ECI THE ELASTIC NETWORK

THE SDN EVOLUTION
INTELLIGENCE INTO YOUR NETWORK

Erez Zelikovitz

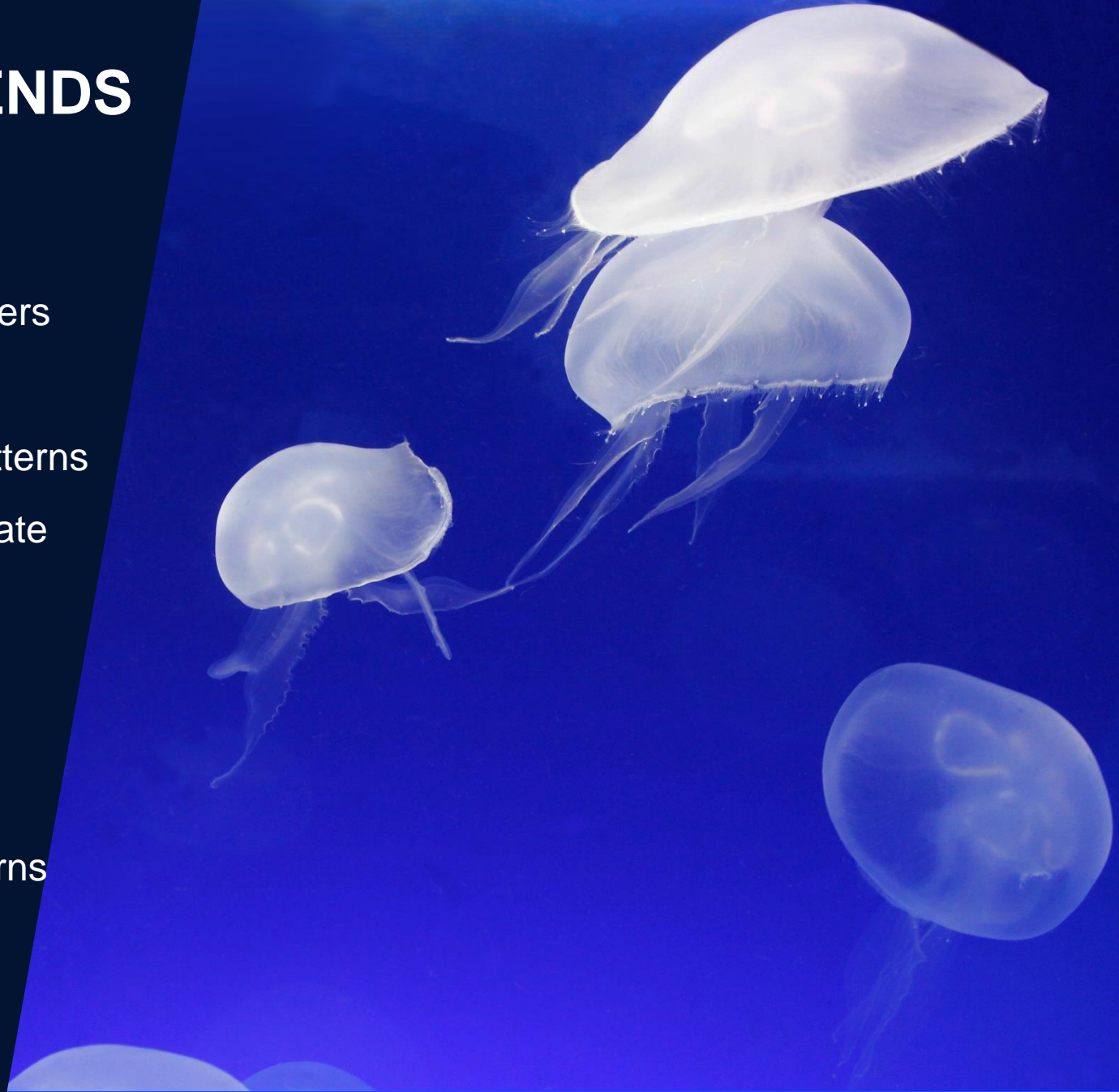**VP, Head of SDN/NFV Network Solutions**

MARKET TRENDS

What's Happening?

- Distributed data centers

- New applications

- App-to-app traffic patterns

- Off-loading of corporate DCs

The Result…

- More bandwidth

- Dynamic traffic patterns

- Metro centric growth

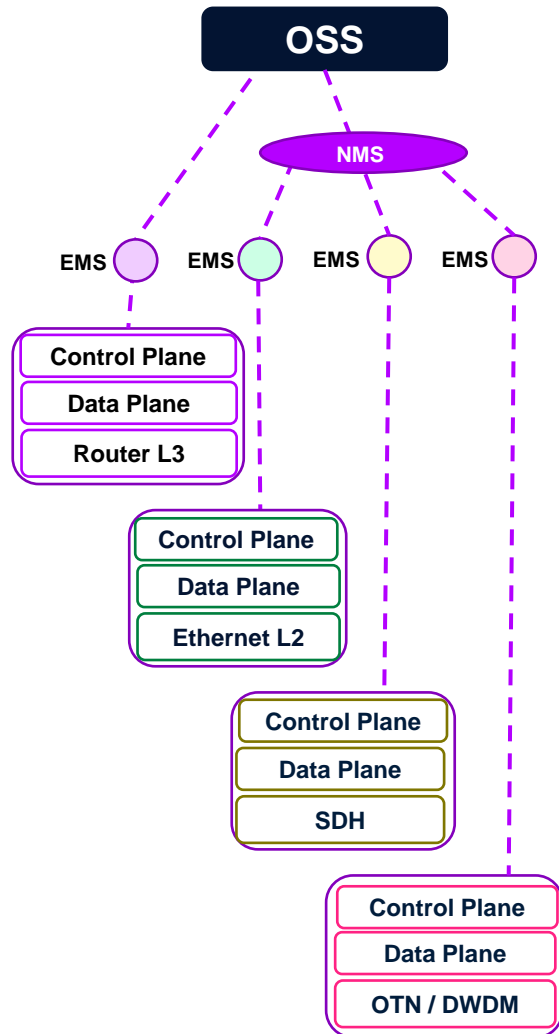# WHY ARE NETWORKS RENOVATED ?

