
OneNet®
Oklahoma's Telecommunications Network
A Division of the Oklahoma State Regents for Higher Education
operated in cooperation with the Office of State Finance

OneNet Network Infrastructure

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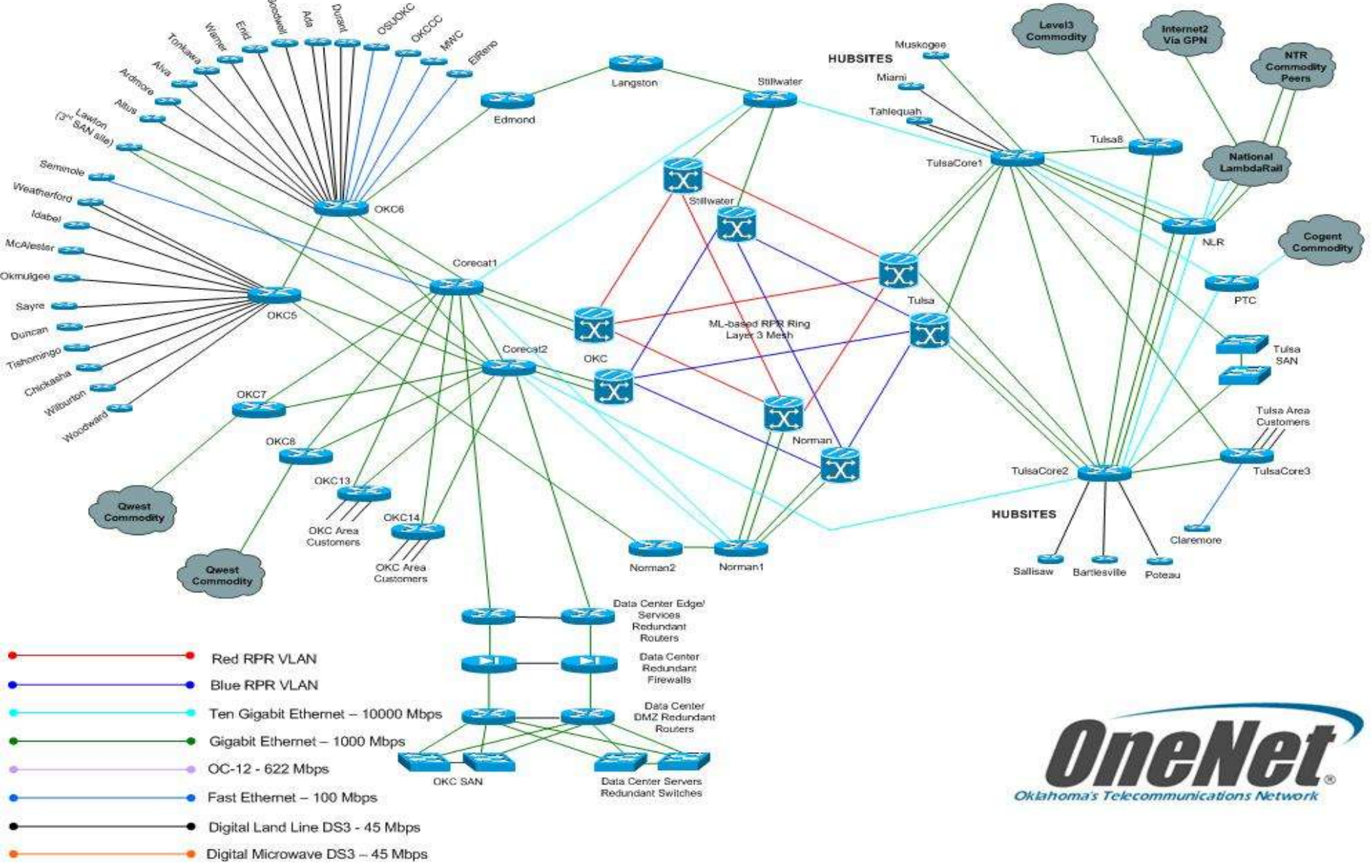

