The Status of IPv6 Network Management

Current IPv6 NMS Tools and Protocols

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Agenda

• Protocols – SNMPv3 and NetFlow/SFlow
• Network Management & Monitoring Tools
• IP Address Management
  – IPAM & automated address reconciliation
• Network Performance
• Application Performance Monitoring
• Event Management (Syslog, alerts, auditing)
In a nutshell…

In 2008, IPv6 Network Management Capabilities were like:

But in 2012 it’s more like:
Protocols: SNMPv3 and IPv6

• Simple Network Management Protocol Version 3 (SNMPv3)
  – Protocol had support since RFC 2465 (IPv6 MIB) and later with the update of the IP MIB (included both IPv4 and IPv6) – RFC 4293
  – Monitoring and management application support has been the “long pole”
  – By now, most applications support basic SNMPv3 queries over IPv6 (Cisco, Juniper, HP, etc)
    • Microsoft Server 2008 and Windows 7 do not support SNMPv3 at all (support is promised in Server 2012 and Windows 8)
NetFlow/SFlow/JFlow and IPv6

• All protocols used for NAT table matching, performance monitoring, link utilization, link saturation, etc

• NetFlow (Cisco proprietary)
  – Version 9 ONLY
  – Natively will only go over IPv4
  – On the interface:
    • ipv6 flow ingress
    • ipv6 flow egress
  – Global:
    • ipv6 flow-aggregation cache source-prefix
    • export version 9
    • export destination 172.16.X.X 2057
    • mask source minimum 64
NetFlow/SFlow/JFlow and IPv6, cont

- NetFlow (Cisco proprietary) – cont.
  - NetFlow specific:
    - ipv6 flow-export version 9
    - ipv6 flow-export destination 10.1.X.X 2055
    - ipv6 flow-export template options export-stats
    - ipv6 flow-export template timeout 60
    - ipv6 flow-export template refresh-rate 10
    - ipv6 flow-aggregation cache protocol-port
    - cache timeout active 1
    - Enabled
  - Supported applications later in presentation
NetFlow/SFlow/JFlow and IPv6, cont

- **SFlow (open standard)**
  - SFlow used in more open-oriented devices (HP Procurve, Brocade, Juniper, NEC, Extreme, and Cisco as well)
  - Configurations vary widely depending upon the device
  - Supported applications later in presentation

- **JFlow (Juniper proprietary)**
  - Version 9 support for IPv6
  - Require a separate license
  - Configs on next slide
NetFlow/SFlow/JFlow and IPv6, cont

- JFlow (Juniper proprietary) - Configs
  - Global enable:
    - set inline-jflow source address 1.1.1.1
  - Edit tree:

```plaintext
services {
  flow-monitoring {
    version-ipfix {
      template ipv4 {
        flow-active-timeout 60;
        flow-inactive-timeout 60;
        ipv4-template;
        template-refresh-rate {
          packets 1000;
          seconds 10;
        }
        option-refresh-rate {
          packets 1000;
          seconds 10;
        }
      }
    }
  }
  inline-jflow {
    source-address 10.11.12.13;
  }
}
```

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NetFlow/SFlow/JFlow and IPv6, cont

• Having SFlow/NetFlow/JFlow is very important for IPv4/IPv6 translations
  – Read Shannon McFarland’s CVD “Deploying IPv6 in the Internet Edge”
  – Two steps:
    • Add x-forward-for in load balancers to send to web server logs
    • Capture to send to NetFlow collector
• Most enterprise load balancers support “x-forward for”
Net Management & Monitoring Tools

• **EMC Ionix (formerly EMC Smarts)**  
  – Full support for SNMPv3 and SNMPv3 traps/polling over IPv6  
  – Configuration management tool: Voyance Control  
    • Voyance Control CCM not currently doing config management & control via IPv6 (SSH & SNMP)

• **SolarWinds**  
  – Orion Performance (NPM) and Configuration Manager (NCM)  
    • NPM – IPv6 support in v. 10.2 ([DETAILS](#))  
      – Discovery, traps, polling  
    • NCM – IPv6 support in v. 6.1
Net Management & Monitoring Tools