CHALLENGES OF TRADITIONAL NETWORKS

- Networks become large and complex

- Time consuming service provisioning

- Multi-vendor environment

- Low utilization of network resources

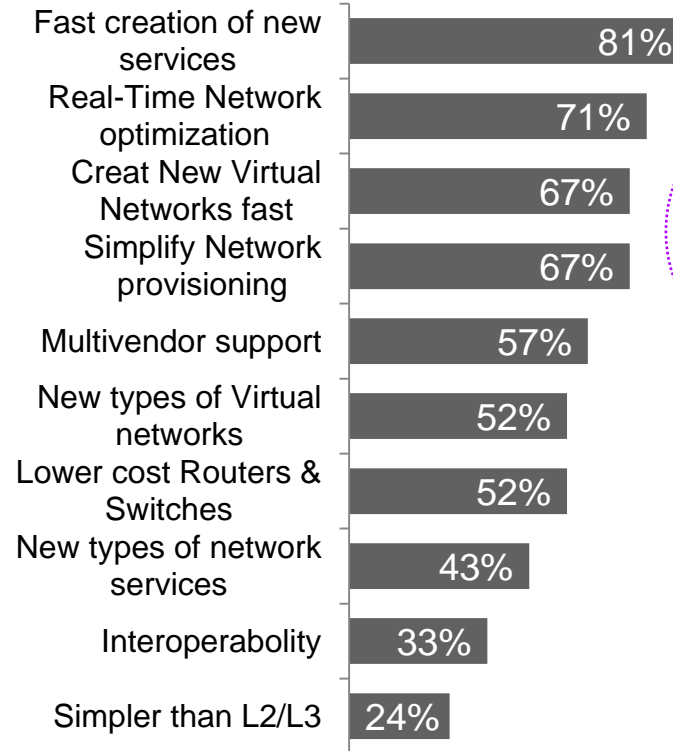- O&M complexity

- Difficult OSS integration

SDN NETWORKS MIGRATION
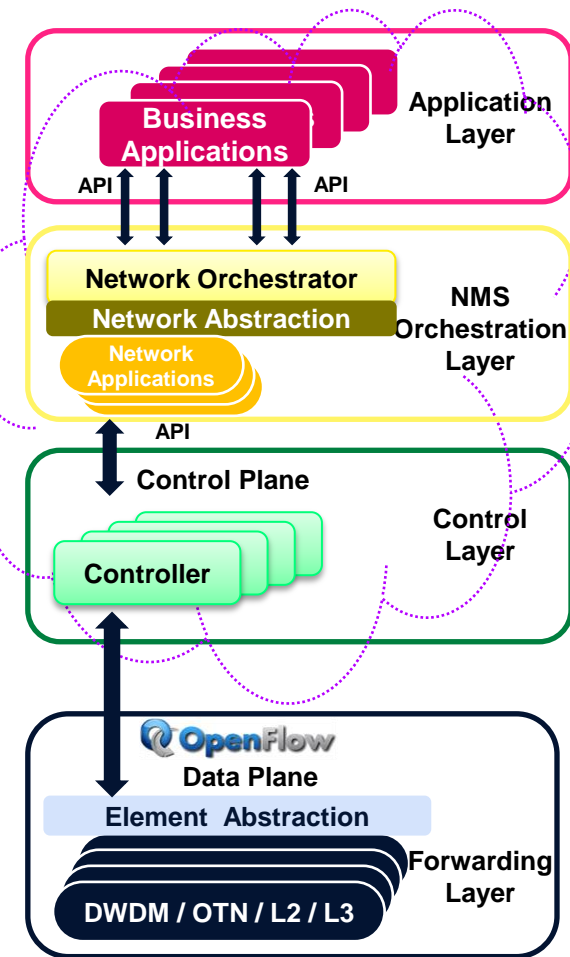
Legacy OSS Management environment

OSS

NMS

EMS EMS EMS EMS

Control Plane
Data Plane
Router L3

Control Plane
Data Plane
Ethernet L2

Control Plane
Data Plane
SDH

Control Plane
Data Plane
OTN / DWDM

SDN & NFV Expected benefits survey: operators' response

Benefit	%
Fast creation of new services	81%
Real-Time Network optimization	71%
Creat New Virtual Networks fast	67%
Simplify Network provisioning	67%
Multivendor support	57%
New types of Virtual networks	52%
Lower cost Routers & Switches	52%
New types of network services	43%
Interoperablity	33%
Simpler than L2/L3	24%

Infonetics, July 2013, "SDN & NFV: Global Service Provider Survey"

Multi-layer, Open, Centralized Control

Business Applications — Application Layer

API   API

Network Orchestrator
Network Abstraction
Network Applications
NMS Orchestration Layer

API

Control Plane
Controller
Control Layer

OpenFlow
Data Plane
Element Abstraction
DWDM / OTN / L2 / L3
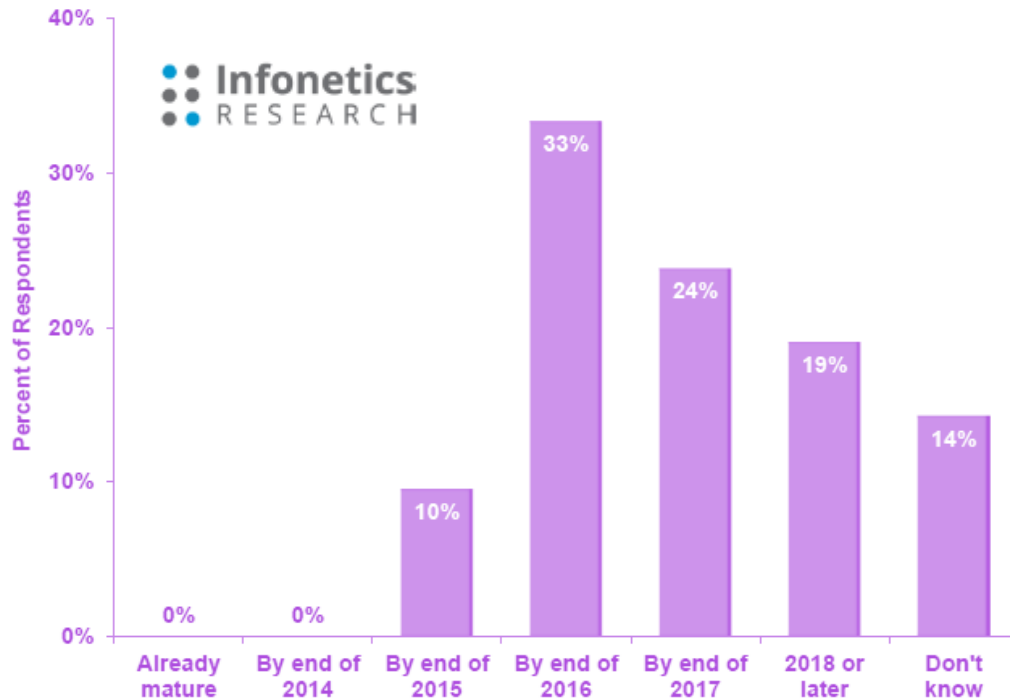Forwarding Layer

