Network Capacity Planning
How Cisco IT Uses NetFlow to Improve Network Capacity Planning

A Cisco on Cisco Case Study: Inside Cisco IT
Overview

- Challenge
  Getting accurate information about network use

- Solution
  Implement Cisco IOS® Net Flow technology

- Results
  Bandwidth upgrades become a business decision

- Next Steps
  Increase information detail
Challenge: Getting accurate information about network use

- Voice over IP (Vo IP) and Video on Demand (Vo D) drove consumption from the late ’90s
  
  Bandwidth was shared with normal business applications

- Network traffic was increasing exponentially and not in line with expectations
  
  IT did not have access to the level of detail necessary to understand the problem

- Cisco did not have a clearly-established proactive planning process
  
  IT tended to implement network bandwidth upgrades in response to internal customer complaints
Solution: Implementing Cisco IOS® Net Flow technology

- Traffic categorization
  
  IT first characterized network traffic as legitimate, inappropriate, or unwise

- Establishment of sizing and utilization guidelines
  
  While important, they did not eliminate the need for an engineering analysis of individual sites

- Deployment of IOS® Net Flow technology (and selected third party solutions)
  
  Cisco Net Flow provides detailed network traffic information and has become the leading accounting and anomaly-detection solution in the network industry
Solution: Cisco IOS Net Flow

Export Packets
- Approximately 1500 bytes
- Typically contain 20 to 50 flow records
- Sent more frequently if traffic increases on NetFlow-enabled interfaces

Core Network

Enable NetFlow
Traffic

UDP NetFlow Export Packets
NetFlow Data Collector
NetFlow Analyzer Application and GUI
## Solution: Sizing and Utilization Threshold Charts

<table>
<thead>
<tr>
<th>Headcount</th>
<th>Primary WAN Bandwidth</th>
<th>Secondary WAN Bandwidth</th>
<th>Primary/Backup WAN Bandwidth</th>
<th>*Percentage Utilization (watch)</th>
<th>**Percentage Utilization (upgrade)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-10</td>
<td>1.5 Mbps</td>
<td>None</td>
<td>***100/100</td>
<td>60%</td>
<td>80%</td>
</tr>
<tr>
<td>11-40</td>
<td>1.5 Mbps</td>
<td>1.5 Mbps</td>
<td>****100/50</td>
<td>40%</td>
<td>50%</td>
</tr>
<tr>
<td>41-100</td>
<td>3 Mbps</td>
<td>3 Mbps</td>
<td>*****50/50</td>
<td>40%</td>
<td>50%</td>
</tr>
<tr>
<td>101-150</td>
<td>4.5 Mbps</td>
<td>4.5 Mbps</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>151-200</td>
<td>6.0 Mbps</td>
<td>6.0 Mbps</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>201-500</td>
<td>45 Mbps</td>
<td>6.0 Mbps</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>501+</td>
<td>155 Mbps</td>
<td>45 Mbps</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Results: Bandwidth upgrades become a business decision

- Capacity planners enter a recommendation into the Cisco Intelligent Networking Solutions (INS) process
- With real, granular information, IT can comfortably help build a business case for bandwidth upgrades
- Cisco capacity planners can plan and manage deployments effectively—delivering bandwidth before performance deteriorates and building better internal relationships
Next Steps: Increase information detail

- The capacity planning team will use Cisco NetFlow to develop increasingly more granular information:
  
  In an MPLS environment, where bandwidth circuit providers charge differentially for classes of service, it is important not to pay unnecessary service charges.

- By monitoring and reporting on classes of service at a deeper level, Cisco should be able to align service charges with what actual needs, saving significantly going forward.
To read the entire case study, or for additional Cisco IT case studies on a variety of business solutions, visit Cisco on Cisco: Inside Cisco IT

www.cisco.com/go/ciscoit