Uptime In IP Based Networks

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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 Comparison

- **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!