ECI

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OUR SDN OFFERING

- Transport SDN ecosystem and **multi-vendor** environment

  - Dedicated applications suite

  - Augmented offline planning and design tools

  - **Multilayer** SDN controller

  - D-NFV applications

  - Open programmable network
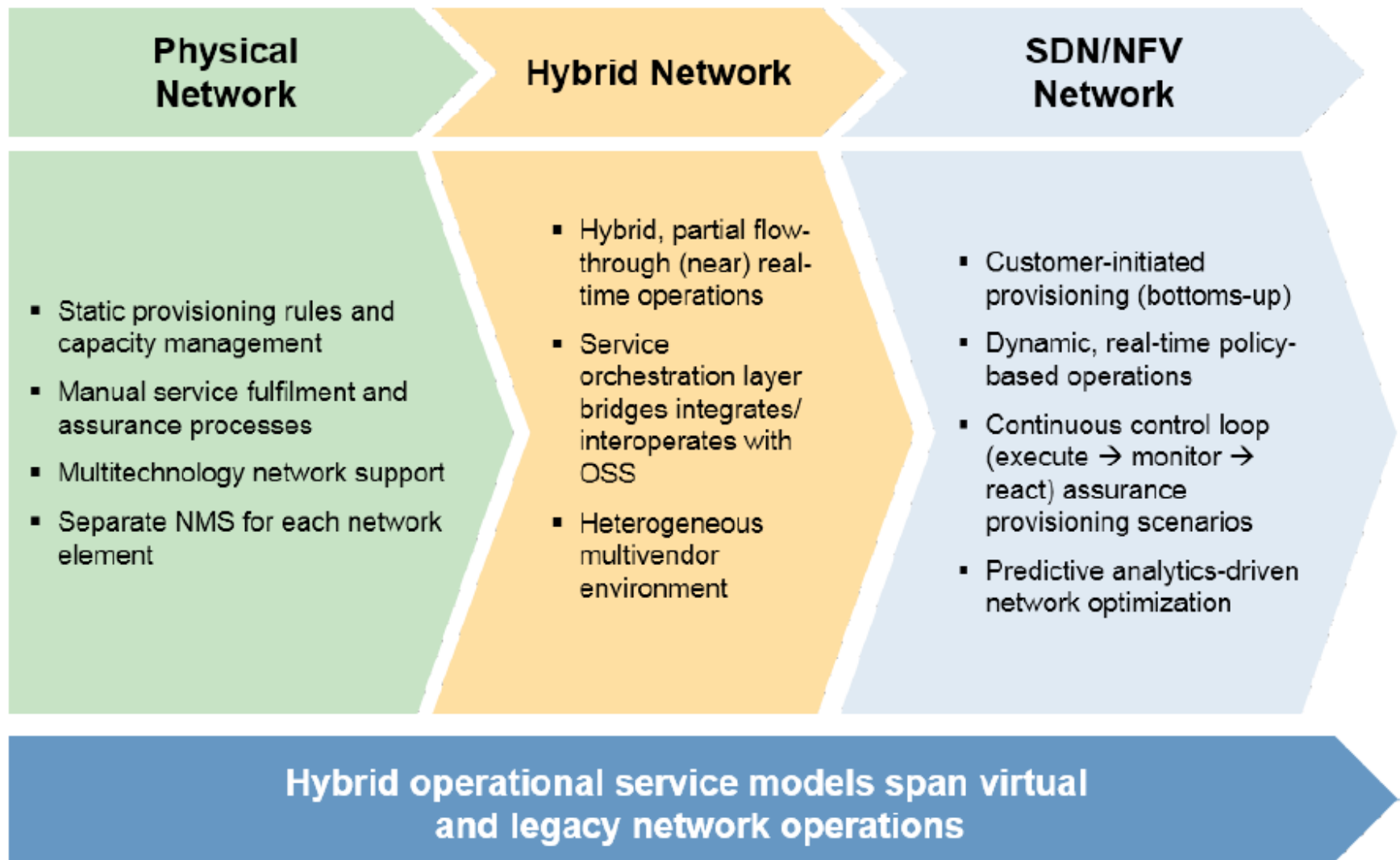
SNAPSHOT INTO THE FORESEEN MARKET TIMELINE

