



Intelligent Infrastructure Provides New Broadband Opportunities



Steve Alexander
Chief Technology Officer

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Demand for capacity is accelerating

Devices

22 Billion
Connected devices
by 2020

Source: IMS Research 2010

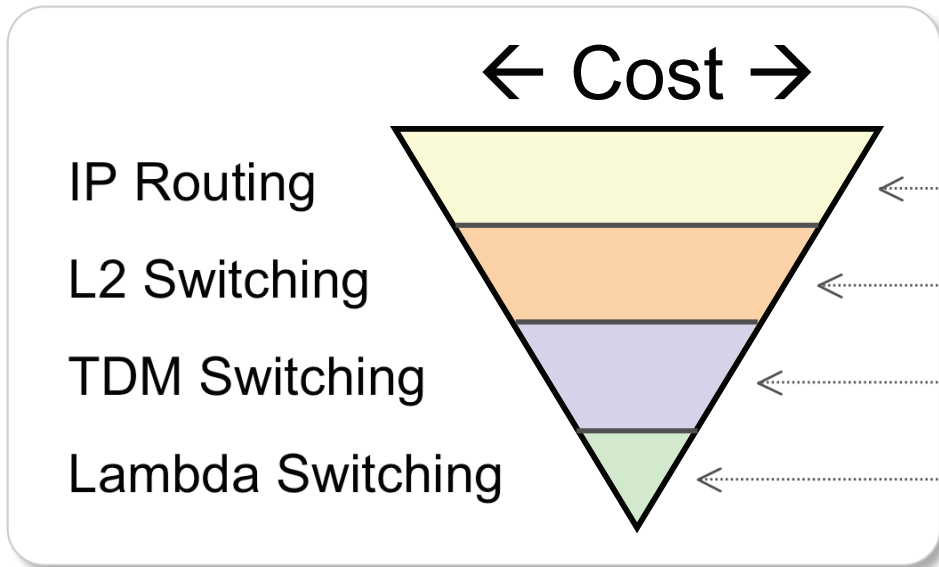
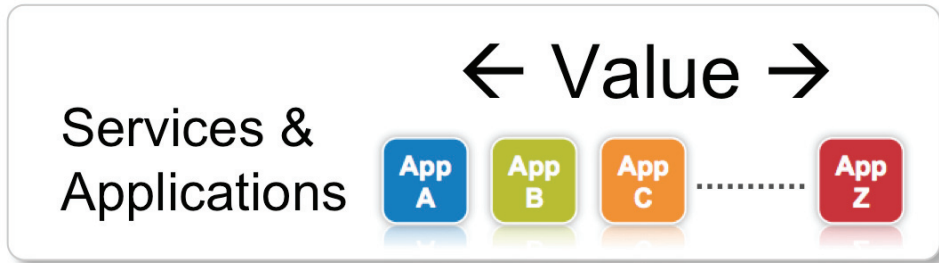
Storage

35 Zetta Bytes
Digital data universe
by 2020

Source: IDC & EMC May 2010

Zettabyte = trillion Gbytes (0.8 ZB in 2009)

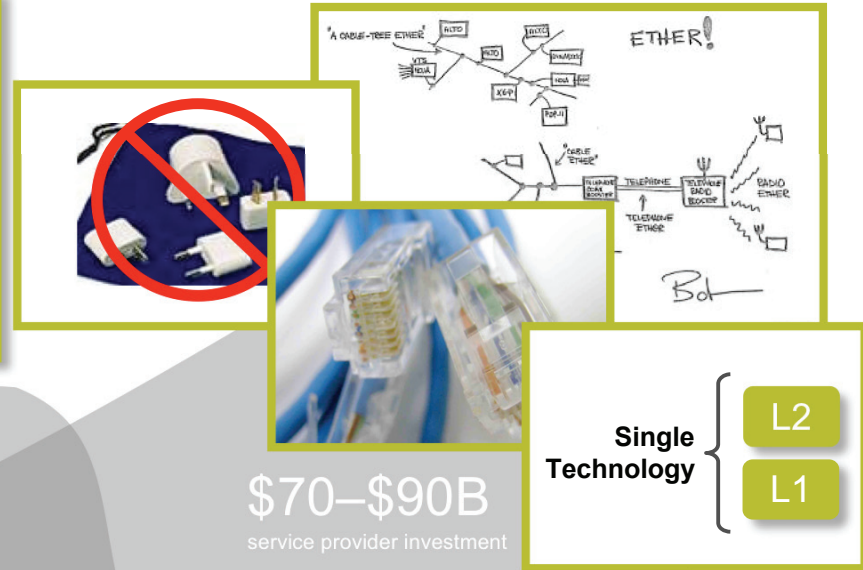




*How to maximize network **Value** and Minimize cost ?*

- L3 IP services
- L2 Connectivity services
- L1 Private services
- L0 Wholesale services

The **Carrier Ethernet / OTN** Technology Wave is changing network economics



\$70-\$90B
service provider investment

Carrier Ethernet
service & layer convergence

Packets everywhere
Global Standards

\$68B
service provider investment

PDH
Digitized voice
National Standards

1986

Source: ITU historical report estimate

\$81B
\$47B ('96-'00)
\$34B ('01-'06)
service provider investment

SDH/SONET
Protection / Restoration
Regional Standards

1996

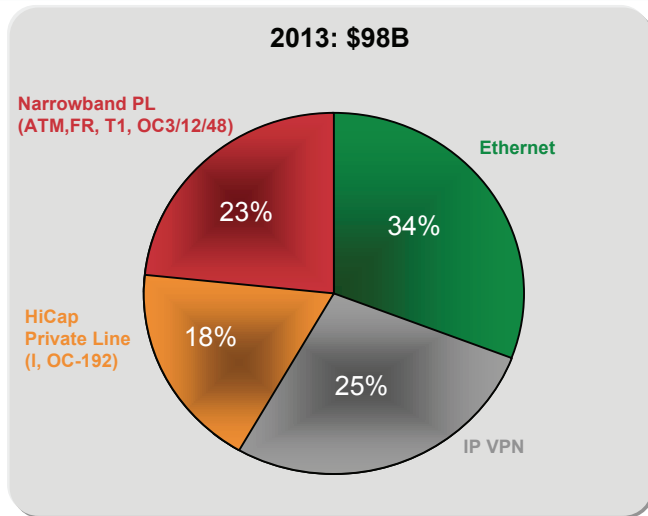
Source: Dell'Oro SONET/SDH historical revenue reports.

