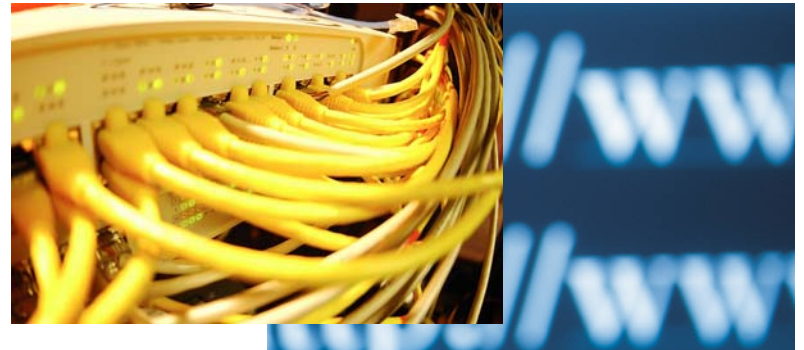


MPLS Gotchas: Challenges, Best Practices and Bottom Lines

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Spring 2006
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Agenda

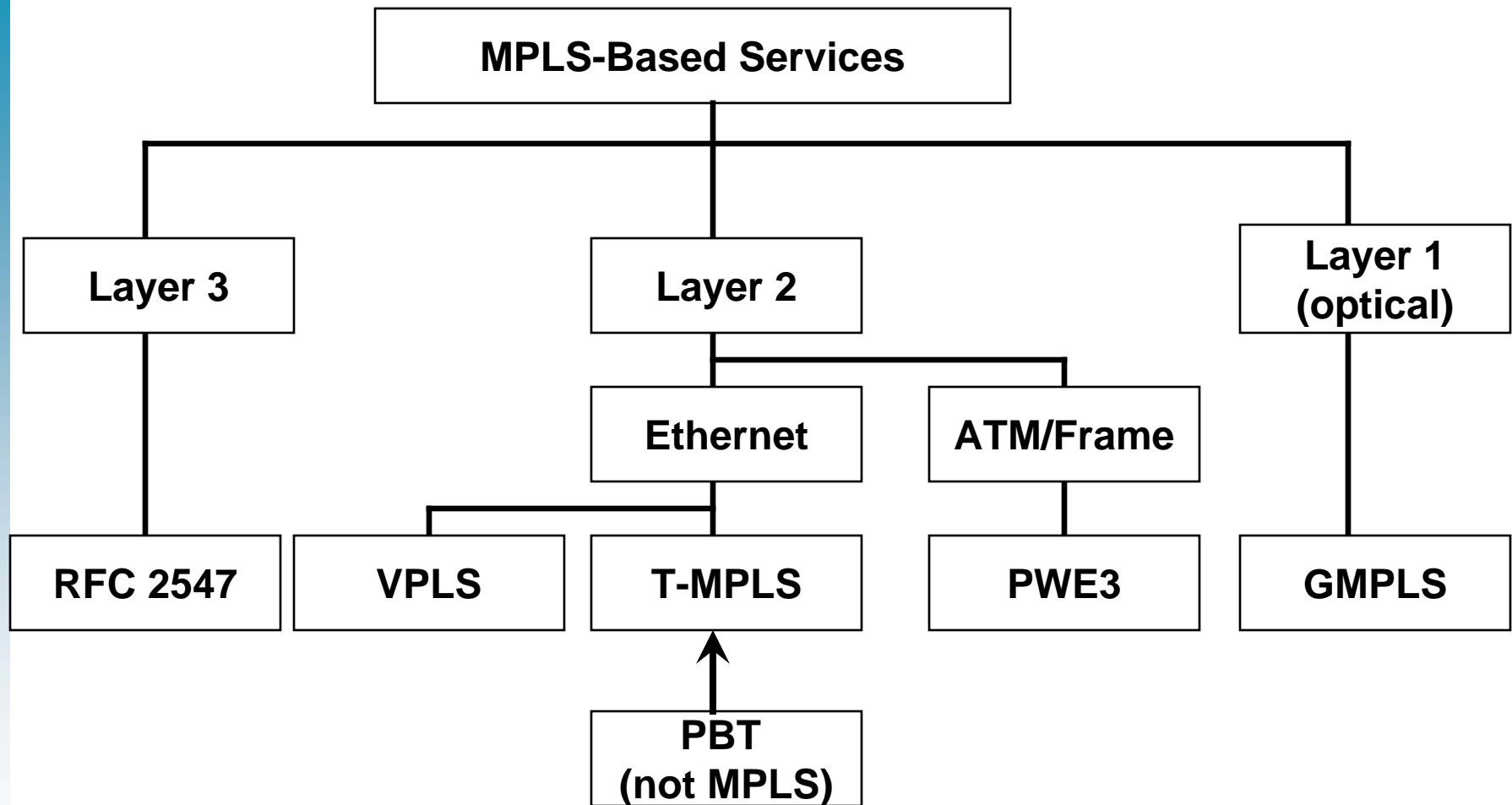
- ⊕ Introductions
- ⊕ MPLS Taxonomy
- ⊕ State of Deployment: Who's Using MPLS?
- ⊕ Why MPLS?
- ⊕ MPLS Migration How-To's
- ⊕ Key Challenges and Solutions
- ⊕ Bottom Lines and Recommendations

