I FIND YOUR LACK OF TRILL DISTRUBING
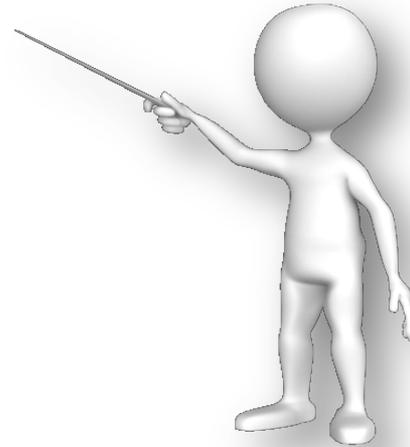
TRILL REVIEW

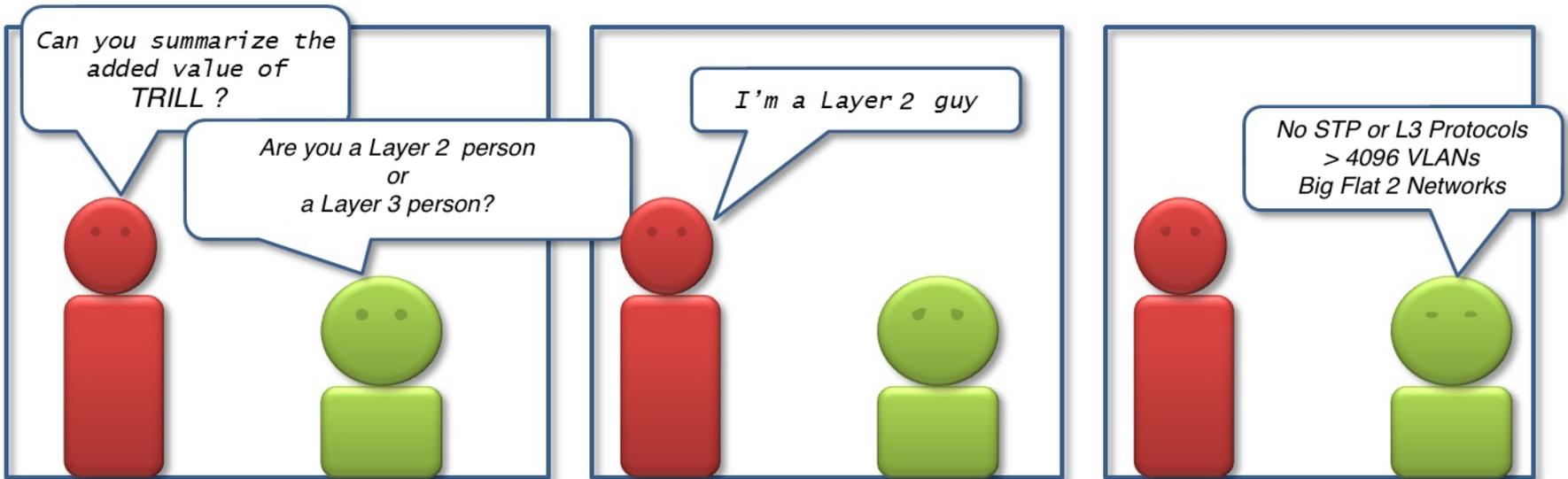## Jon Hudson (Brocade)