Infonetics asked: "*When do you believe transport SDN solutions will be mature enough for deployment in your network*?"
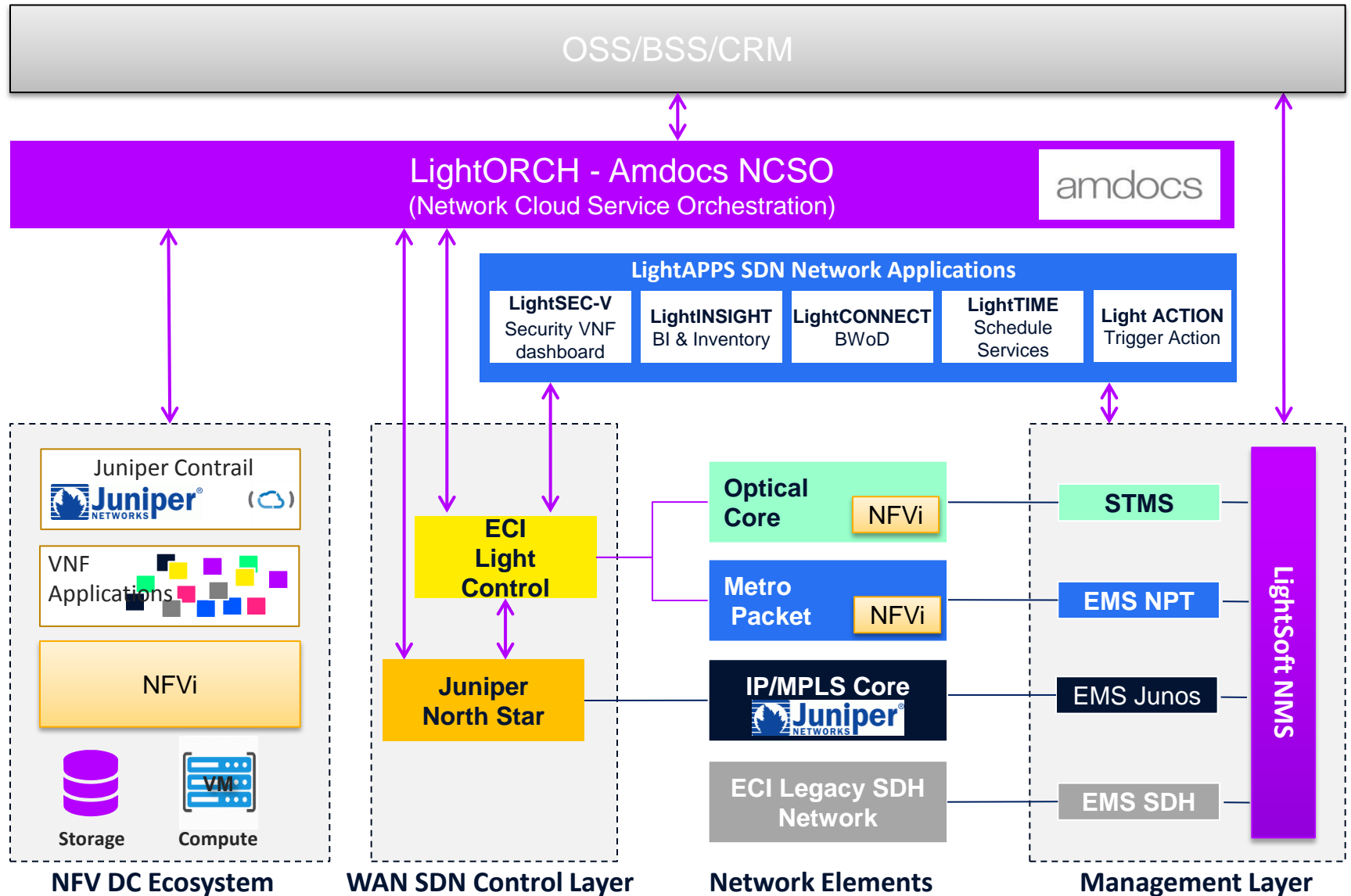
Service Provider Opinions:

- 2016 is the earliest that transport SDN solutions will be mature enough to deploy

- 33% indicated that a vendor's transport SDN strategy is very important in their decisions to make purchases today
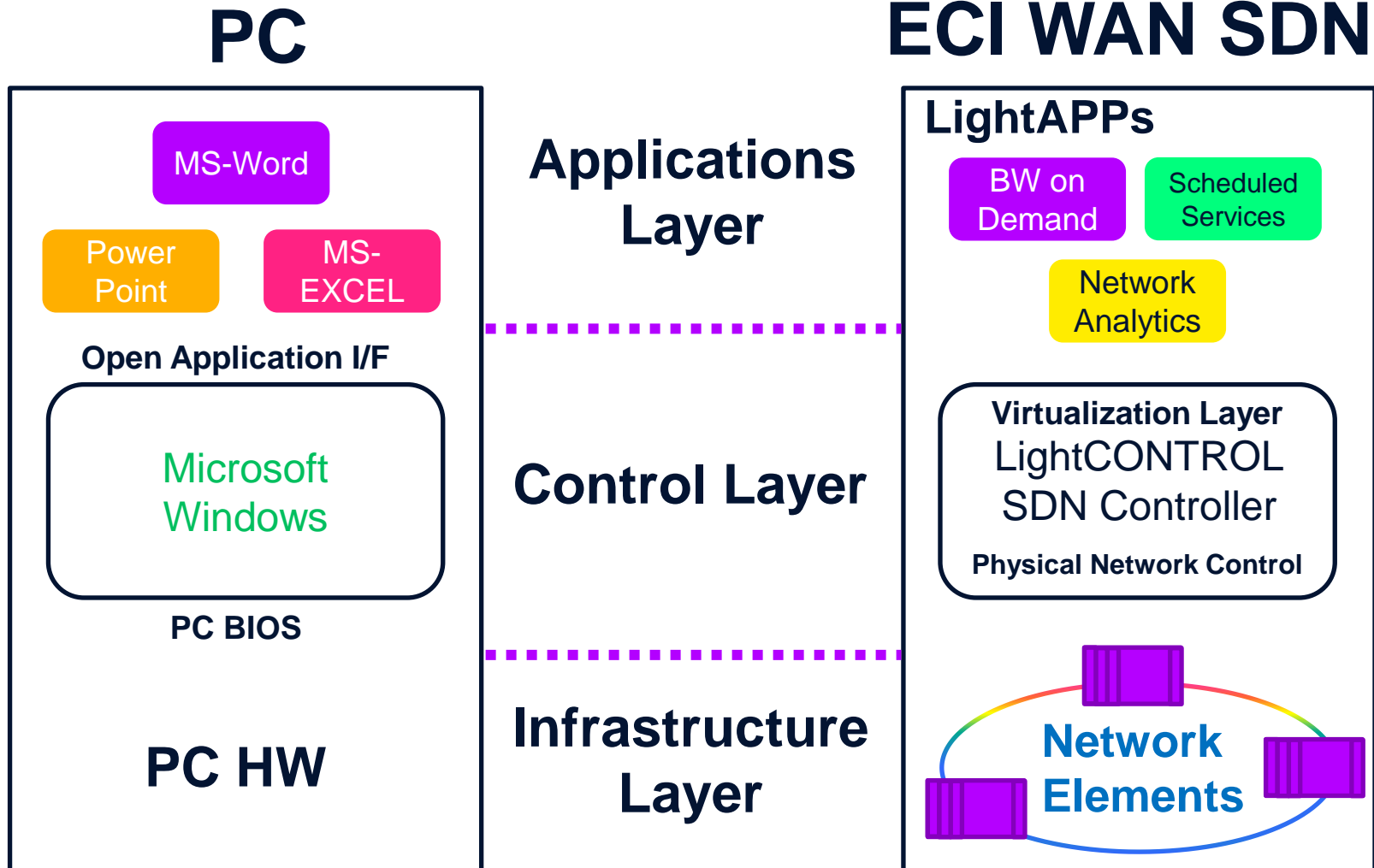
EVOLUTION INTO HYBRID NETWORKS

Physical Network

- Static provisioning rules and capacity management
- Manual service fulfilment and assurance processes
- Multitechnology network support
- Separate NMS for each network element