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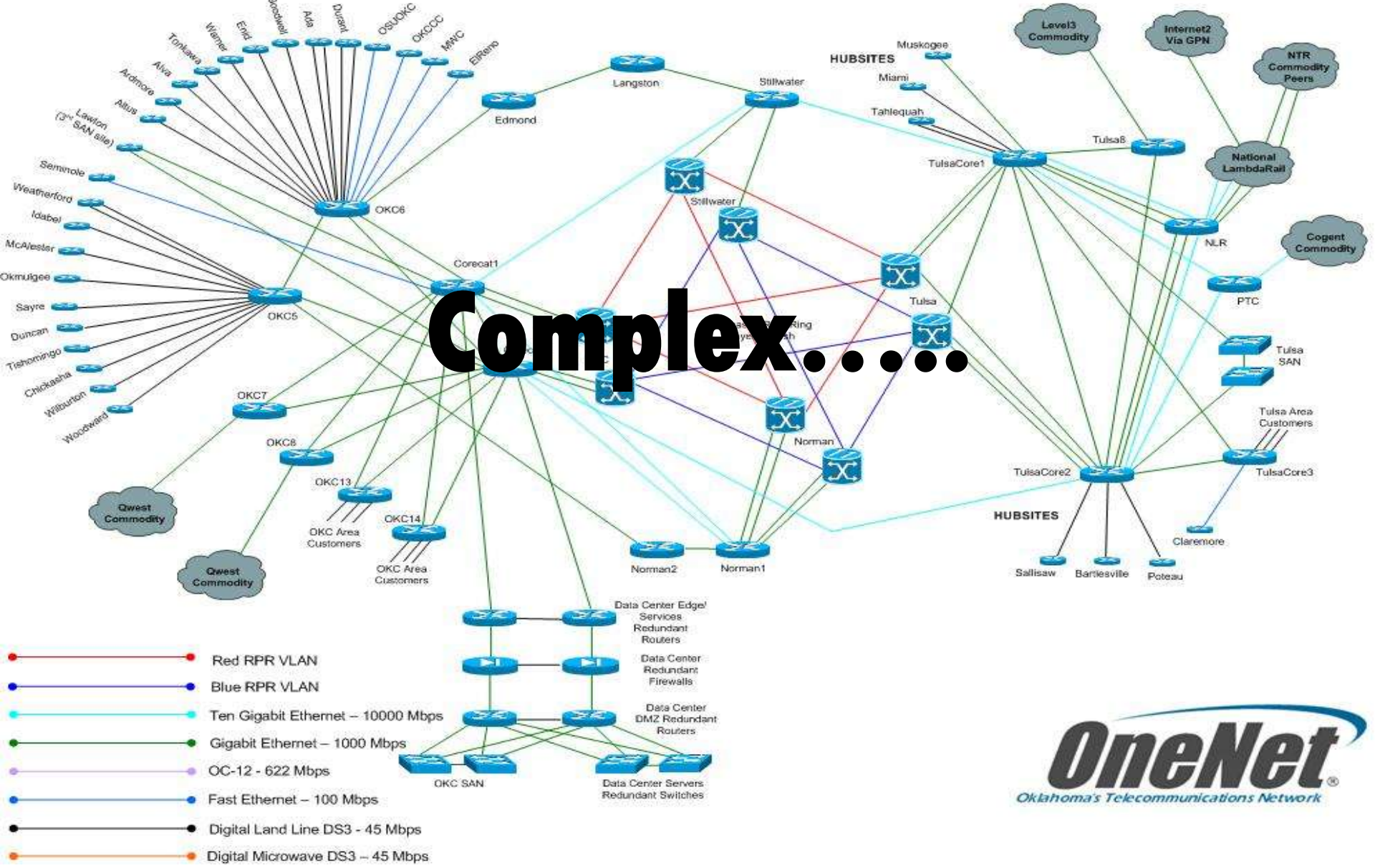