<jon.hudson@gmail.com>
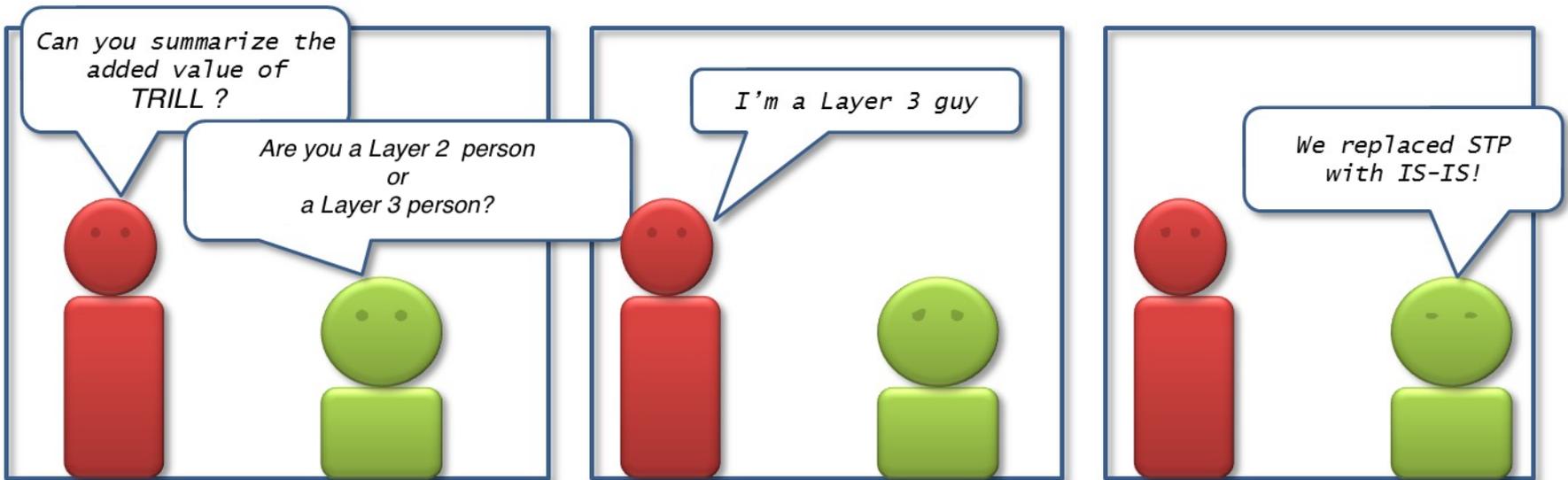
AGENDA

- TRILL: What & Why?

- What worked?

- What hasn't?

- Where are we?

What is TRILL?

What is TRILL?

What is TRILL?

- Basically a simple idea:
  - *Encapsulate native frames in a transport header providing a hop count*
  - *Route the encapsulated frames using IS-IS*
  - *Decapsulate native frames before delivery*