Introductions

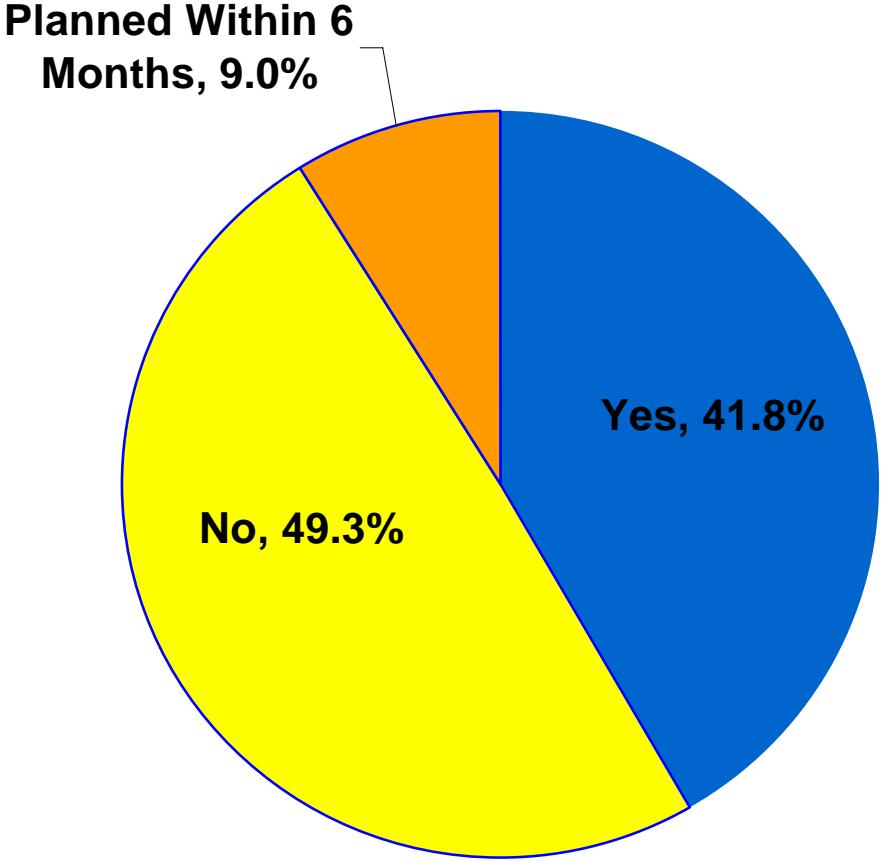
- ⊕ About Nemertes
 - ⊕ Founded October 2002
 - ⊕ Research data comes from network of 2,500 IT executives willing to discuss their issues and concerns at length
 - ⊕ Research process emphasizes quantitative benchmarking
 - ⊕ Principals all have 15-21 years industry experience, including operational
 - ⊕ Focused on analyzing the business value of emerging technologies
 - ⊕ Advise leading global enterprises, carriers, vendors, investment firms on emerging technologies.