2006

Source: Infonetics CE switches, Ethernet over SONET/SDH, Ethernet over WDM, Ethernet access forecasts, Ciena Marketing.

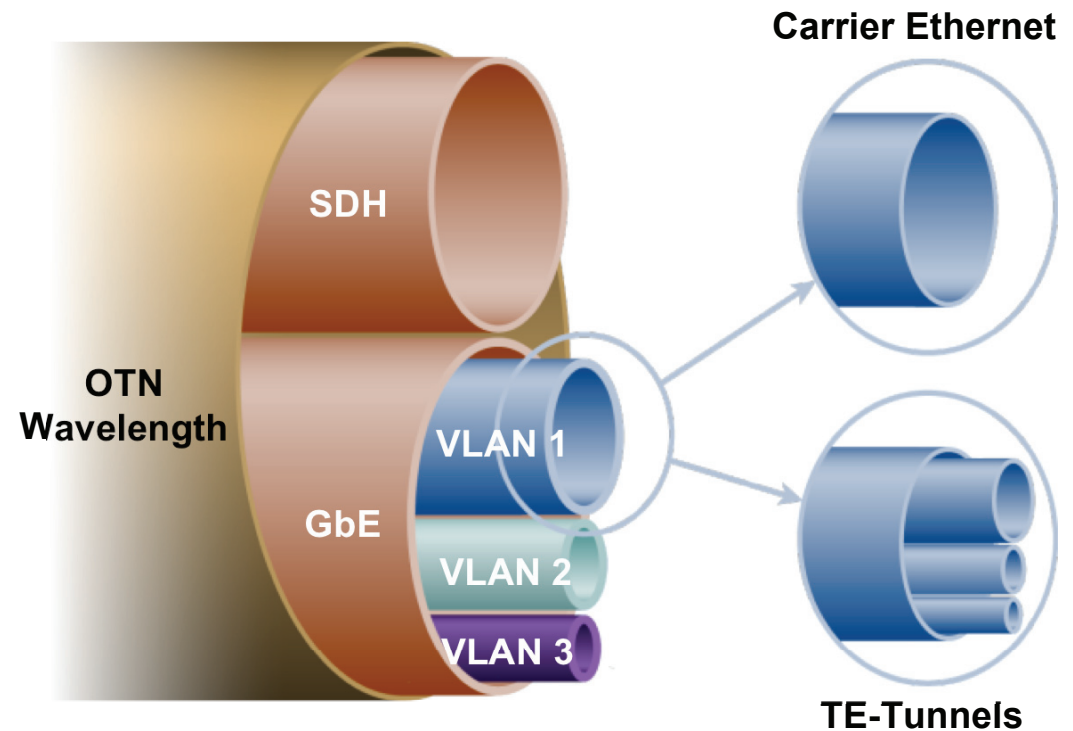
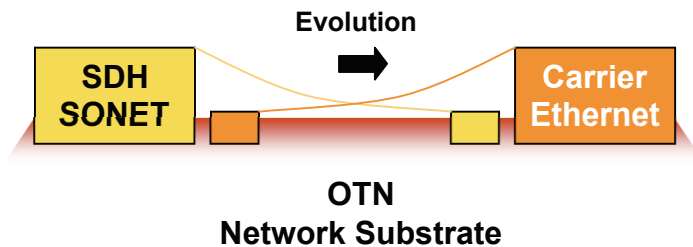
2016

