Remote Network Management System (RNMS)

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Outline

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Problem Definition

- The network administrator must be behind, to monitor and fix the network components problems.

- Non IT related companies – Petroleum companies, etc… – have to have an IT team or department to manage the network, because they can not deal with the network technologies, components and protocols, beside network technologies high expenses. So networking will be an overhead for them.

Environment

* A PC as RNMS with Windows OS, Java Programming Language, Adventnet SNMP API, Java Web Server, mySQL, COMMAPI, J2ME, and ChartDirector.

* 5 PCs each of them have SNMP installed and configured, with Windows OS.

Node IP	Subnet Mask	Location	Node Type
192.168.8.75	255.255.254.0	Lab1	Agent
192.168.8.67	255.255.254.0	Lab3	Agent
192.168.8.76	255.255.254.0	Lab2	Agent
192.168.8.65	255.255.254.0	Lab1	Agent
192.168.8.74	255.255.254.0	control	Manager

Proposed Framework

Gateway

SMS Trap MSG (GSM Modem)

Internet

Targeted NW

Web Servers & NMS
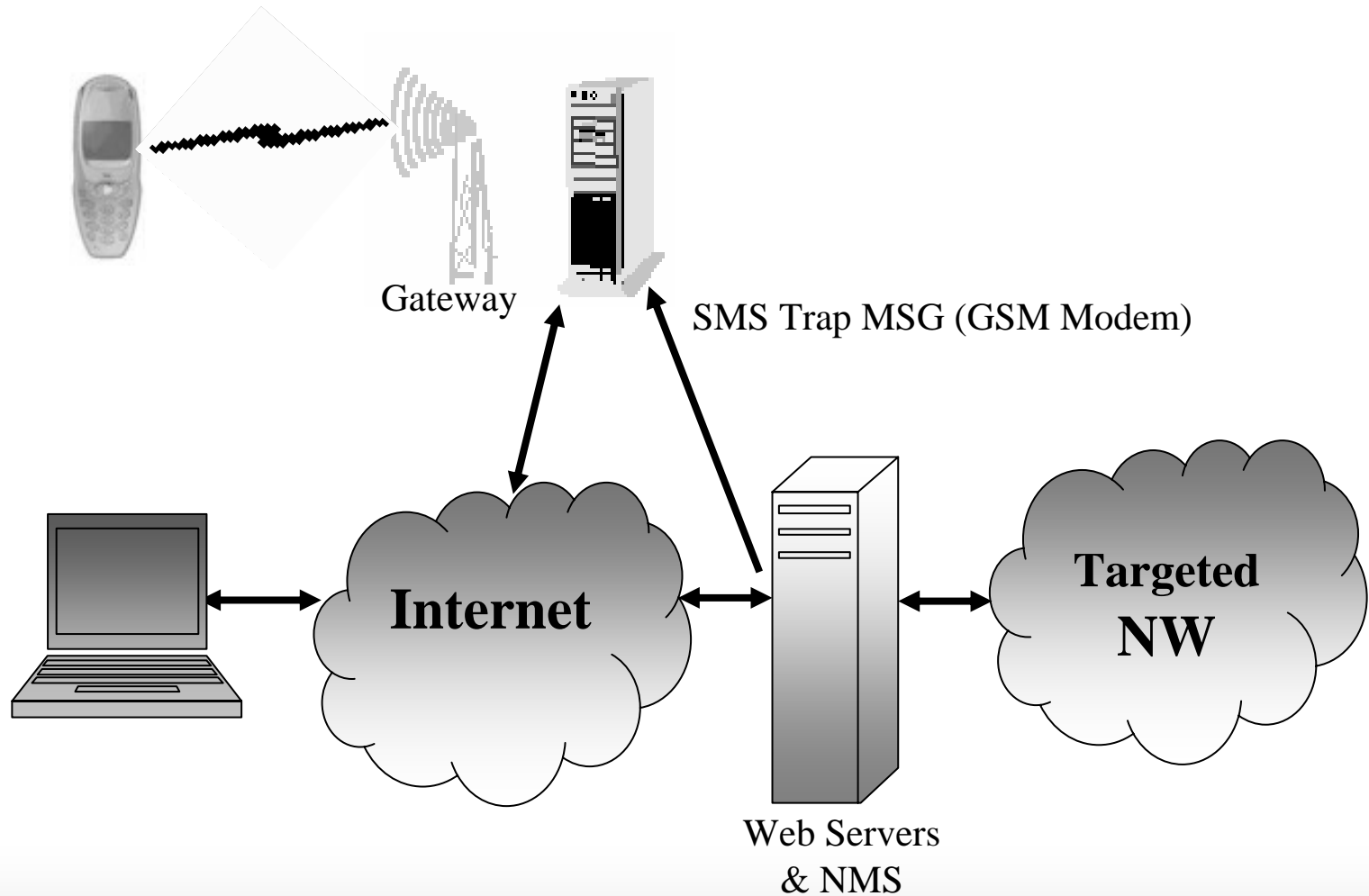
Result

- All RNMS operations were tested in the real environment and give the expected result.

Operation	Result	Notes
Change password	The system change the password successfully and displays "Your password was successfully changed" The system refuses to change the password because the old password is wrong or the user name is not exist and displays "No such user name or wrong password"	The system refuses to proceed when any text box is empty.
Network View	The system navigates all the network nodes either by network IP or by location.	The user can go through till the node information (MAC address, RAM capacity, System [HW, OS], etc.)
Management Ping Get Get next Set	The system ping the intended node The system gets the value of the desired object ID The system gets the next value of the desired object ID The system sets the new value of the desired object ID	The system displays the object ID description The system refuses to proceed when any required text box is empty
Monitoring	The system gets the required information from the bandwidth table and create the chart	The system ping the node, gets the in Octets and out Octets, calculate the bandwidth utilization, and then store it

Gained Experience

* Build network management tool.

* Dealing with SNMP.

* Dealing with GSM modem.

* Wireless programming (WAP-Wireless Application Protocol- technologies).

Recommendation

* Access the Manager part from a separate web server, to do so RMI and Enterprise Java beans (EJB) must be used.

* Enhance the polling section in the suggested framework.

* Use the SNMPv3 in the framework.

* Secure the framework.

* Enhance the mobile phone application to adopt monitoring the network performance.

* Managing the non SNMP supported elements using a proxy element.

* Addition of a redundant RNMS server to add reliability to the system.

Questions

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