Figure 1: A Quick Taxonomy of MPLS Services



MPLS Usage (All Participants)

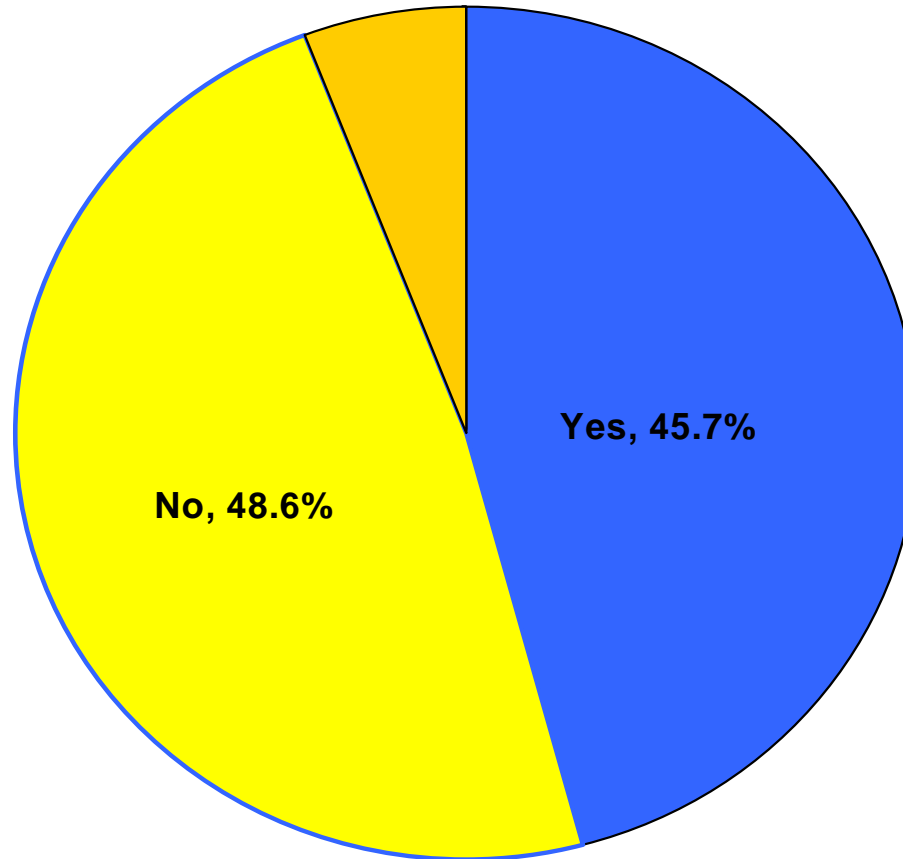


Vertical Industry Breakdown

Industry	Current or Planned
Financial Services	67%
Pharmaceuticals	100%
Retail	80%
Entertainment/Media/Hospitality	100%
Professional Services	60%
Energy	50%
Healthcare	25%
Education	20%
Manufacturing	45%
Government	25%
Transportation	33%