Carrier Ethernet / OTN is ideal for the WAN



Private Line Services

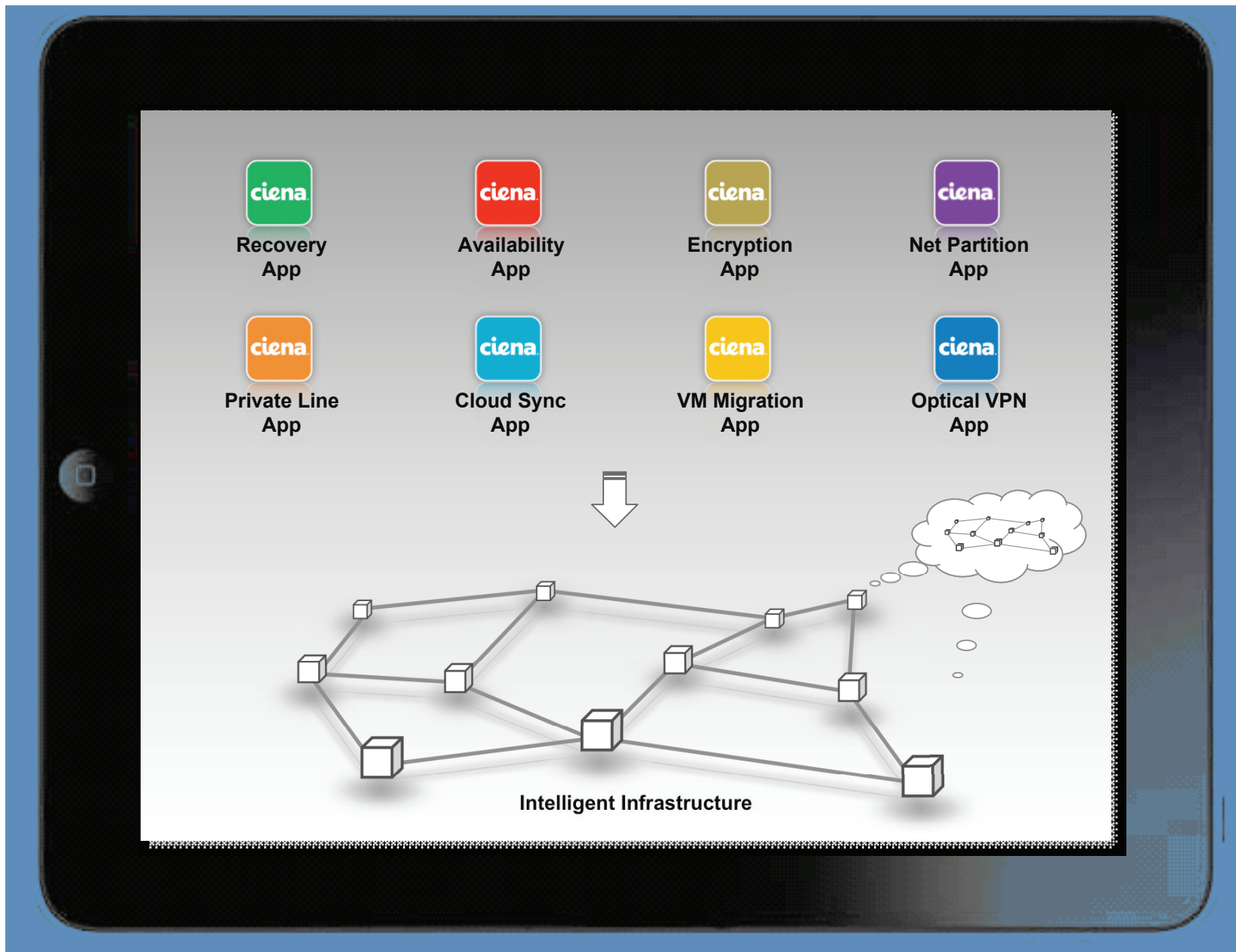
Sources: Infonetics & Insight Research

