and configuration services.

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