IP SLA - High Definition Response Time Reporting

Vess Bakalov  CTO, SevOne
Nicholas Reid  Director of Product Design, SevOne

Follow us on Twitter for real time updates of the event:
@ciscoliveeurope, #CLEUR
Housekeeping

- We value your feedback- don't forget to complete your online session evaluations after each session & the Overall Conference Evaluation which will be available online from Thursday

- Visit the World of Solutions and Meet the Engineer

- Visit the Cisco Store to purchase your recommended readings

- Please switch off your mobile phones

- After the event don’t forget to visit Cisco Live Virtual: www.ciscolivevirtual.com

- Follow us on Twitter for real time updates of the event: @ciscoliveeurope, #CLEUR
Agenda

- Overview
- IP SLA
- SevOne & IP SLA: Combined Strengths
- Compound Thresholds
- Closing Remarks
SevOne – Complete, Immediate Visibility

SevOne is the new leader in network performance management, delivering the fastest, most scalable, and comprehensive real-time monitoring, troubleshooting and performance reporting.
Cisco IP SLA – Hiding in Plain Sight
When is it useful?

Internet Gaming
When is it useful?

Low-latency Trading
When is it useful?

Many Short-running Connections
When is it useful?

- Jitter is a real problem for all **buffered** protocols needing real-time interaction
- Trade-off:
  - Small buffer for interactivity
  - Long buffer for Jitter tolerance
- Video - Jitter causes lip-sync issues
- Video & Voice
  - Resizing the voice buffers is either a flick or a pause
  - Or ‘Man-on-the-Moon’ effect........ Hello?

TCP-Windowing is great until you get JITTER!
Cisco IP SLA – A Brief History

- Pre-IP SLA Technologies
  - Proxy-Ping
  - DISMAN Ping

- Introduced as RTTMON pre-2000
  - Still use ‘RTTMON’ MIB for interaction

- Briefly known as SAA circa 2002-4

- 2005 Rechristened *IP SLA* with an extended number of types
Cisco IP SLA – Today

- Industry-leading integrated response technology
- Other vendors playing catch-up
- Extremely flexible set of synthetic monitoring tests
- 14+ types of probes
- Multiple hardware platforms supported
  - IOS since 12.0 (other variants even earlier)
  - IOS-XR
  - ASR/ISR
Increasing Time Accuracy

- Originally millisecond accuracy (maybe)
- Now microsecond accuracy on round-trip measurements
- Future: 1-way microsecond latency?
IP SLA Types - 1

- ICMP Echo
- ICMP Jitter
  - Ping latency & jitter
- TCP Connect
  - Naïve transaction response measurement
- UDP Echo
- UDP Jitter
IP SLA Types – 2

- Domain Name System (DNS)
- Dynamic Host Control Protocol (DHCP)
- File Transfer Protocol (FTP)
- Hypertext Transfer Protocol (HTTP)
- Data Link Switching Plus (DLSw+)
  - IBM SNA & NetBIOS over IP response measurement
  - All My Mainframe Peeps: Hands in the air!
IP SLA Types - 3

- **UDP Jitter for VoIP**
  - Approximate VoIP latency measurement
  - Provides estimated ICPIF (Impairment Factor), MOS
  - Supports ‘Codec Simulation’ – manipulates size of datagrams for G.711 (mu/A-law) and G.729A

- **Real-Time Transport Protocol (RTP)-based VoIP**

- **VoIP gatekeeper registration delay**

- **VoIP post-dial delay**

- **Medianet – VoIP & Video Synthetic tests**

- **Ethernet OAM – L2 Ping**
IP SLA QoS Support

- Most IP SLA types allow
  - Definition of ToS/DSCP flag for test
  - Source IP address on originating Router

- Can create parallel tests to measure e2e response in different CoSes

- Test experience for different traffic types!
All supported by SevOne
IP SLA Futures – Cisco PfR

- Intelligent traffic re-routing based on policy:
  - WAN out-bound performance (traffic exiting from an enterprise): Delay, loss, reachability, throughput, jitter, and MOS
  - WAN in-bound performance (traffic arriving into an enterprise): Delay, loss, reachability, and throughput
  - WAN and Internet path parameters: Reachability, throughput, load, and link usage cost

- IP SLA essential for verification of PfR activities
SevOne & IP SLA

HD Response Time Monitoring
End-to-end Visibility

Who, What and Where

- Customer Experience Testing
  - What is the current application delay?
  - What is the baseline?
  - Am I seeing normal or exceptional response?