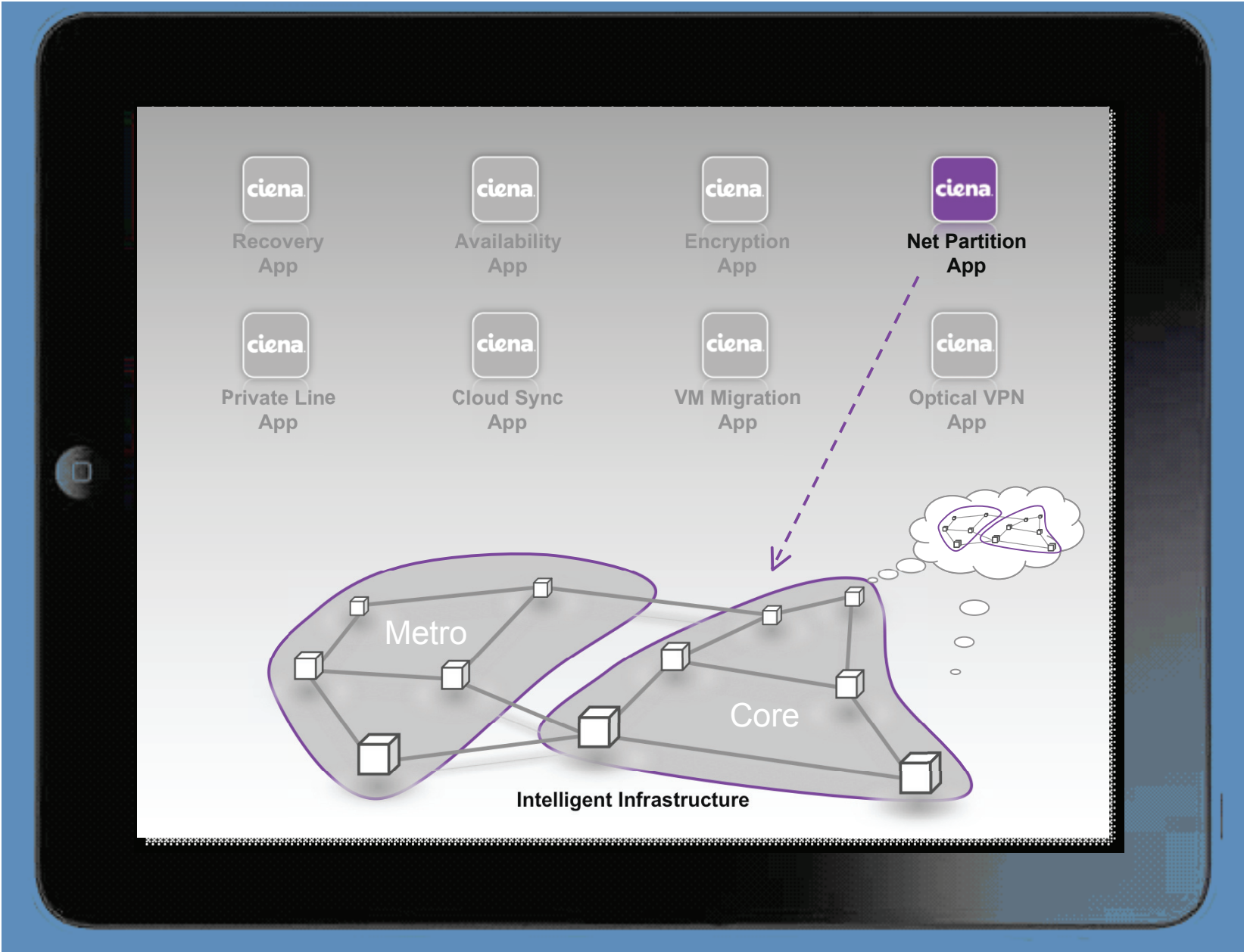


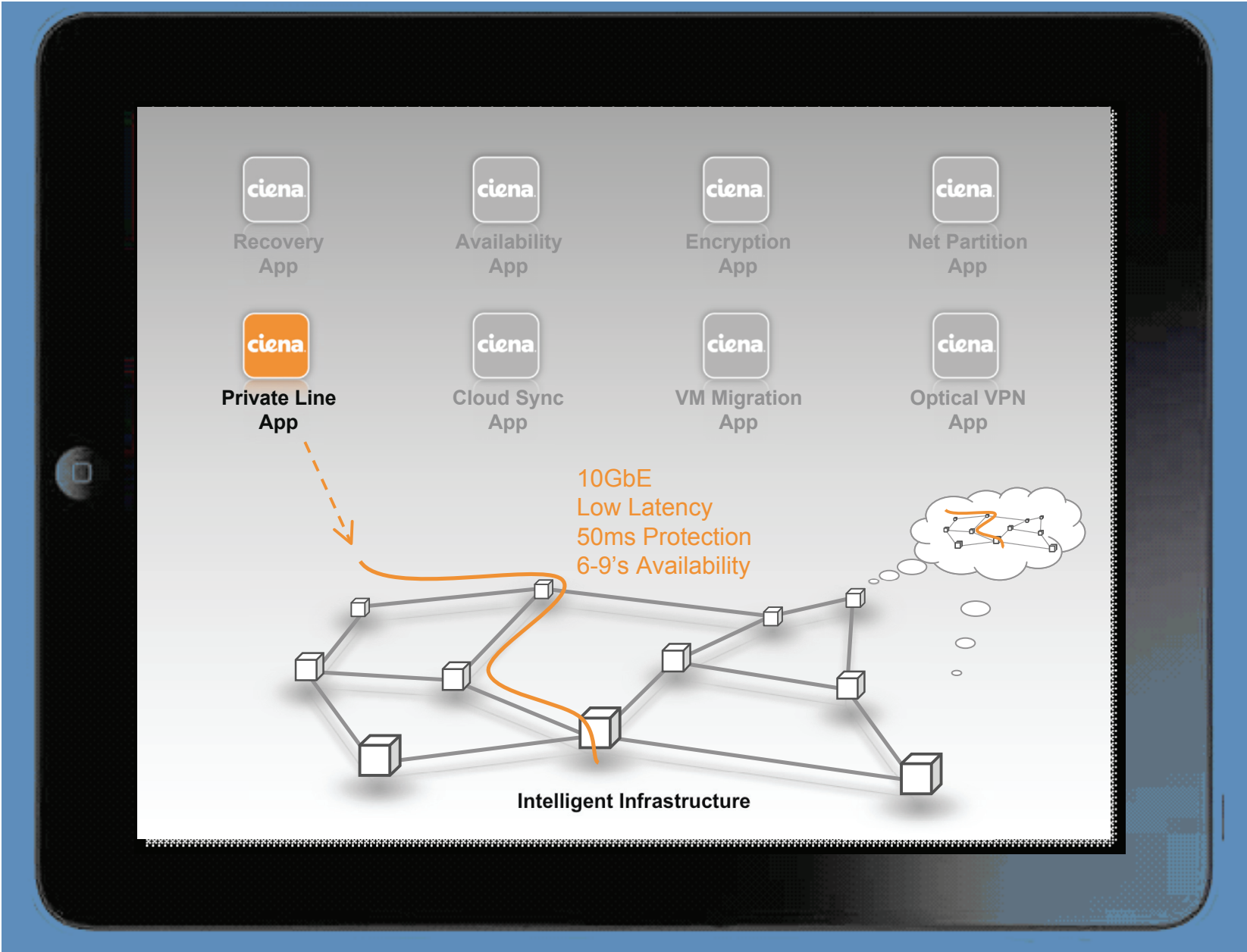
Think Different about infrastructure

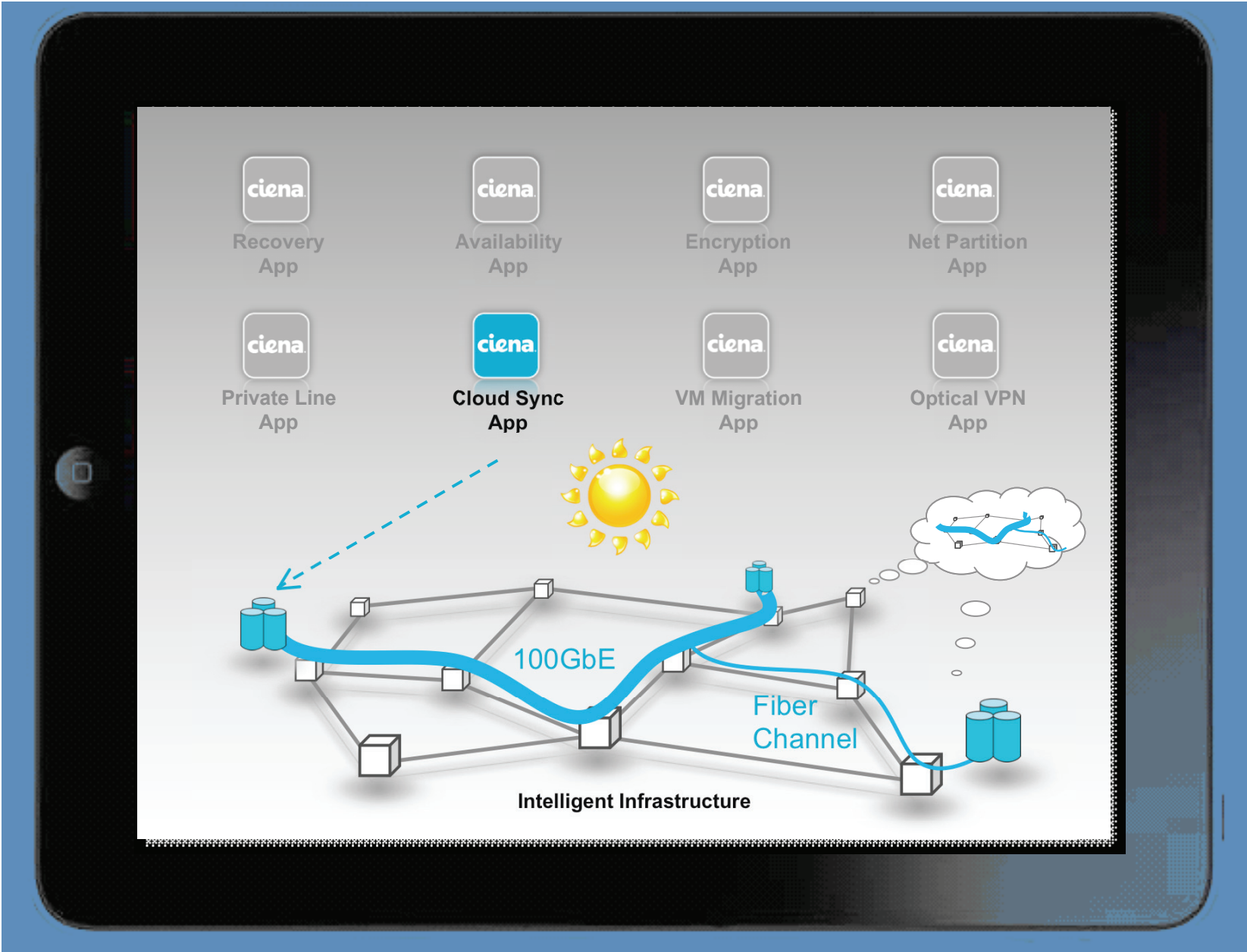