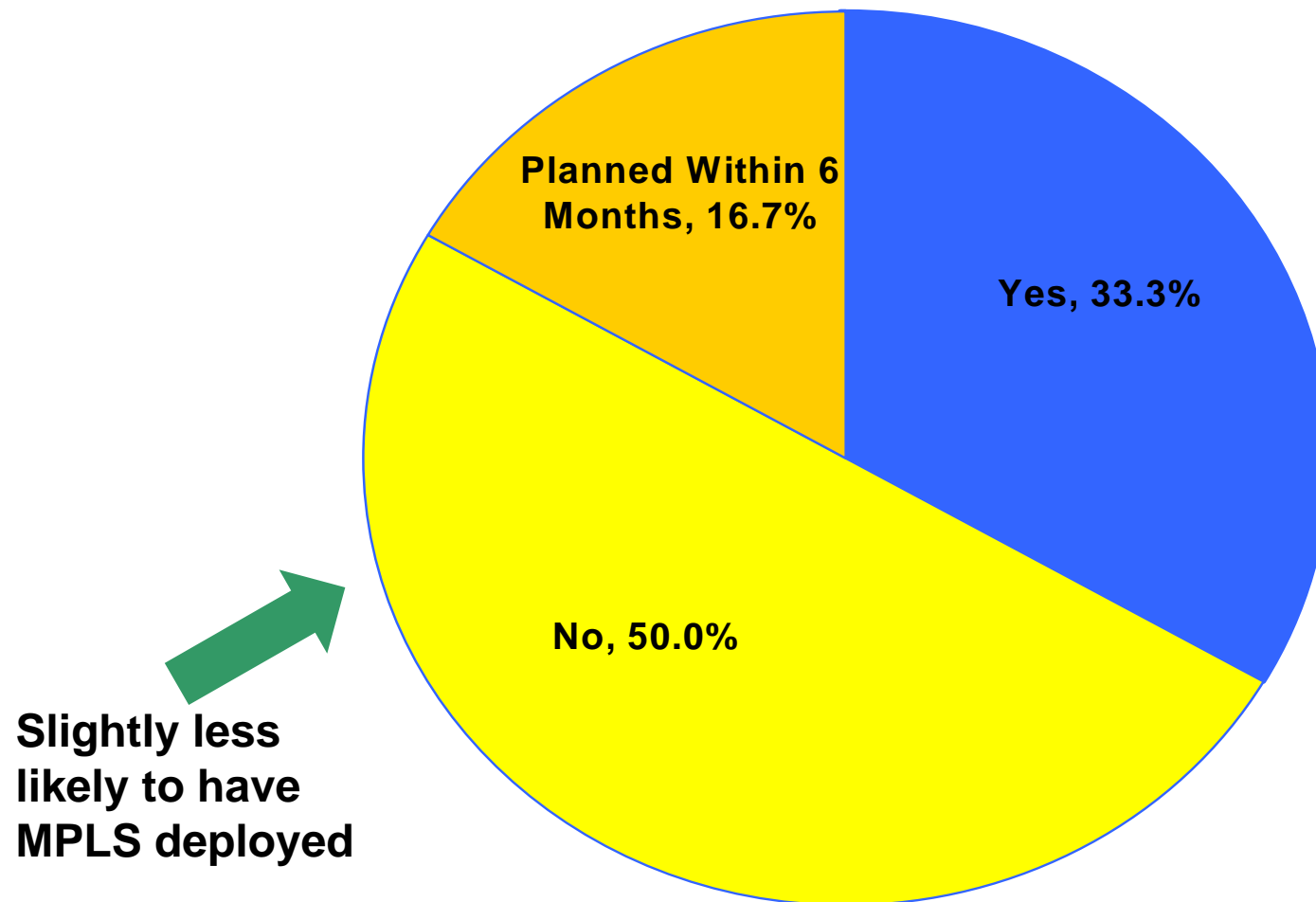
“Aggressive/Bleeding Edge”

Planned Within 6
Months, 5.7%



Slightly more
likely to have
MPLS deployed

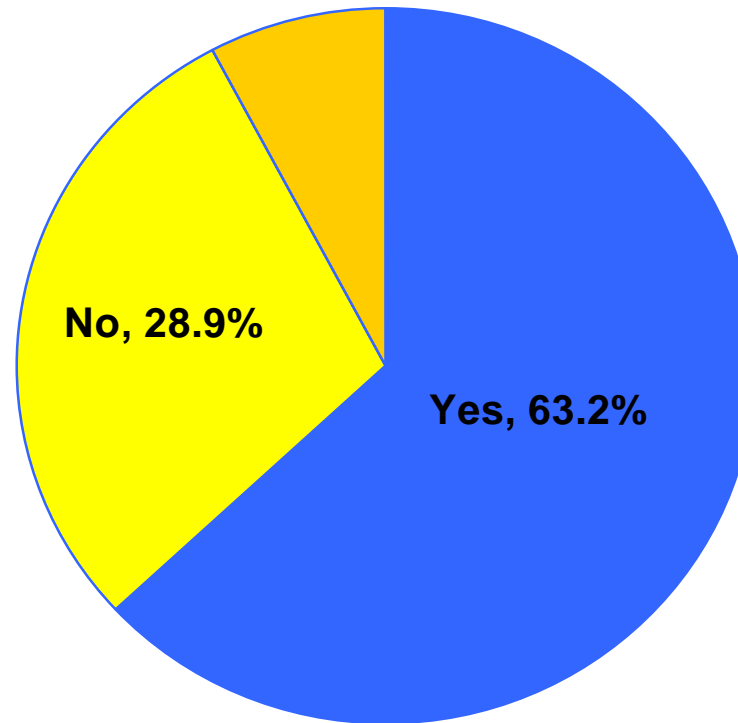
“Moderate/Conservative”