• Spectrum Infrastructure Manager
  – Fully supported with IPv6 since v. 9.0.0.0.1
    • Discovery, traps, polling
  – SNMPv3 fully supported, but unsure if SNMPv3 over IPv6 is supported

• Nagios Network Monitoring
  – Fully IPv6 supported with PATCH
    • Discovery, traps, polling
  – SNMPv3 uses Linux operating system SNMP version
  – Pairs well with Splunk for log monitoring
Net Management & Monitoring Tools

• OPNet
  – Full IPv6 support
    • Discovery, traps, polling
  – Working on SNMPv3 support (should be available by EOY 2012)

• WhatsUp Gold
  – Full IPv6 support
    • Discovery, traps, polling
  – Full SNMPv3 over IPv6 support
Net Management & Monitoring Tools

• Microsoft SCCM and SCOM
  – IPv6 support available since Server 2008
  – SCOM has no SNMPv3 support
    • Capability is supposedly available in System Center Server 2012
IPAM Tools

• Virtually all IPAM tools have support for IPv6 address planning functionality (IPv6 block, networks and adding static hosts)
  – Varying degrees of support for automated IPv4 and IPv6 address discovery and reconciliation

• Infoblox
  – Limited IPv6 support
  – All reconciliation done using NetMRI
  – Scans using SNMPv3 for IPv6 since NetMRI version 6.1
  – Cannot do DHCPv6 discovery/reconciliation with Microsoft DHCPv6 servers
  – Can connect to web interface over IPv6
  – Virtual appliance
IPAM Tools

• BlueCat Proteus
  – Limited IPv6 support
  – All IPv4 and IPv6 reconciliation is done natively (no external tool/application needed)
  – IPv6 and IPv4 address discovery done using SNMPv3
  – Can do DHCPv6 only with Adonis DNS/DHCP tool
  – Cannot do DHCPv6 discovery with Microsoft DHCPv6 servers
  – Can connect to web interface over IPv6
  – Virtual appliance
IPAM Tools

• BT Diamond IP Control
  – Limited IPv6 support
  – All IPv4 and IPv6 reconciliation is done natively (no external tool/application needed)
  – IPv6 and IPv4 address discovery done using SNMPv3
  – Cannot do DHCPv6 discovery with Microsoft DHCPv6 servers

• Internet Associates iPAL
  – Limited IPv6 support
  – All reconciliation done using 3rd parties (Lumeta or NetMRI?)
Network Performance Tools

• Use of NetFlow/Sflow/JFlow data

• Most have some level of IPv6 support

• SolarWinds Orion NPM
  – Has full support with IPv4 NetFlow transport (DETAILS)

• CA NetQoS
  – Has no IPv6 support (DETAILS)
  – No known roadmap for IPv6 support

• Open-source/Freeware tools
  – There are many that have unknown levels of IPv6 support (DETAILS)
Application Performance Monitoring

• This area has the least amount of IPv6 support in the industry (new toolset on the market)
• In fact, **none** can do **any** IPv6 application analysis including:
  – OPNET
  – Riverbed Cascade
  – SolarWinds Network Traffic Analyzer
• CA has a limited APM – APM Cloud Monitor
  – Meant for external performance monitoring of DNS and web traffic ([DETAILS](#))
Event Management Tools

• Two types of tools in this area: Syslog and Security Alerting tools

• ArcSight
  – Limited IPv6 support
  – NCM server has IPv6 config management support
  – ESM does not have capability to view IPv6 address in address fields (must create a text string to view)
  – Connectors must use only IPv4
Event Management Tools, cont

• Splunk
  – Full IPv6 support
  – Requires a web.conf configuration to connect to web interface via IPv6 (DETAILS)
    • Change:
      – server.socket_host = ::
      – listenOnIPv6 = yes (if you want to use only IPv6 → ‘only’)
      – Restart Splunk server
  – All logging done with IPv6 addresses shown
  – Connectors can use IPv6 transport
Summary

• Enterprise-class network management is getting much better
• A few issues remain:
  – Microsoft DHCPv6 for IPAM
  – NetFlow performance monitoring
  – Application performance monitoring
• Start your detailed questions with your vendors now
  – “Do you support IPv6?” isn’t good enough, ask the tough technical parity questions
Questions?

I can haz IPv6?

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