Hybrid Network

- Hybrid, partial flow-through (near) real-time operations
- Service orchestration layer bridges integrates/ interoperates with OSS
- Heterogeneous multivendor environment

SDN/NFV Network

- Customer-initiated provisioning (bottoms-up)
- Dynamic, real-time policy-based operations
- Continuous control loop (execute → monitor → react) assurance provisioning scenarios
- Predictive analytics-driven network optimization

Hybrid operational service models span virtual and legacy network operations

Gartner, Aug 2015

ECO-SYSTEM BLUEPRINT

OSS/BSS/CRM

LightORCH - Amdocs NCSO
(Network Cloud Service Orchestration)

amdocs

LightAPPS SDN Network Applications

LightSEC-V	LightINSIGHT	LightCONNECT	LightTIME	Light ACTION
Security VNF dashboard	BI & Inventory	BWoD	Schedule Services	Trigger Action

NFV DC Ecosystem

Juniper Contrail

Juniper NETWORKS

VNF Applications

NFVi

Storage   Compute (VM)

WAN SDN Control Layer

ECI Light Control

Juniper North Star

Network Elements

Optical Core — NFVi

Metro Packet — NFVi

IP/MPLS Core — Juniper NETWORKS

ECI Legacy SDH Network

Management Layer

STMS

EMS NPT

EMS Junos

EMS SDH

LightSoft NMS

ECI

8

ECI SDN – THE PC ANALOGY

PC

MS-Word

Power Point

MS-EXCEL

Open Application I/F

Microsoft Windows

PC BIOS

PC HW

Applications Layer

Control Layer

Infrastructure Layer

ECI WAN SDN

LightAPPs

BW on Demand

Scheduled Services

Network Analytics

Virtualization Layer
LightCONTROL
SDN Controller

Physical Network Control

Network Elements

ECI SDN/NFV SOLUTION VALUES

- Network operation automation and OPEX Reduction
  - End-End service creation
  - Advanced end to end operation and maintenance
- Network flexibility and programmability – Fast new services introduction (TTM)
  - SDN Centralized control layer and network abstraction
  - Centralized NFV evolution and ECI unique distributed NFV with cyber security VNFs
- Better ROI – ECI and partners value proposition
  - Lowering CAPEX and improved OPEX
  - Fast TTM and responsiveness to subscribers needs
- Solution Attributes
  - Open standards
  - Multi-Vendor and Multi-Domain
  - Future proof

ECI SDN – ADDRESSING THE CHALLENGES

- **Automation** – Offline Planning tools connected and streamlined to achieve automatic network operation
  - Service Provisioning and Dynamic Service Modification
  - Service Restoration

- **Virtualization** – Transport Network complex structure is virtualized
  - Simplifying IT (OSS/BSS) integration – Fast TTM
  - Simplifying O&M – OPEX reduction
  - Virtual Private Network by Network slicing – Improve customer retention

- **Synergy** – IP and Optical layers synergy to improve network performance and better utilization of resources

- **Flexible** – Network resources are SW controlled to achieve
  - Programmable line rates
  - Better links utilization
  - Optimal Path selection based on Services SLA

- **Open** – Open standards for Multi-vendor, Multi-Domain operation simplify Integration and improved TTM

LIGHTCONTROL: MULTILAYER SDN CONTROLLER

- Multi-layer controller for WDM and OTN layers – Multilayer algorithms for network optimization and high utilization
    - Automatic service provisioning
    - Multilayer real-time optimization and path restoration
- Network abstraction and virtualization to simplify integration with orchestration and OSS layers
- Bandwidth-on-demand driven by orchestrator, LightAPPS
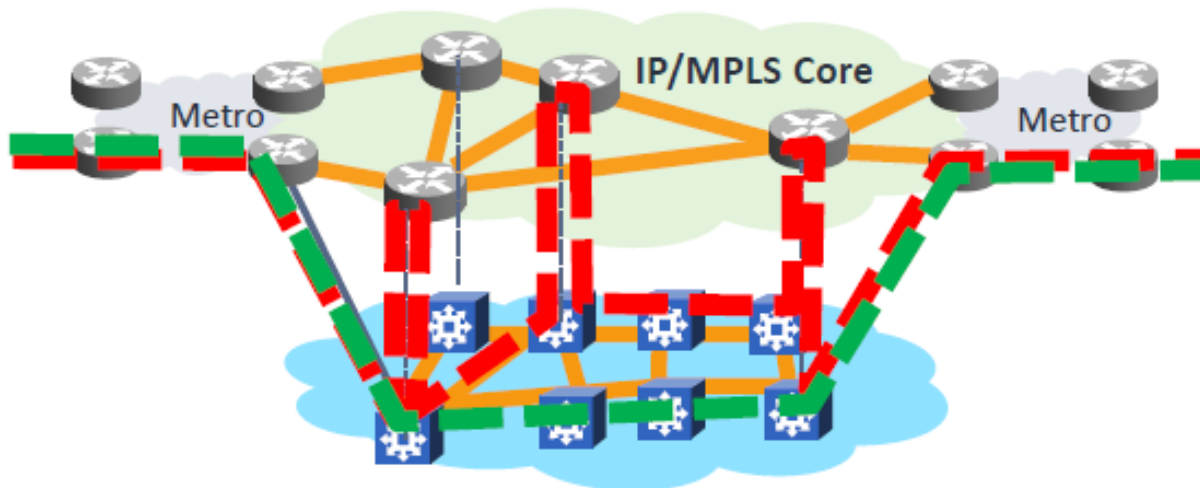
LightCONTROL™