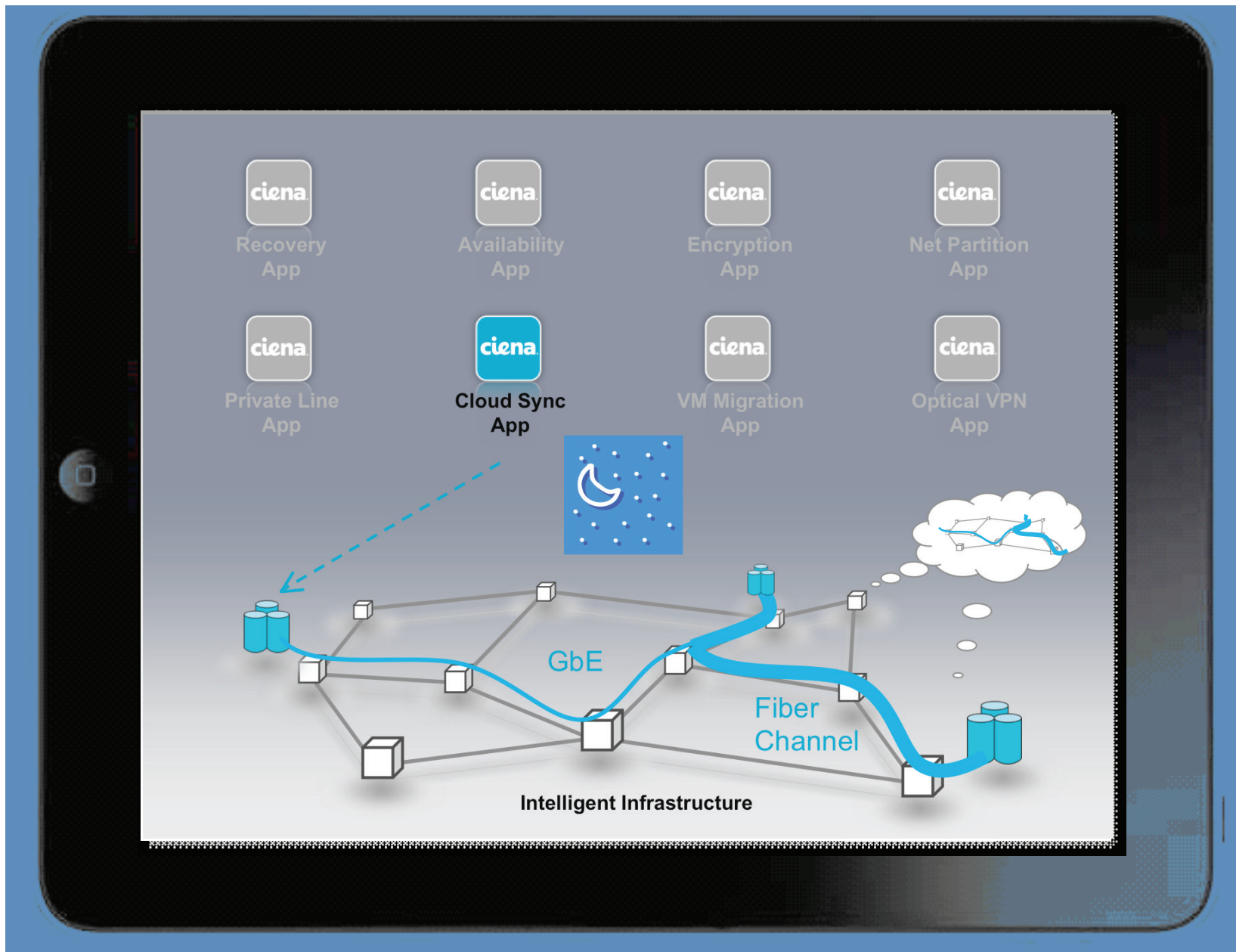
The *Intelligent Infrastructure* is a network platform for app-enabled services that redefines connectivity for the cloud





