

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:

```
[edit forwarding-options]
sampling {
  instance {
    sample-ins1 {
      input {
        rate 1;
      }
      family inet {
        output {
          flow-server 2.2.2.2 {
            port 2055;
            version-ipfix {
              template {
                ipv4;
              }
            }
            inline-jflow {
              source-address 10.11.12.13;
            }
          }
        }
      }
      family inet6 {
        output {
          flow-server 2.2.2.2 {
            port 2055;
            version9 {
              template {
                ipv6;
              }
            }
          }
        }
      }
      interface sp-0/1/0 {
        source-address 10.11.12.13;
      }
    }
  }
}
```

```
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;
        }
      }
    }
  }
}
```

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) The EMC logo, consisting of the letters 'EMC' in a blue, sans-serif font.
 - 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
 - [\(DETAILS\)](#)
 - 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?)
 - Runs on standard Windows Server (2003-2008)



Network Performance Tools

- Use of NetFlow/Sflow/JFlow data
- Most have some level of IPv6 support
- SolarWinds Orion NPM The SolarWinds logo, consisting of the word 'solarwinds' in a grey sans-serif font and a stylized orange and yellow flame-like icon to the right.
 - Has full support with IPv4 NetFlow transport ([DETAILS](#))
- CA NetQoS The NetQoS logo, featuring the text 'NetQoS' in a bold, black, sans-serif font with a blue diamond icon above the 'Q', and 'Performance Experts' in a smaller font below it.
 - 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?

www.SalientFed.com