Slightly less likely to have MPLS deployed

With Global Operations

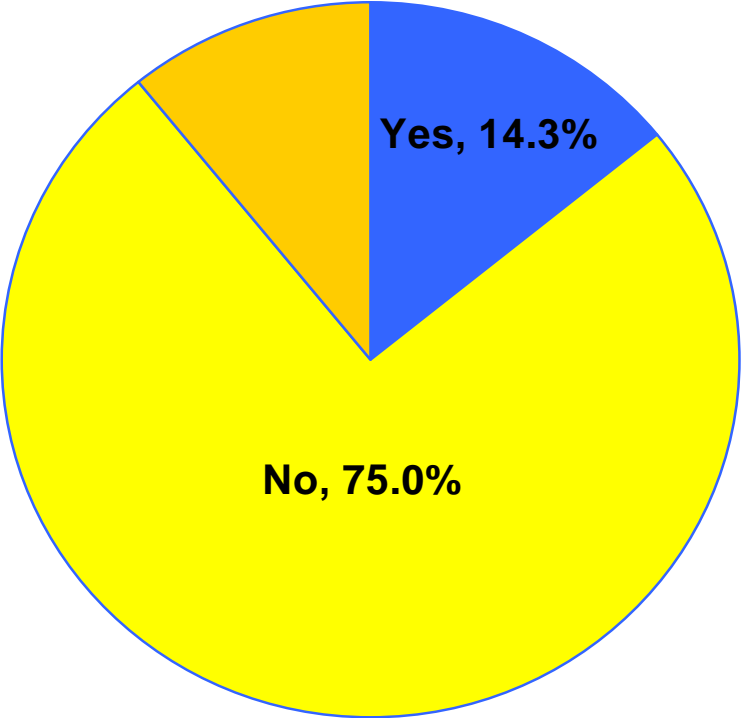
**Planned Within 6
Months, 7.9%**



**MUCH more likely
to have MPLS
deployed**

Without Global Operations

Planned Within 6 Months, 10.7%

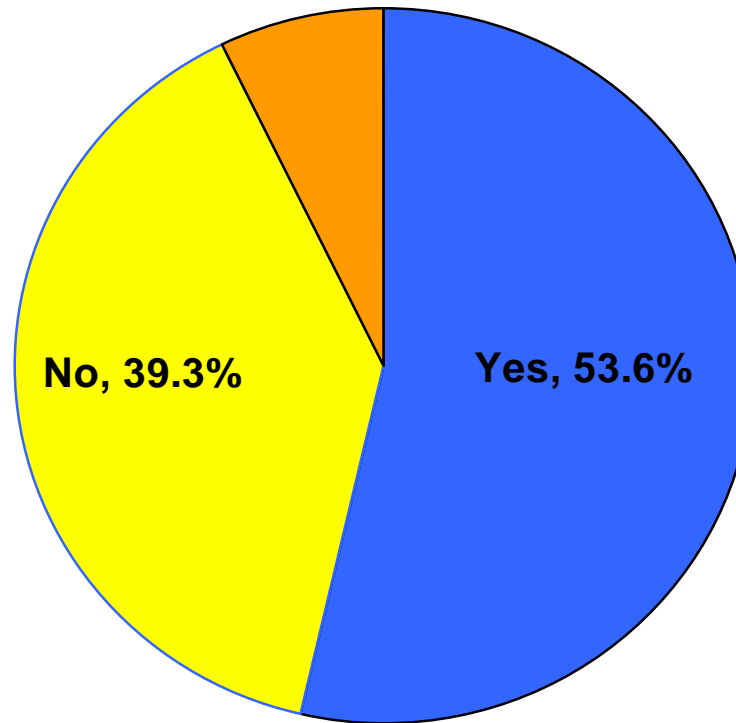


