Datasheet

neanms®

The New Way for Network Operation Management

ASSET INVENTORY

It manages the inventory of all systems installed on the network as well as the managed IP subnets and addresses.

Network elements

- characterized by type, category, location, installation date, inventory number, DNS domain, SNMP profile.
- characterized by operating system version, hardware version, access login and storage related data
- inventory of network interfaces, characterized by name, MAC and IP address

IP addresses

- IP address grouping into subnets
- accurate description for each IP address or subnet
- linkage between IP addresses and elements' network interfaces
- RADIUS (secret) and DHCP parameters definition for each subnet

DNS MANAGER

The zone files creation (direct and reverse) is managed by a batch procedure that builds them according to the network elements database (ASSET INVENTORY), with the specification of the host name together with the network interface and DNS domain.

- network interface names are appended to the host name (e.g. server1-eth0.mydomain.net)
- a special boolean flag allows the choice of the IP address to use for CNAME record, reporting the element name without extra string for the interface (e.g. server1.mydomain.net)
- reverse mapping for all subnets according to the direct zone files records
- a special field for each IP address allows the specification of different strings for the reverse mapping

CONFIGURATION MANAGER

It allows to save configuration files in text format for all network elements which implement the remote configuration read functionality. It uses customized procedure based upon the network element type.

- configurations are saved only if they differ from the ones which are present in the database (from the previous read)
- stores configurations into the relational database with specific timestamp indicating the time of the configuration read
- configurations are viewable and browseable through the web console
- e-mail notifications with detected differences between reads

NETWORK DISCOVERY

NeaNMS implements an autodiscovery functionality in order to identify the characteristics of detected network elements and to automatically schedule polling types, according to the detected services on the element.

- possibility to run over an entire IP subnet or on a specific network element address
- possibility to pre-define a series of SNMP profiles which will be used, one after another, during the network element discovery
- possibility to define a series of polling templates which will be used to detect the implemented services and to schedule pollings on the discovered network element

FAULT MANAGER

It allows for the definition of a series of pollings for each network element. Each polling checks over the state of a specific service and reports any possible outage.

Pollings and SNMP traps

- possibility of detecting and reporting any value readable through SNMP MIBs, both string and numerical types
- availability of several predefined pollers such as: HTTP, SMTP, telnet, RADIUS, SSH, interfaces, DNS, IMAP4, POP3, ping, postgres. All of them support parameters for managing timeout thresholds or to verify the presence of reply strings (banners)
- definition of double alarm severity: one over the polling failure and another over the match of the threshold criteria which can be defined on the returned performance values
- possibility to customize the predefined pollers as well as to develope new pollers for monitoring any device which can be poller over TCP/IP
- SNMP trap receiver with the possibility to set specific filters to match only relevant traps (identified by trapOID or by content)
- each failure and/or threshold match can be linked to a specific severity among the predefined types: EMERGENCY, ALERT, CRITICAL, ERROR, WARNING, NOTIFICATION, INFORMATIONAL, DEBUGGING
- possibility to define new alarm severities, which can be customized for matching criteria and notification forwarding policies
- each event is stored into the relational database and can be viewed through the web interface on a specific summary page
- event acknowledgement functionality, both for polling failure or SNMP trap reception
- possibility to run pollings one-shot or real-time with performance graphs updates every second (e.g. for network traffic control)
- home page reporting summaries of current and last events, grouped by categories and integrated with geomaps

Notifications

Each event (polling failure, threshold match or SNMP trap reception) can trigger a notification forward. Following notifications are available:

- e-mail notifications
- SMS notifications
- phone call notifications with syntesized voice
- external command execution (with redirection of all event data)
- multiple notification means for each event
- escalation support after a certain number of failures, in case no web user acknowledges the event
- possibility to customize all the notification messages through the definition of notification templates

Hirerachy

- all pollings can be configured in hierarchical way
- the hirerachy can be used to represent the network topology (node based dependencies)
- possibility to set the dependency of a service from another (e.g. the web server on a network element may depend from that node ICMP reachability
- network hierarchy representation in form of network-tree
- network hierarchy representation with device georeferencing powered by GoogleMaps™

History and SLA

- all events are stored into the relational database together with the timestamp of when they occurred, in order to maintain the history of the whole network functionality
- each polling's state change (failure, recovery, cannot be monitored) is stored into the database
- possibility of SLA/availability calculation (service level agreement) for each configured polling
- possibility of SLA calculation for each network element (overall availability) as average of every polling's availability
- SLA representation as pie graphic chart through the web console
- possibility of SLA calculation on user defined timeslots
- possibility to report and export (pdf, xls formats) each generated SLA calculation

PERFORMANCE MANAGER

Besides reporting failure conditions, each polling used by the FAULT MANAGER reports also up to two different numerical values, as representation of performance indicators.