- Provides
  - *Least cost paths with zero/minimal configuration*
  - *Equal Cost Multi-Pathing of unicast*
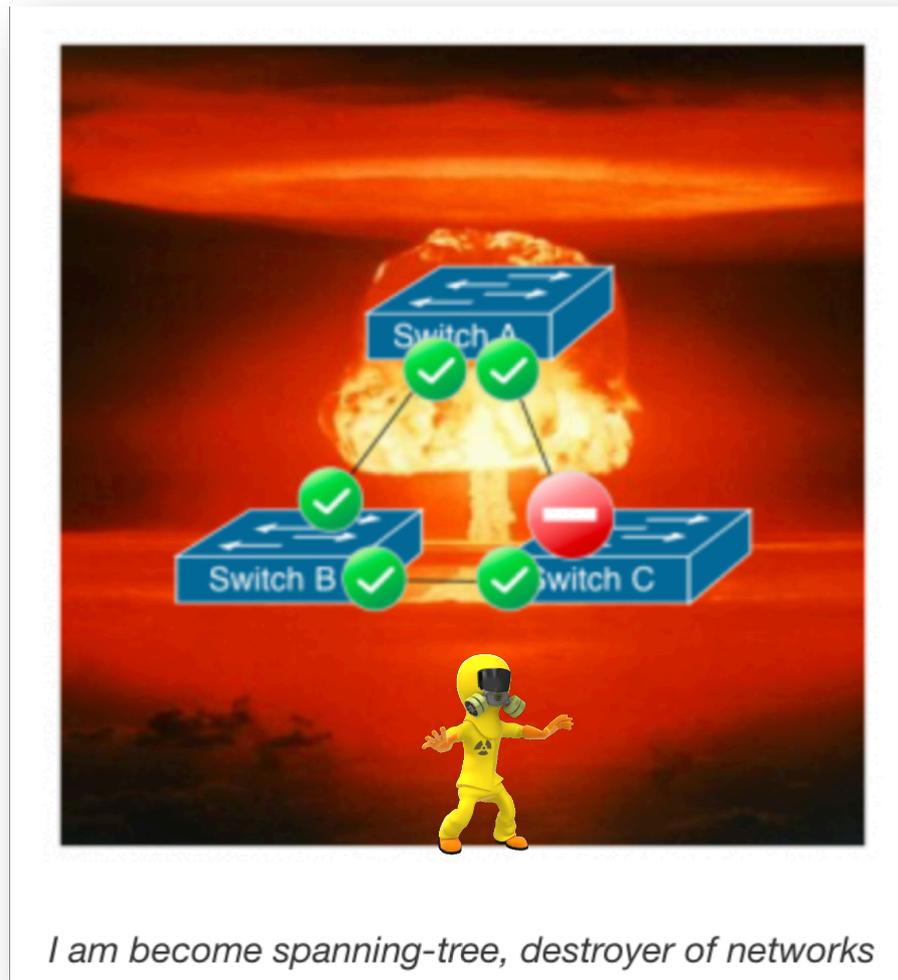 - *Multi-paths of multi-destination*
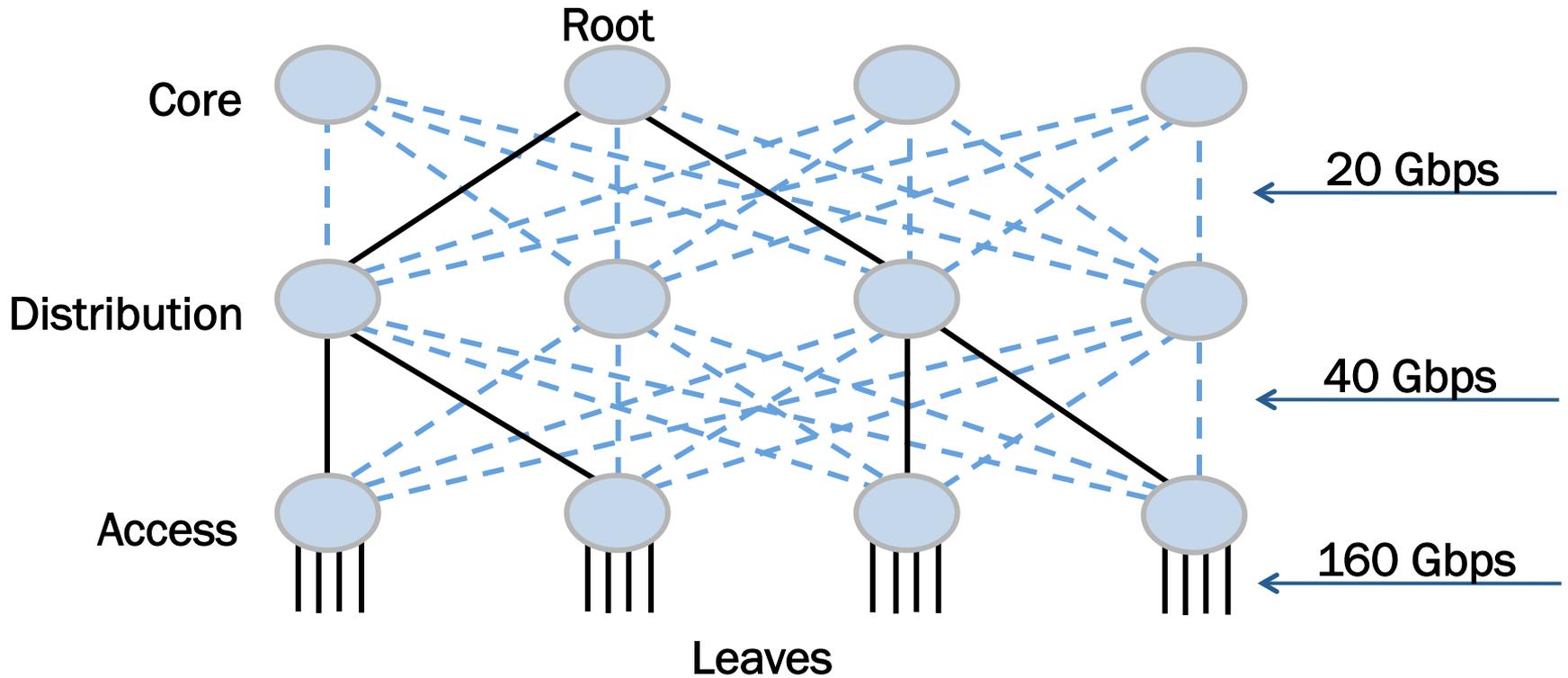
What is TRILL?