- E2E Latency Measurement
SevOne IP SLA Provisioning

Light Probe Configuration Management

1. Troubleshooting Workflow
   - Select device of interest
   - Specify desired type & parameters
   - Provision, reporting automatically started

2. Bulk Provisioning
   - Specify multiple IP SLA probes, sources, types in CSV-form
   - Bulk-provision to specified devices, exceptions reported
SevOne IP SLA Provisioning
SevOne IP SLA Provisioning
SevOne IP SLA Reporting

High-definition SNMP Polling

- SevOne-provisioned & 3rd party probes
- Begins automatically after provision/discovery
- SNMP v1, v2c & v3 supported
- Down to every 1 second, 12 month retention
- Automatic baselining begins
SevOne IP SLA Reporting

**Availability**

% 01/29/2012 02:46 EST to 01/30/2012 02:46 EST

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Freq</th>
<th>Last</th>
<th>Average</th>
<th>Peak</th>
<th>Total</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability</td>
<td>300s</td>
<td>100.00</td>
<td>99.30</td>
<td>100.00</td>
<td>n/a</td>
<td>%</td>
</tr>
</tbody>
</table>

**Average time**

ms 01/29/2012 02:45 EST to 01/30/2012 02:45 EST

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Freq</th>
<th>Last</th>
<th>Average</th>
<th>Peak</th>
<th>Total</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average time</td>
<td>300s</td>
<td>177.00</td>
<td>133.93</td>
<td>266.00</td>
<td>n/a</td>
<td>ms</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Freq</th>
<th>Last</th>
<th>Average</th>
<th>Peak</th>
<th>Total</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>300s</td>
<td>95.09</td>
<td>96.28</td>
<td>100.00</td>
<td>n/a</td>
<td>%</td>
</tr>
</tbody>
</table>
High-Resolution Collection

High-definition SNMP Polling

- **Down to every 1 second, 12 month retention**
- Effective granularity may be even lower:
  - Jitter probe can send tens of tests within a second
  - We can see millisecond variations of jitter
SevOne UMF

Universal Metric-to-Flow

- Link IP SLA objects to relevant NetFlow
- NetFlow can be filtered/grouped to make it relevant
- One click navigation from degraded response into Talkers & Conversations
- Supports Flexible NetFlow
- Medianet
  - Flow-based response, packet loss & jitter for Voice/Video
- AVR for ISR/ASR
  - NEW! General purpose flow-based response for TCP/UDP
SevOne Alerting

Threshold Policy Definition

- Define threshold policies on dynamic groups
- Thresholds automatically applied on new device discovery
- ‘Static’ & Baseline- ‘Dynamic’
- Simple & Compound
The Joy of Compound Thresholds

Rich GUI-based Thresholding Capabilities

- **Static Condition**
  - If indicator X is [above, below, changed] Y for Z minutes

- **Dynamic Condition**
  - If indicator X is Y [above, below, changed] calculated baseline for Z minutes

- **Multiple Conditions**
  - Combined with parenthetical boolean logic
    - if (Cond 1 AND Cond 2)
    - OR (Cond 3 AND Cond 4)
    - then Alert
The Joy of Compound Thresholds

Subpath Exception Identification

- Identify remote segment responsible for degradation
The Joy of Compound Thresholds
Subpath Exception Identification

Degraded
Demonstration
SevOne Consolidated Platform

- An all-in-one PMDB, provides a global view of IT infrastructure performance
- Supports the convergence of IT operations away from traditional silo’s
Peer-to-Peer Architecture – Speed at Scale

- Linear scalability to millions of objects and billions of baselines
- Distributed, real-time collection and reporting, with no limits
- Easy to deploy and use; footprint 2x-4x smaller than competition
Recommended Reading

Please visit the Cisco Store for suitable reading.
Please complete your Session Survey

We value your feedback

- Don’t forget to complete your online session evaluations after each session. Complete 4 session evaluations & the Overall Conference Evaluation (available from Thursday) to receive your Cisco Live T-shirt

- Surveys can be found on the Attendee Website at [www.ciscolivelondon.com/onsite](http://www.ciscolivelondon.com/onsite) which can also be accessed through the screens at the Communication Stations

- Or use the Cisco Live Mobile App to complete the surveys from your phone, download the app at [www.ciscolivelondon.com/connect/mobile/app.html](http://www.ciscolivelondon.com/connect/mobile/app.html)

1. Scan the QR code
   (Go to [http://tinyurl.com/qrmelist](http://tinyurl.com/qrmelist) for QR code reader software, alternatively type in the access URL above)

2. Download the app or access the mobile site

3. Log in to complete and submit the evaluations

Cisco live!
Thank you.