Uptime In IP Based Networks

SGNOG 1 – 20 July 2011

Benjamin T.P. Tan
<benjamin.tan@super.net.sg>
Managing Director
SuperInternet *ACCESS* Pte Ltd

Background

- Observation
  - Old-Time Leased Lines:
    - Seldom go down
      - 50ms SDH switchover
    - Scheduled Maintenance? Almost never!
  - New IP/MPLS/NGN circuits
    - How often do you see Scheduled Maintenance?
    - How often has your circuit flapped?
    - How often has it gone DOWN and for How Long?

Spec Comparision

- SDH – GR-253-CORE
  - LAPS: Linear Auto Protection Switching
    - 4-core. 2 in each direction. 1 working 1 standby.
  - UPSR: Unidirection Path-Switched Ring
    - 2-core. 1 in each direct. 2 copies of each packet.
  - BLSR: ReRoute on next node failure
- Next Generation IP based network?!?
  - How many strands?
  - ReRoute?

Software / Firmware

- Maintenance Cycle Best Practice?
- EoL of versions
- Hitless Upgrades? ISSU/GRES? NSR/NSF?
  - Line Cards?
  - Major Upgrades?
- Software stability
  - What is (e.g.) Cisco TAC's 1st step?

IP/MPLS/Ethernet Features

- Ethernet
  - RSTP <50ms
  - TRILL? (But for WAN?)
- MPLS FRR Local Protection
- MPLS-TP Liner Protection (Survivability Framework)
- IP Routing
  - OSPF fast hello
  - BGP w/BFD

Solutions(?)

- No-Brainer(?)
  - 2 fibers + 2 routers to every end site
- Dumb Switch Front?
  - Do we lose granularity?
  - MTBF of the Dumb Switch?
  - Doesn't solve customer end site issue.
- Other Solutions?!?

Tech or Policy/Business Issue?

- Cost? Price point?
- Who drives the Solution-ing?
- Sunk Costs?
- Lots of Fiber?
- Existing SDH?
  - So just do Eth o SDH? What do you lose?

Summary

- Technology is available
- Not the current norm

- Engineering must not go along with poor solutions
- Deploy a network that you're proud of!