TRILL Header

TRILL Ethertype	V	R	M	ExtLng	Hop
Egress RBridge Nickname	Ingress RBridge Nickname				

- Nicknames – auto-configured 16-bit campus local names for TRILL Switches (RBridges)
- V = Version (2 bits)
- R = Reserved (2 bits)
- M = Multi-Destination (1 bit)
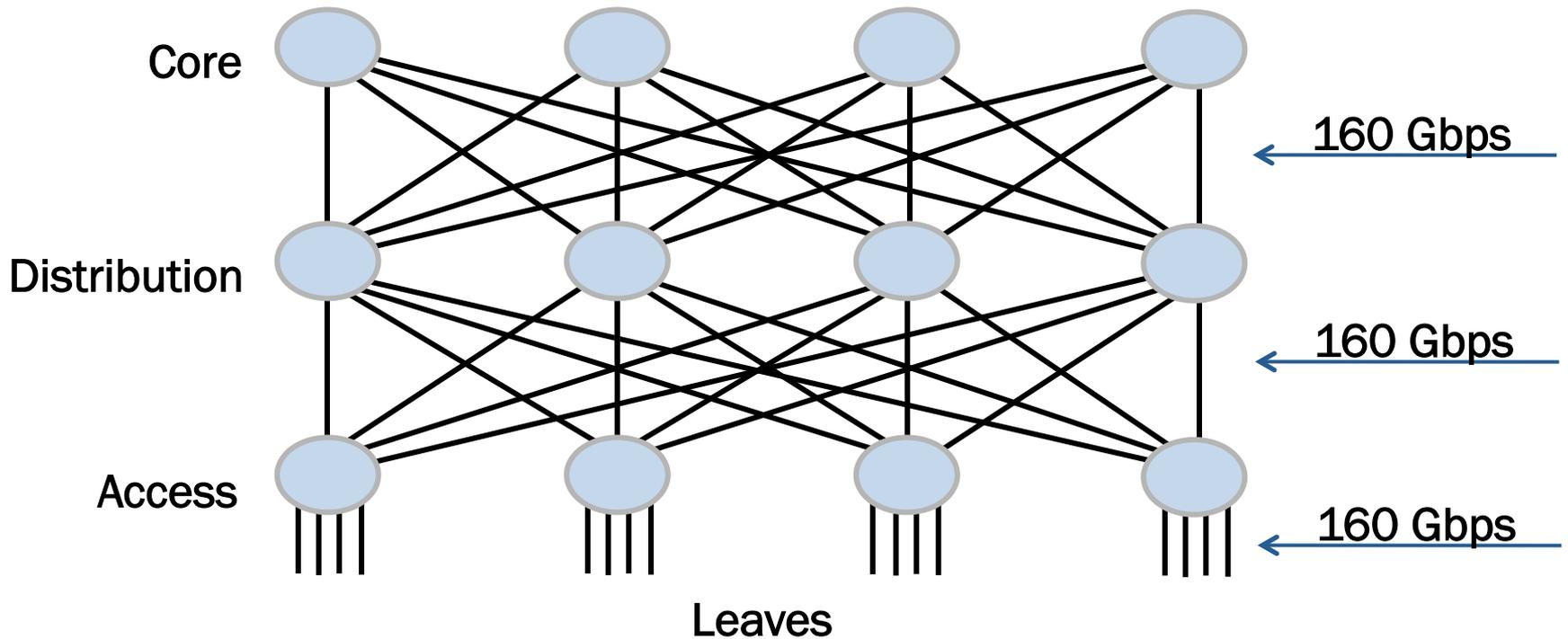- ExtLng = Length of TRILL Header Extensions
- Hop = Hop Limit (6 bits)

Why TRILL?