MULTI-LAYER SDN CONTROLLER

CONTROLLER

NETWORK

APPS

Security Apps Control Transport
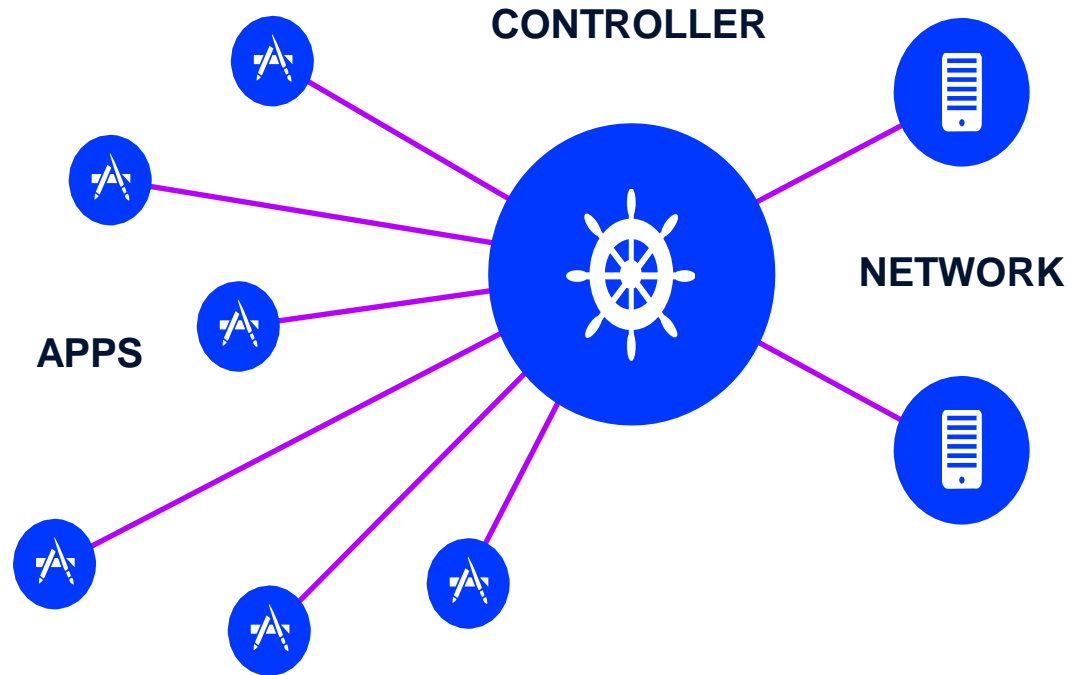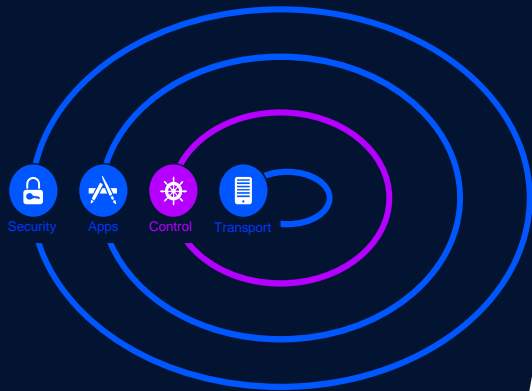
Carrier-grade controller	**Centralized coordinated multi-layer**	Multi-layer **network optimization**	**Real-time** and **programmable** control logic	Expansive **Openness**
for wide area networks	control plane for packet-optical networking			

PACKET-OPTICAL SYNERGY

PACKET-OPTICAL CONTROL PLANE INTEGRATION CONTROLLER-TO-CONTROLLER

NorthStar Controller

LightCONTROL Transpont SDN

Abstract link topology
(via Northbound Restful interface*)

PCEP, BGP-LS
(Southbound interface to NE)

SNMP, OpenFlow, NetConf, etc…
(Southbound interface to NE)

SRLG

Q   C   V

B   X

A   Z

T

C   Y

R   U   W

- - - - - LSP
━━━━━ Optical path
▪▪▪▪▪ Failed path
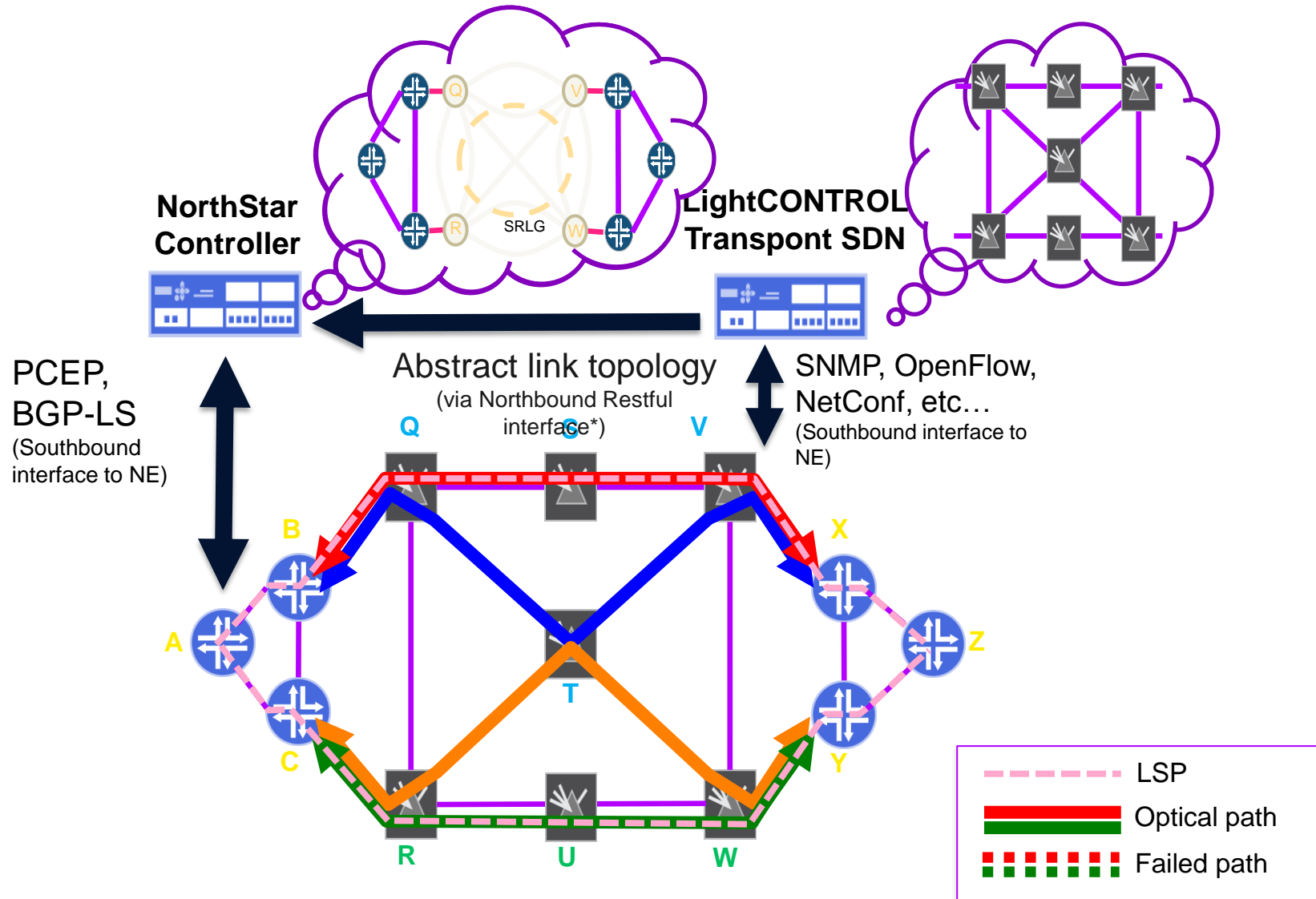
NETWORK FUNCTIONS VIRTUALIZATION (NFV): WHAT IS IT ALL ABOUT?