MUCH less likely to have MPLS deployed

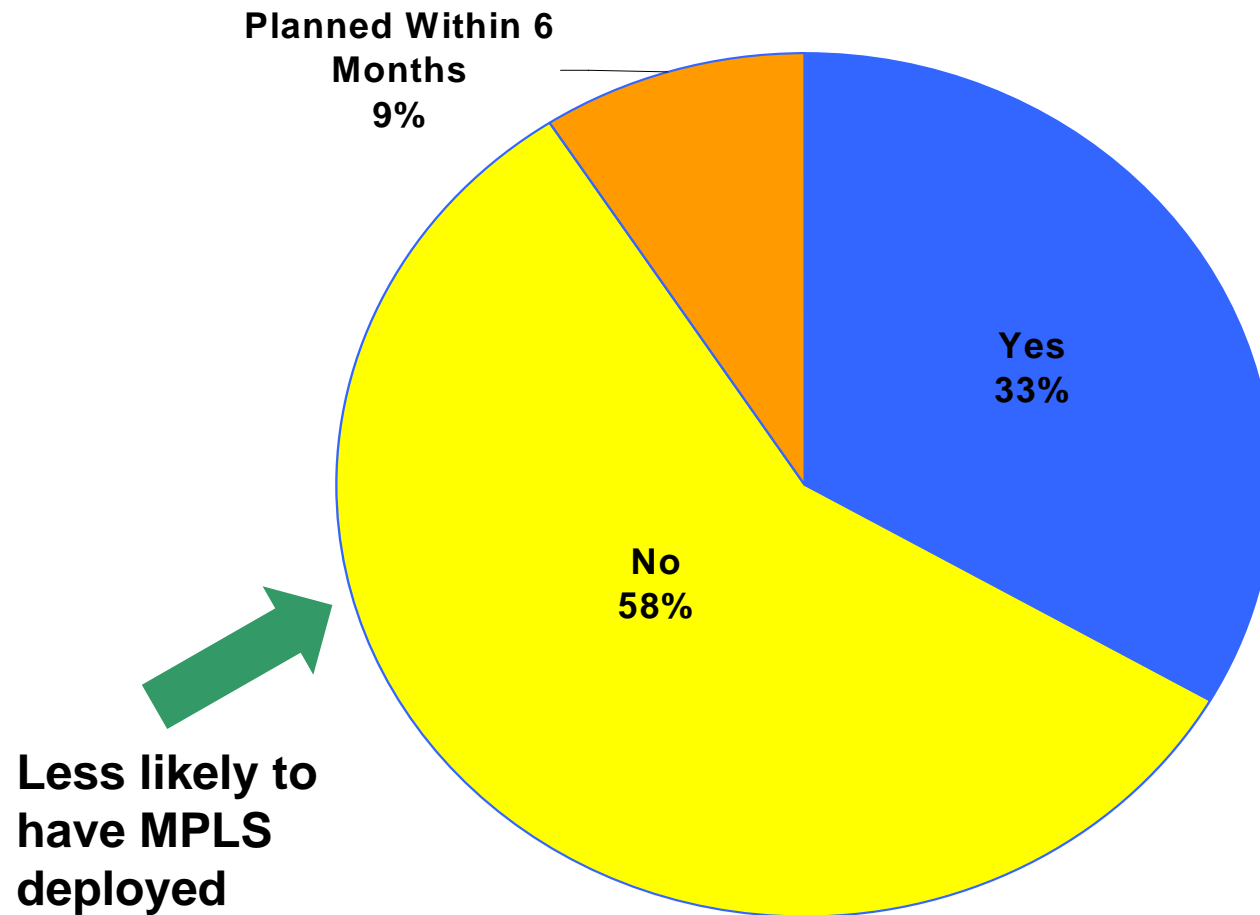
Annual Revenues over \$1 Billion

**Planned Within 6
Months, 7.1%**

**More likely to
have MPLS
deployed**



Annual Revenues Under \$1 Billion



Current State: Summing Up

MPLS More Likely Deployed By:

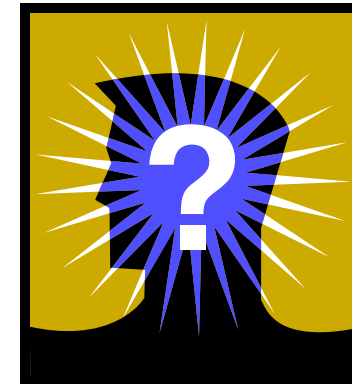
- ⊕ Large companies with global operations
- ⊕ In financial services, pharmaceuticals, global retail, media/entertainment/hospitality verticals
- ⊕ With self-defined “Aggressive/Bleeding-edge” corporate IT cultures

MPLS Less Likely Deployed by:

- ⊕ Small companies without global operations
- ⊕ In healthcare, transportation, government, education, not-for-profit industries
- ⊕ With self-defined “Moderate/Conservative” corporate IT cultures

Why MPLS? Key Reasons

- ⊕ Performance and QoS, especially for converged applications. “The most important aspect for me is that the carrier network meet the QOS parameters, delay, performance that they say they can. The last thing I need is to get a very jittery network and to try to run VOIP over it,” --- director of IT security and systems, global manufacturing company
- ⊕ Cost savings: 10%-40%, depending on real-time app mix
- ⊕ Disaster recovery (any-to-any architecture)



MPLS & VOIP: Synergistic, But....

⊕ VOIP Fully Deployed

- ⊕ Just 21 % have deployed/are planning to deploy MPLS
- ⊕ 79% not deploying
- ⊕ Why? These companies tend to be much smaller, not global.