I am become spanning-tree, destroyer of networks

Why TRILL?

Why TRILL?

Core

Distribution

Access

160 Gbps

160 Gbps

160 Gbps

Leaves

What Worked?

(End User Perspective)

- *"I JUST BUILT A TRILL-BASED FABRIC WITH [VENDOR X] AND A BUNCH OF REDUNDANT MULTIPATH LINKS. INTUITIVE, FUNCTIONAL, EASY CLI. "*

- *"EASE OF CONFIGURATION IS SIGNIFICANT"*

- *"FINISHING DEPLOYMENTS ON AVERAGE A DAY EARLY"*

- *"I'M FINISHING ONE DAY INSTALLS BY LUNCH"*

What Worked?

- An End to the 4096 VLAN Limitation

https://tools.ietf.org/html/rfc7172
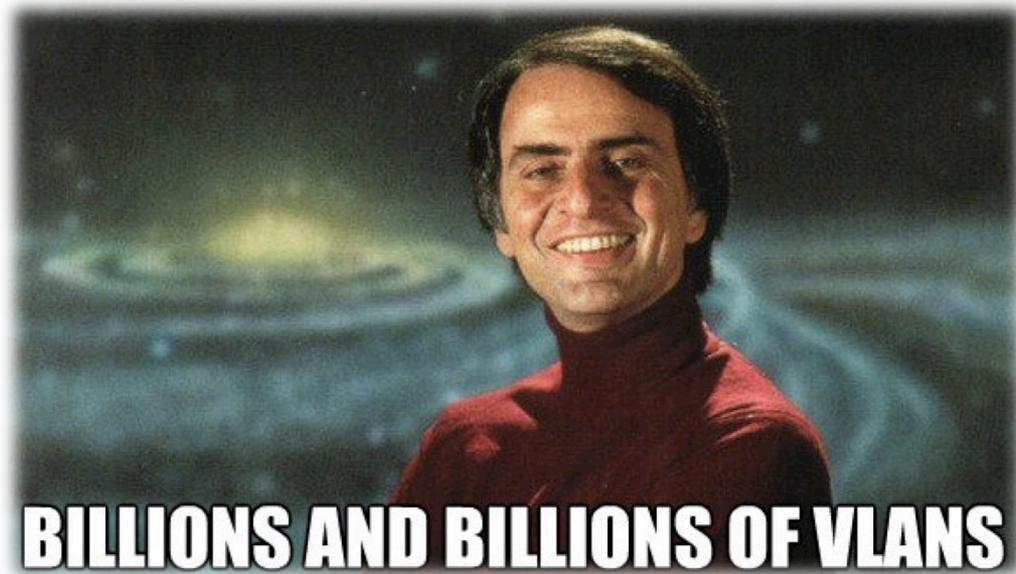
What Worked?

- Active/Active Edge Devices
  https://tools.ietf.org/html/rfc7782

- Directory Assistance
  https://tools.ietf.org/html/rfc7067

- Zero Config IS-IS

- Removed STP & Active/Passive Links

What Hasn't Worked?

- ## Politics
  - While gone now, was severe in early days

- ## Vendor Interoperability
  - Plug-fests had limited success, vendors did less than compatible implementations

- ## OAM
  - Trouble Shooting a Problem " How do I debug this?" – Asked by customer just 2 months ago
  - Huawei did a great job providing a unified OAM for TRILL & SPB

Where are we?

- ## Traffic Engineering
  Better Support for other technologies

- ## Transparent Mode
  Reduced coupling between TRILL and attached networks at the edge.

- ## ECN
  Great presentation today by Bob Briscoe on using TRILL with ECN

- ## Re-charter being considered

Jon Hudson (*Brocade*)

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