- performance value types differ according to the polling type (poller) in order to allow different units of measurement
- all values are stored into a round-robin database (RRD)
- graphic charts are built on data from RRDs and displayed through the web console
- graphic charts are available on daily, weekly, monthly and yearly basis
- grahic charts can be zoomed in and out
- possibility to collect any data type (e.g. network traffic measured as bytes passing through a certain network interface, or any other data whose counters are available through the SNMP agent of the polled element)

SERVICE MANAGER

It takes care of the control and the provisioning of network services, that is the creation and management of accounts for accessing network services as well as their billing management.

- creation, activation/deactivation of users or user groups with the possibility of specifying the expiry date
- user and user groups profiling according to the service type
- service type definition, with specification of bandwidth criteria (minimum guaranteed bandwidth, maximum allowed bandwidth, both upload and download)
- geographical user location definition
- limitation on the user connection time
- scratch cards management for dynamic subscribers credentials generation (linked to specified group, profile and tariff)
- connection reporting with possibility to export data (pdf, xls formats)
- correlation with network elements (CPE types) which are present in the ASSET INVENTORY database

Billing

- free of charge accounts definition
- fee-based accounts definition
- prepaid accounts definition, traffic volume based (exchanged bytes) or time based
- interaction with network access servers for check and reply attributes (e.g. for instructing the NAS to on the disconnect time when the user credit finishes)
- automatic credit update for prepaid accounts after disconnection
- possibility to recharge prepaid accounts credit
- postpaid accounts definition, traffic volume based (exchanged bytes) or time based
- rating plans definition through web-based editor

Roaming

- operator account definition
- RADIUS realm standard compliance
- compliance with Wi-Fi alliance specifications ("Best Roaming Practice") which are supported by the majority of wireless access devices

User Portal

- access portal for users defined in the SERVICE MANAGER
- possibility for the end user to update own contact data
- possibility to view own connection history list
- possibility to recharge own credit (through direct access to the service manager's bank)

TROUBLE TICKET

Integrated task management system which allows tracking of the management and resolution of outages during daily network operation.

- opening, management, closure of trouble-tickets
- planned trouble-tickets
- recurring trouble-tickets
- trouble-ticket history maintainance and consulting capability
- integration with the FAULT MANAGER in order to open trouble-tickets directly from the happening of a specific event (failure or SNMP trap reception)
- e-mai notification for each trouble-ticket update
- possibility to specify extra recipients for notifications reception

WEB CONSOLE USER AND GROUPS

- the access to the web console is protected by username/password
- possibility of users and user groups creation iwith specification of e-mail address and mobile phone number for reception of system's notifications
- definition of customized authorizations on specific areas of the web console for single users or user groups
- network elements can be linked to a specific user group in order to receive alarm notifications as well as to be able to fragment the view over the whole network
- definition of special users for notifications escalation
- possibility to create hierarchical groups to view all elements belonging to the groups which are at a lower level of the hierarchy
- predefined user "admin" for the creation and management of all new system users

LOAD BALANCING AND FAILOVER

- possibility to configure a cluster of polling engines in order to share the workload over several nodes
- cluster nodes automatically take over each other's work whenever any of them fails (failover)
- native load balancing support for RADIUS, DNS and DHCP protocols

NEANMS CONFIGURATION

- possibility to control polling engines for multithread parameters
- customization of syslog facility for system logging
- parameters definition for the control of RRD data collection and graphic charts display (such as colors and size)
- configuration of notification related parameters (mail-from, etc.)
- definition of preferences for automatic DNS zone files generation
- definition of default values for each poller's parameters whenever the polling arguments are not specified
- multi-language support (predefined: english, italian)

OPEN-SOURCE SOFTWARE

NeaNMS makes use of the following open-source software packages:

- PostgreSQL database
- FreeRadius RADIUS server
- ISC dhcp3 DHCP server with DHCP relay agents support
- J2EE-based web console
- Jboss application server
- Tomcat servlet container
- Net-SNMP SNMP server
- RRDtool library