Physical Network

A, B, C, D, E, F, G, H, I, J — Internet

Future Virtual Network

Orchestration

A, B, C, D, E, F, G, H, I, J

Standard high volume servers
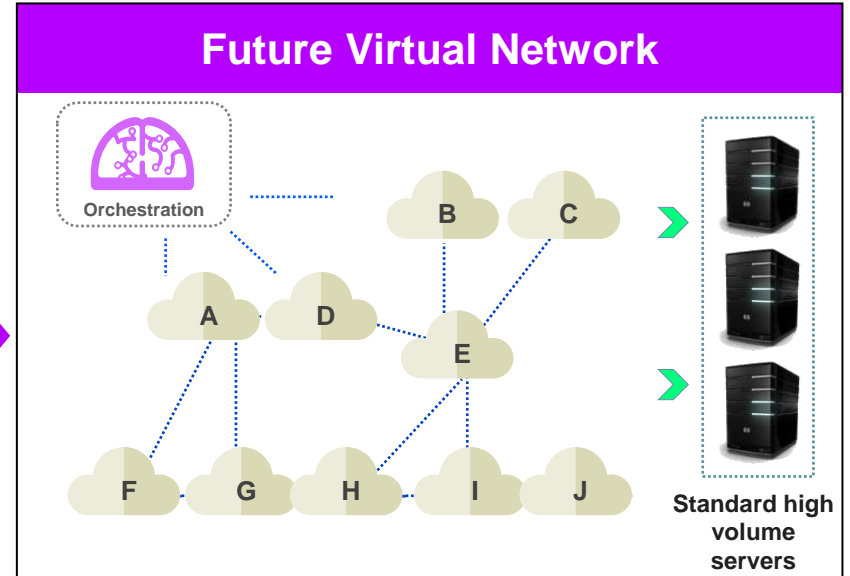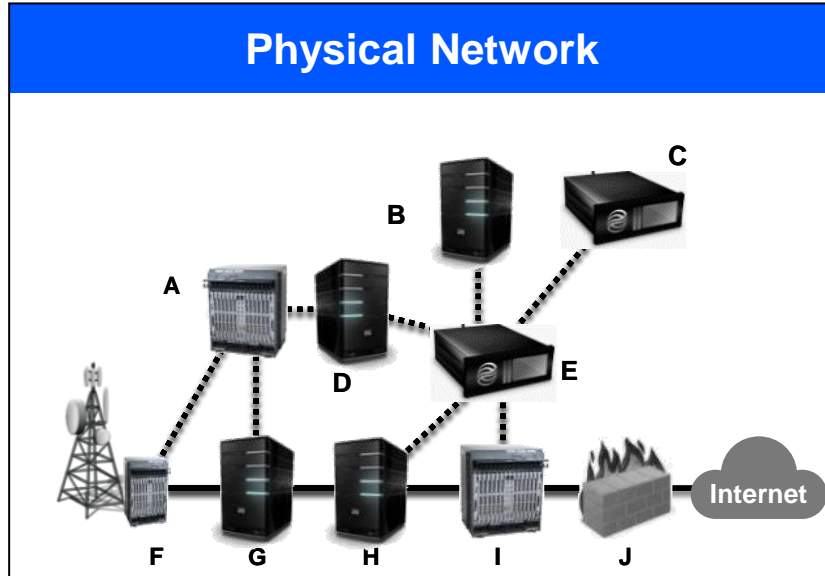
Business Agility	Operational Efficiency	Cost Reduction
• Rapid time to market for new services, • Faster changes	• Automation • On-demand service selection and delivery	• High resource utilization • Multiple vendors
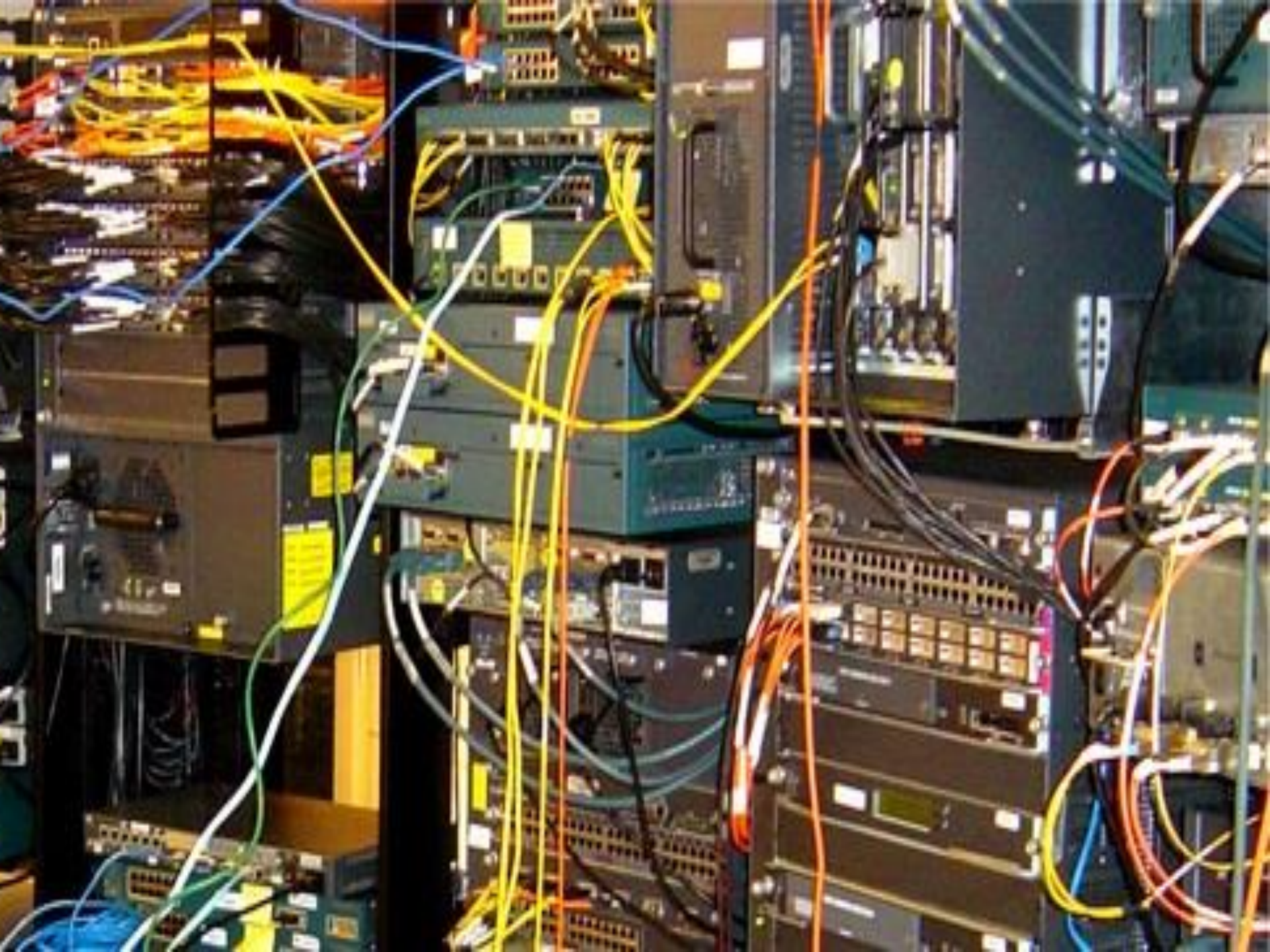
ECI NFV SOLUTION