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~Future Network Services~

IPv6

QoS

MPLS

Scalability

Multicast

10G/40G/100G

VPLS

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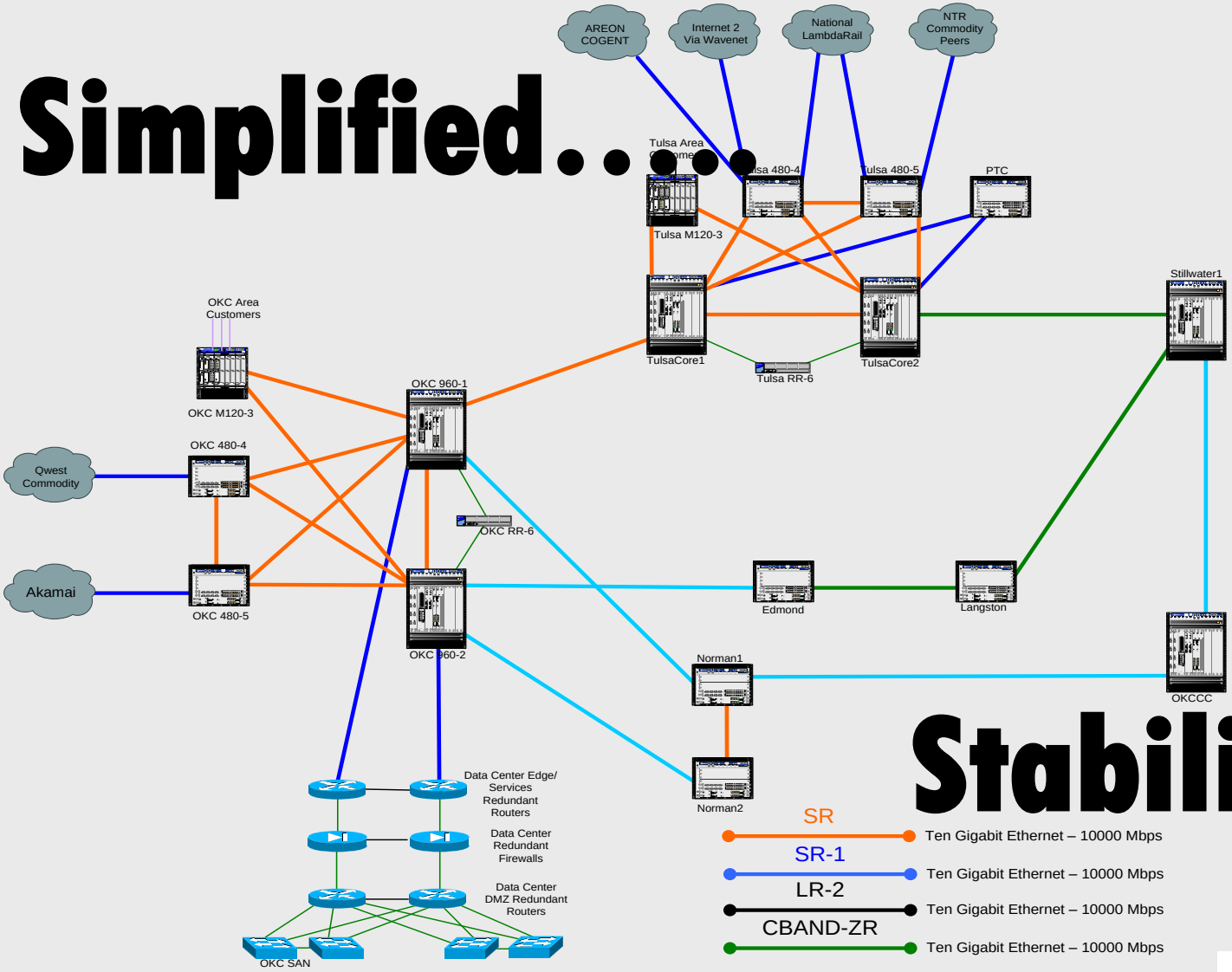
juniper
NETWORKS


CISCO


Alcatel·Lucent

Simplified…



Stabilized…

SR — Ten Gigabit Ethernet – 10000 Mbps

SR-1 — Ten Gigabit Ethernet – 10000 Mbps

LR-2 — Ten Gigabit Ethernet – 10000 Mbps

CBAND-ZR — Ten Gigabit Ethernet – 10000 Mbps

Gigabit Ethernet – 1000 Mbps

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MX960

8 MX960 Routers within network

11 or 12 slot chassis

System Capacity

2.6 Tbps

Throughput per slot

120 Gbps per slot

Packet Forwarding

2.42 Bpps

Layer 3 routing (IPv4 and IPv6), Layer 2 switching

Wide range of Ethernet and MPLS services

MX480

12 MX480 Routers within network

6 slot chassis

System Capacity

1.4 Tbps

Throughput per slot

120 Gbps per slot

Packet Forwarding

1.32 Bpps

Layer 3 routing (IPv4 and IPv6),

Layer 2 switching

Wide range of Ethernet and MPLS services

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M120

32 M120 Routers within network

4 FPC slots chassis

System Capacity

120 Gbps

Throughput per slot

10 Gbps per slot

Packet Forwarding

1.32 Bpps

Supports Layer 2 and Layer 3 services over virtually any access technology, including Ethernet, TDM at any speed from DS0 to 10 Gbps

