Simple Network Management Protocol

SNMP

The Simple Network Management Protocol was standardized by the IETF and is mostly used by operators to monitor various types of network equipment, as well as other types of network-connected equipment.

One common use of SNMP is to periodically measure interface loads and other operational parameters of routers. These measurements can be visualized using tools such as MRTGorCricket, or used as input to threshold-based alerting systems. For a list of SNMP-based measurement and analysis tools, see the SnmpBasedTools topic.

Terminology

- Agent: An entity that gives access to management instrumentation via SNMP. An agent responds to management requests (get/set/...) and/or sends notifications. An Agent runs on a managed device such as a router, usually as a long-running background process ("daemon").
- Manager: An entity that accesses remote management instrumentation via SNMP. A manager issues management requests (get/set/...) and
 processes responses, and/or receives (unsolicited) notifications. Managers can range from simple scripts that retrieve specific management
 information to integrated systems that monitor and control many aspects of the operation of large networks.
- Notification: A message about an asynchronous event. Notifications are sent from an agent to a manager. SNMP has two different kinds of
 notifications: Traps and Informs. The difference is that an Inform is acknowledged by the manager, and the agents will retransmit an Inform until
 such an acknowledgement is received. Therefore, Informs are more reliable than Traps.
- Trap: See "Notification".
- Management Information Base (MIB): The set of management "instrumentation" accessible via network management protocols such as SNMP. See the ManagementInformationBase for more information.

Caveats with SNMP

There are a few common pitfalls when using SNMP for measurement. They are briefly described in these topics:

- SNMP Update Lag Variables monitored via SNMP may not be updated continuously. One possible effect is that if you look at counter-change
 rates (e.g. interface utilization) over short timescales, you may experience drastic measurement artifacts
- SNMP Low Priority Managed devices such as routers often handle SNMP requests at low priority relative to other tasks such as packet forwarding or running routing protocols. This can lead to timeouts in high-load situations possibly exactly the situation where one would be most interested in measurements!
- SNMP Counter Wrap Many SNMP counters wrap at 2

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. If you don't poll them frequently enough, high rates cannot be measured reliably.

References

Books

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Web Sites

• the SimpleWeb at University of Twente, http://wwwsnmp.cs.utwente.nl/

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