MONITORING WITH SNMP

252-3810-00L Datacenter Network Monitoring and Management

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Where to monitor inside a switch?
Where to monitor inside a switch?
Monitoring metrics: control plane

- CPU
- Routing protocols
- #InDelivers
- #OutRequests
- #InReceives #InForwDatagrams
- #InDelivers
- #InNoRoutes #OutNoRoutes
- #OutRequests
- #OutForwDatagrams
- #OutTransmits
- #OutDiscards
- #InDiscards #InHdrErrors #InTruncatedPkts #InAddrErrors #InUnknownProtots
- #InNoRoutes #OutNoRoutes
- #OutDiscards
Command line interface is not efficient

- show cpu queues: pulls information on queue occupation of the CPU
- Manual task
- Structured but cumbersome data format
- Does not scale to datacenter dimension
Remote pulling of data

• Standardized protocols for collection and propagation of monitoring data

• Simple Network Management Protocol
  • allow devices to exchange information with each other across a network
  • Monitor performance of SNMP-enabled devices

• SNMP agent and SNMP manager
  • Agents run in managed devices and collect useful metrics
  • Managers sit in a remote location and consolidate data from many agents
SNMP messages

• Manager
  • Get(Request): request the value of a metric
  • Getbulk: get a complete set of metrics
  • Set: send configuration instructions

• Agents
  • Response: return the current value of a metric
  • Trap: send metric value upon a condition being met
Management Information Base (MIB)

• a formatted text file within the SNMP manager designed to collect information and organize it into a hierarchical format
• Metrics database inside a device
• Standardized or proprietary (by a vendor like Cisco)
• Consists of managed objects (or variables)
• Managed objects are identified by an Object Identifier (OID)
• OID is like an address of a metric in the MIB hierarchical tree
MIB hierarchy
Monitoring the data plane

- Clos type of network
- Commodity switches at every layer
- Hosts connects to leaf switches (aka top of rack)
Monitoring the data plane
Arista 7050TX pipeline (Trident II chip)