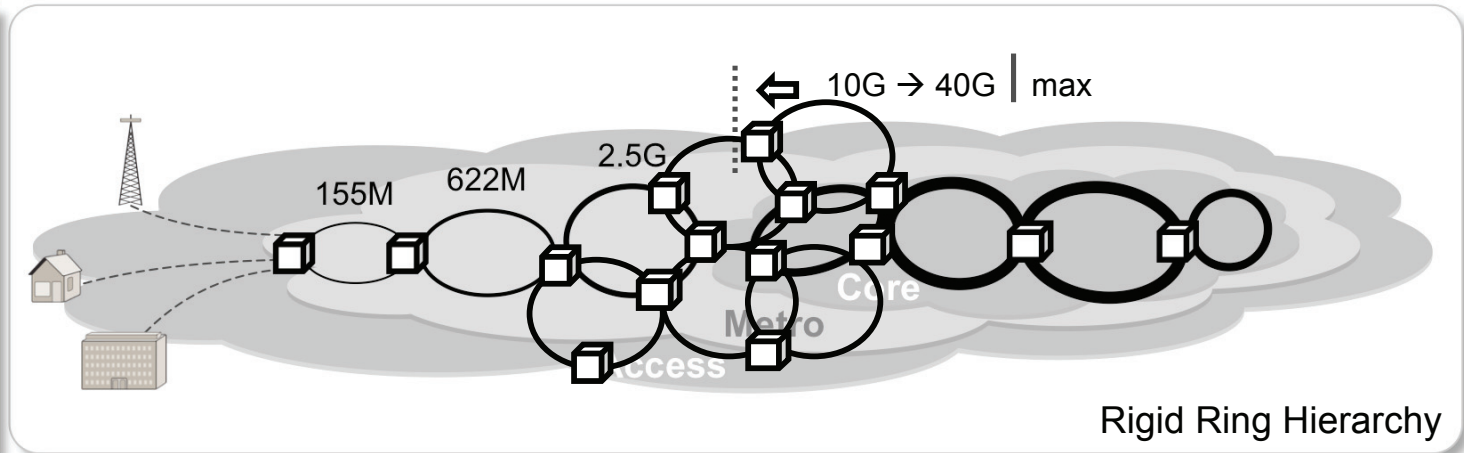




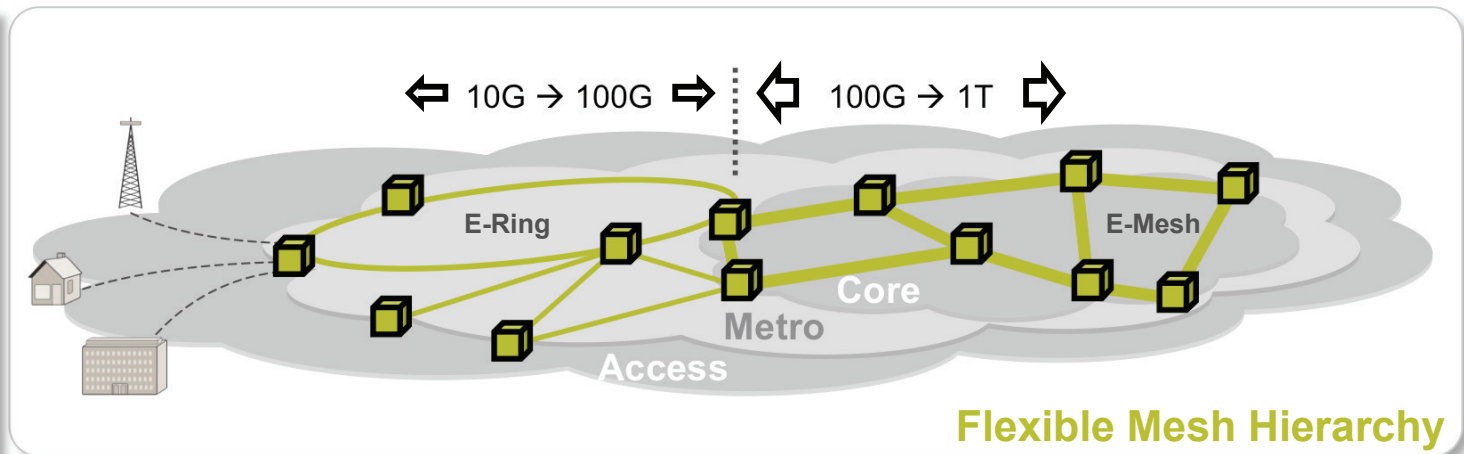


How do we build this Intelligent Infrastructure?