⊕ VOIP Pilot/Growing Rollout

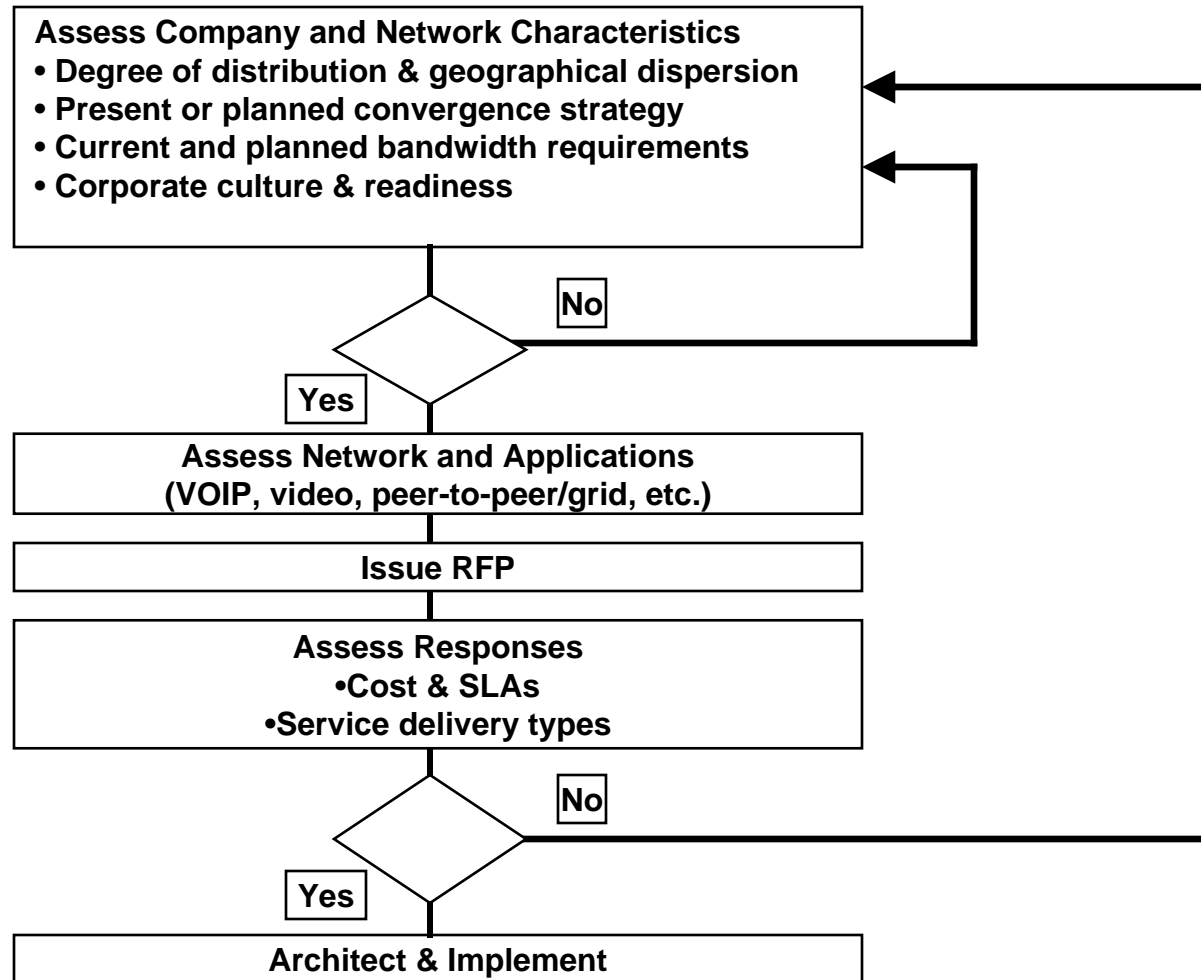
- ⊕ 67% have deployed/are planning to deploy MPLS
- ⊕ 33% not deploying

⊕ VOIP Limited/No Rollout

- ⊕ 57% have deployed/are planning to deploy MPLS
- ⊕ 43% not deploying

⊕ Bottom line: Though MPLS is ideally architected to support VOIP, not all VOIP users need MPLS, and vice versa

An MPLS Migration Flowchart



MPLS Implementation & Operational Challenges

⊕ Architecture

- ⊕ Multi-carrier or single-carrier?
- ⊕ Layer 2 versus Layer 3
- ⊕ Access types and mechanisms

⊕ Configuration and setup

- ⊕ Mapping priorities to applications (how do you know whether that app needs 'gold' or 'platinum' QoS?)
- ⊕ Routing and addressing strategies

⊕ Provisioning and management

- ⊕ Definition
- ⊕ Detection
- ⊕ Managed services: yes or no?

MPLS Implementation (Con't)

⊕ Training and expertise

- ⊕ Engineers may be skilled on IP routing/networking; unfamiliar with MPLS “lingo” and concepts
- ⊕ VOIP integration brings added headaches (Hint: Do NOT fire all your voice people!!)

⊕ Pricing and cost rationalization: apples to apples

⊕ Security: How much is enough?

- ⊕ “Security through obscurity”—nobody bothers our network (oh, yeah?)
- ⊕ PE-PE encryption
- ⊕ CE-CE encryption
- ⊕ End-point encryption (and how does that coexist with QoS, exactly?)

Bottom Lines & Recommendations

- ⊕ Consider MPLS if you're
 - ⊕ Large (annual revenues over \$1 billion)
 - ⊕ Global
 - ⊕ In a network-intensive vertical
 - ⊕ Also considering VOIP
- ⊕ Thoroughly understand your internal requirements for
 - ⊕ QoS
 - ⊕ Security
 - ⊕ VOIP integration
 - ⊕ Address management
 - ⊕ Management, provisioning and troubleshooting
- ⊕ Assess architectural impacts of multiple networks
- ⊕ Don't forget to invest in training for your engineers and techs (voice and data)
- ⊕ As with all communications services, negotiate aggressively!



Thank you!