- ELIMINATES THE DEPENDENCE ON DEDICATED HARDWARE
  - Better scalability – not depended in box/card granolarity
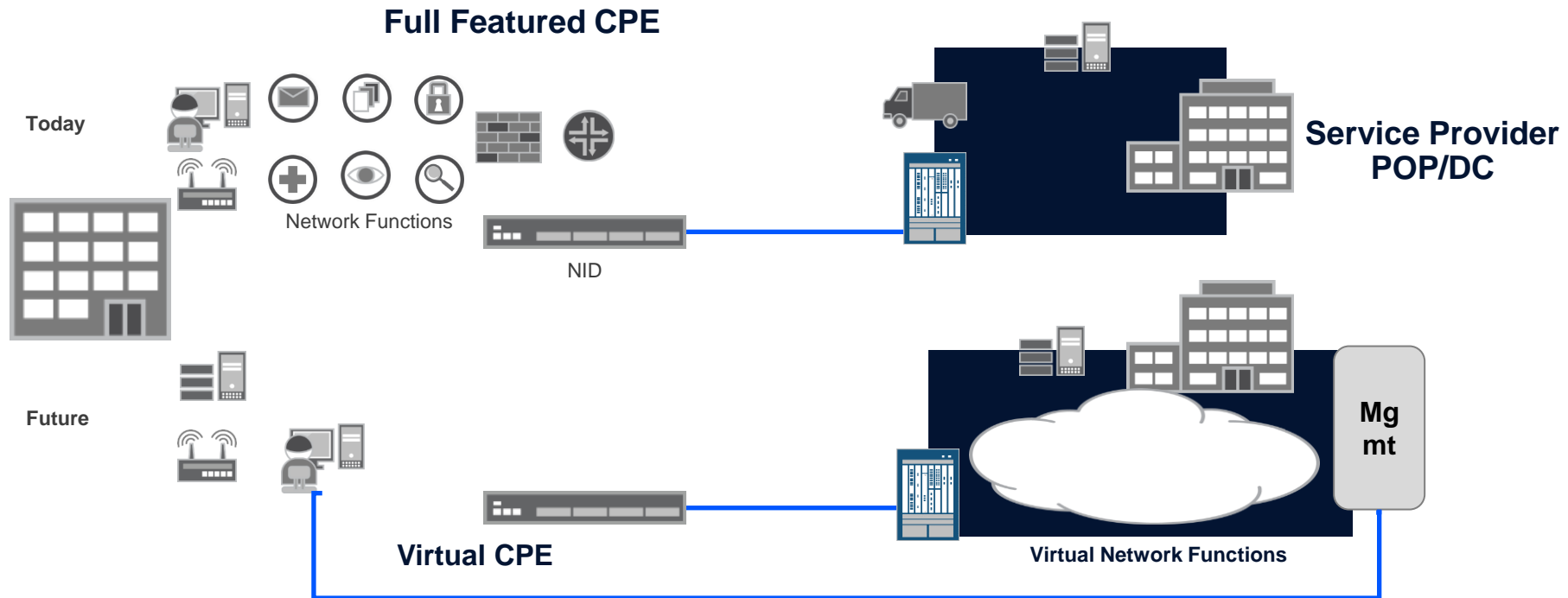 - Fast innovation – SW-based solutions over standard HW
- SERVICE PROVIDERS BENEFITS
  - Respond quickly to customers' expectations
  - Dynamically meet capacity demands
- ECI NFV SOLUTION – TWO ARCHITECTURES
  - Centralized Data-Center based solution - Leverages the common flexible and scalable infrastructure of Data Center
  - Distributed - commercial-CPU populated in deployed network element
    Optimally locates functions in the network, close to where they are really needed
    - L2&L3 Encryption
    - DPI for security purpose
    - Firewall
    - SSH /HTTPS Proxy
    - IP and L2 Anomaly Detection

vCPE Use Case

Full Featured CPE

Today

Network Functions

NID

Service Provider POP/DC

Future

Virtual CPE

Virtual Network Functions

Mgmt

COLT – vCPE Success Story

- **Virtualized CPE service for enterprise customers**

    - *69% Faster time to market*

    - *41% Lower TCO*

    - *Service agility with NFV*

    - *Lower risk of introducing new services*

    - *New commercial models: Pay-as-you-go, CAPEX to OPEX transformation*

colt
smarter / faster / further

Nicolas Fischbach
Director of Network & Platform Strategy and Architecture
Colt

SUMMARY OF SDN/NFV SOLUTION BENEFITS

Greater Network Visibility

Opex Reduction

Better Utilization of Resources

Less Capex

More Efficient Operations

Opex Reduction

New & Faster Service Introduction

Increase Revenues

ECI THE ELASTIC NETWORK

THANK YOU!

Erez Zelikovitz

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