Don't
do this



Do this

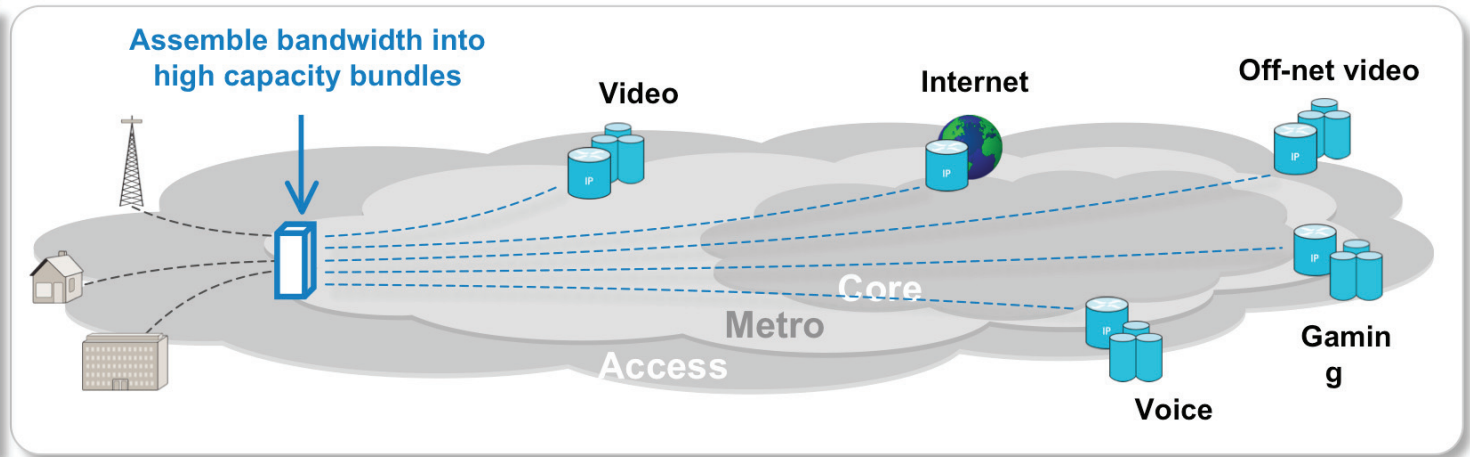


SW defined Virtualized Connections
Ring, Mesh, Point-to-Point, Broadcast

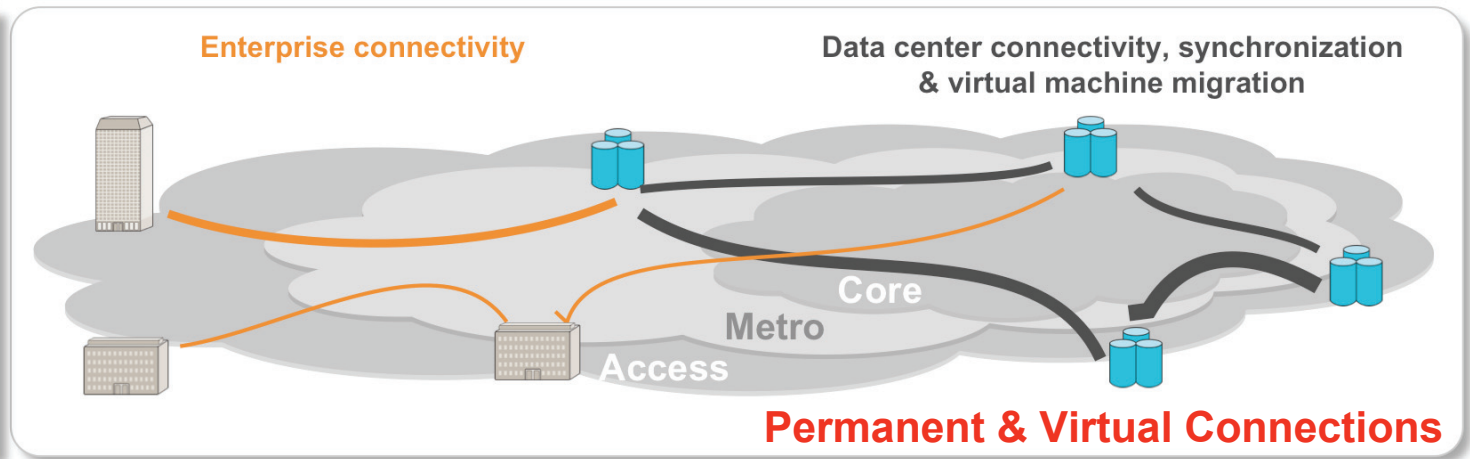
ciena.

Streamline connectivity

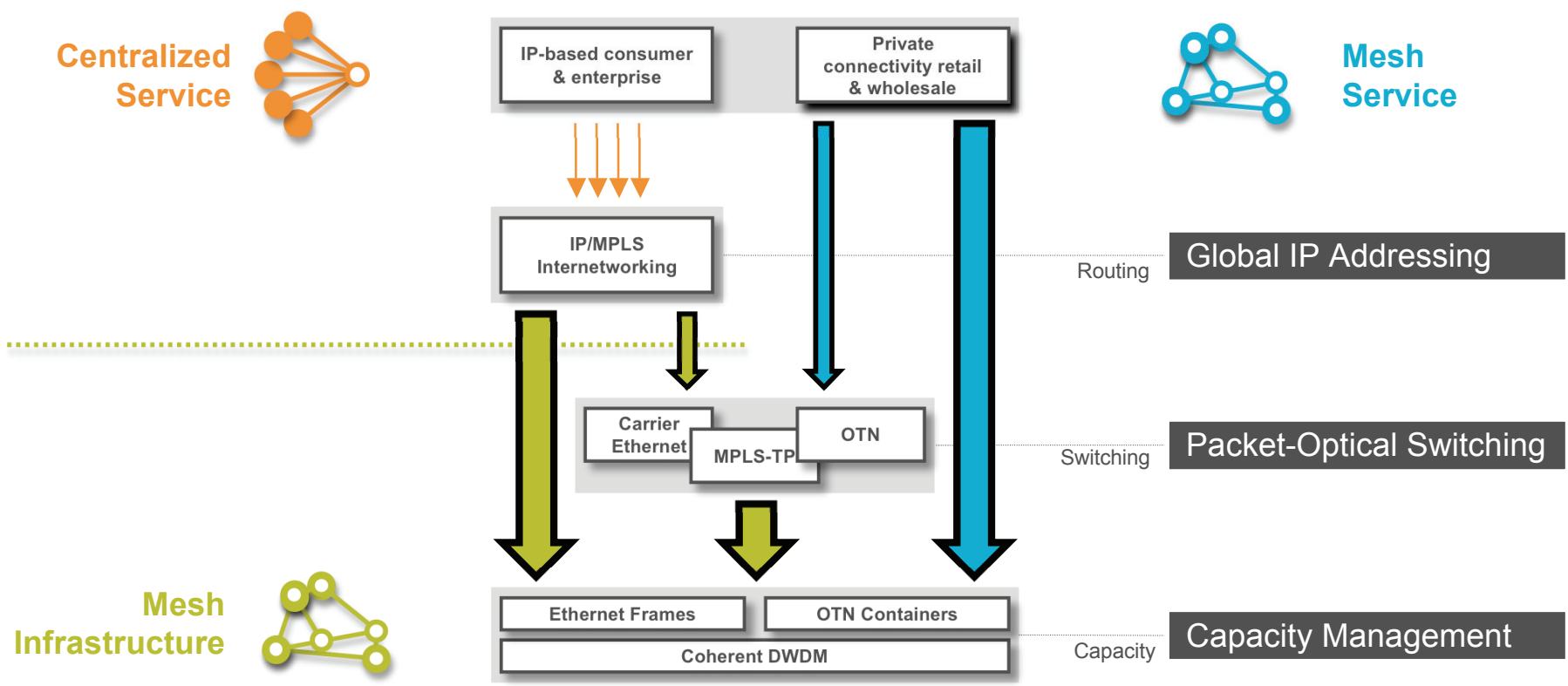
Concentrate IP services into data centers



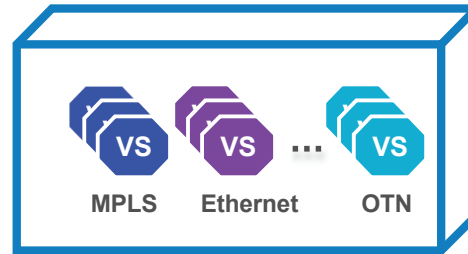
Distribute connectivity using Carrier Ethernet & OTN mesh



Build an application-aware infrastructure

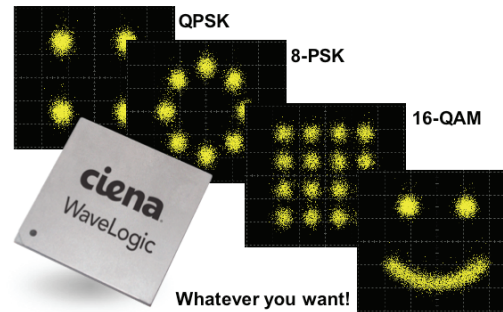


Programmable Switching



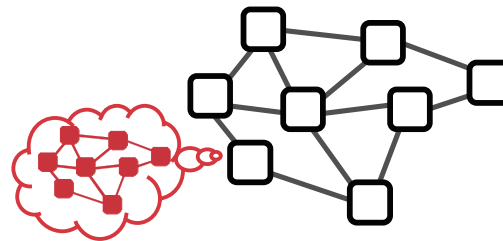
Partition with virtual switching

Elastic Modulation



Solve propagation with DSP

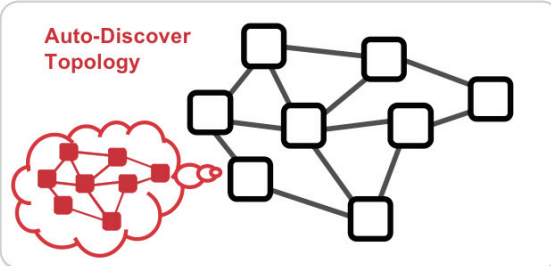
Automated Control



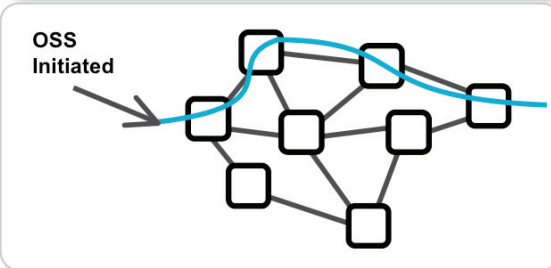
Use Distributed Control Plane for intelligence

An Intelligent multi-layer control plane is the key

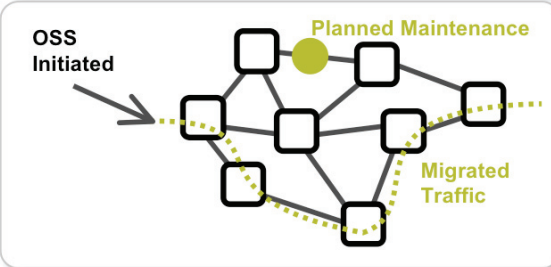
1
Automated
self-inventory



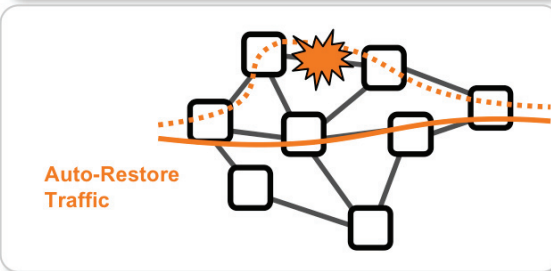
2
Automated
connection
management



3
Efficient
planning &
operations



4
Self-healing
network



Enormous bandwidth demand on metro and core networks

Meeting this demand requires a network that can adapt to application requirements

The *Carrier Ethernet / OTN Technology Wave* is fundamentally changing network architecture and economics

The *Intelligent Infrastructure* is a network platform for applications and services that redefines connectivity for the cloud



Thank You



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