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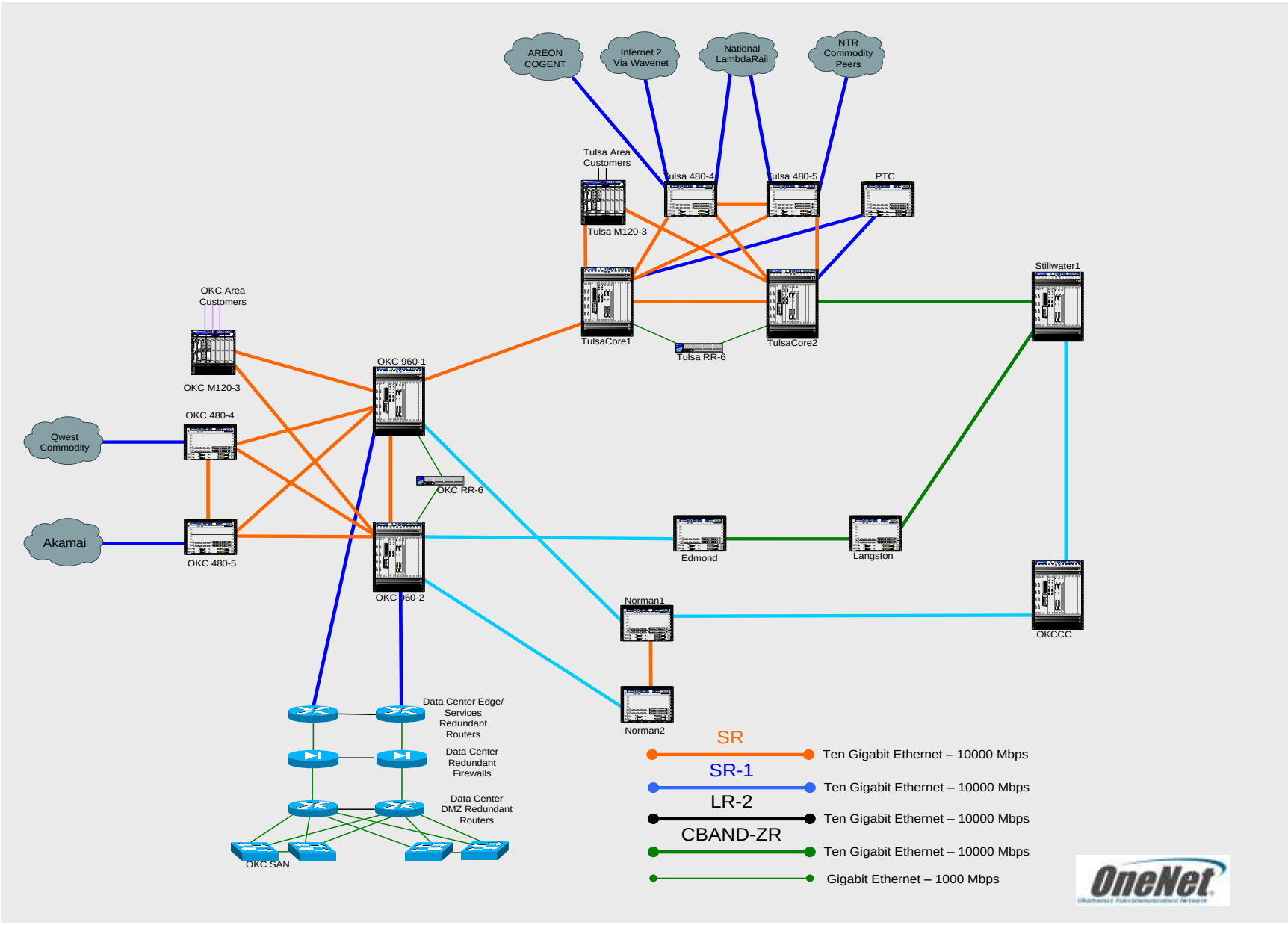
AREON COGENT
Internet 2 Via Wavenet
National LambdaRail
NTR Commodity Peers
Tulsa Area Customers
Tulsa 480-4
Tulsa 480-5
PTC
Tulsa M120-3
TulsaCore1
TulsaCore2
Tulsa RR-6
Stillwater1
OKC Area Customers
OKC M120-3
OKC 960-1
OKC 480-4
Qwest Commodity
OKC RR-6
Akamai
OKC 480-5
OKC 960-2
Edmond
Langston
Norman1
OKCCC
Norman2
Data Center Edge/ Services Redundant Routers
Data Center Redundant Firewalls
Data Center DMZ Redundant Routers
OKC SAN
SR
Ten Gigabit Ethernet – 10000 Mbps
SR-1
Ten Gigabit Ethernet – 10000 Mbps
LR-2
Ten Gigabit Ethernet – 10000 Mbps
CBAND-ZR
Ten Gigabit Ethernet – 10000 Mbps
Gigabit Ethernet – 1000 Mbps
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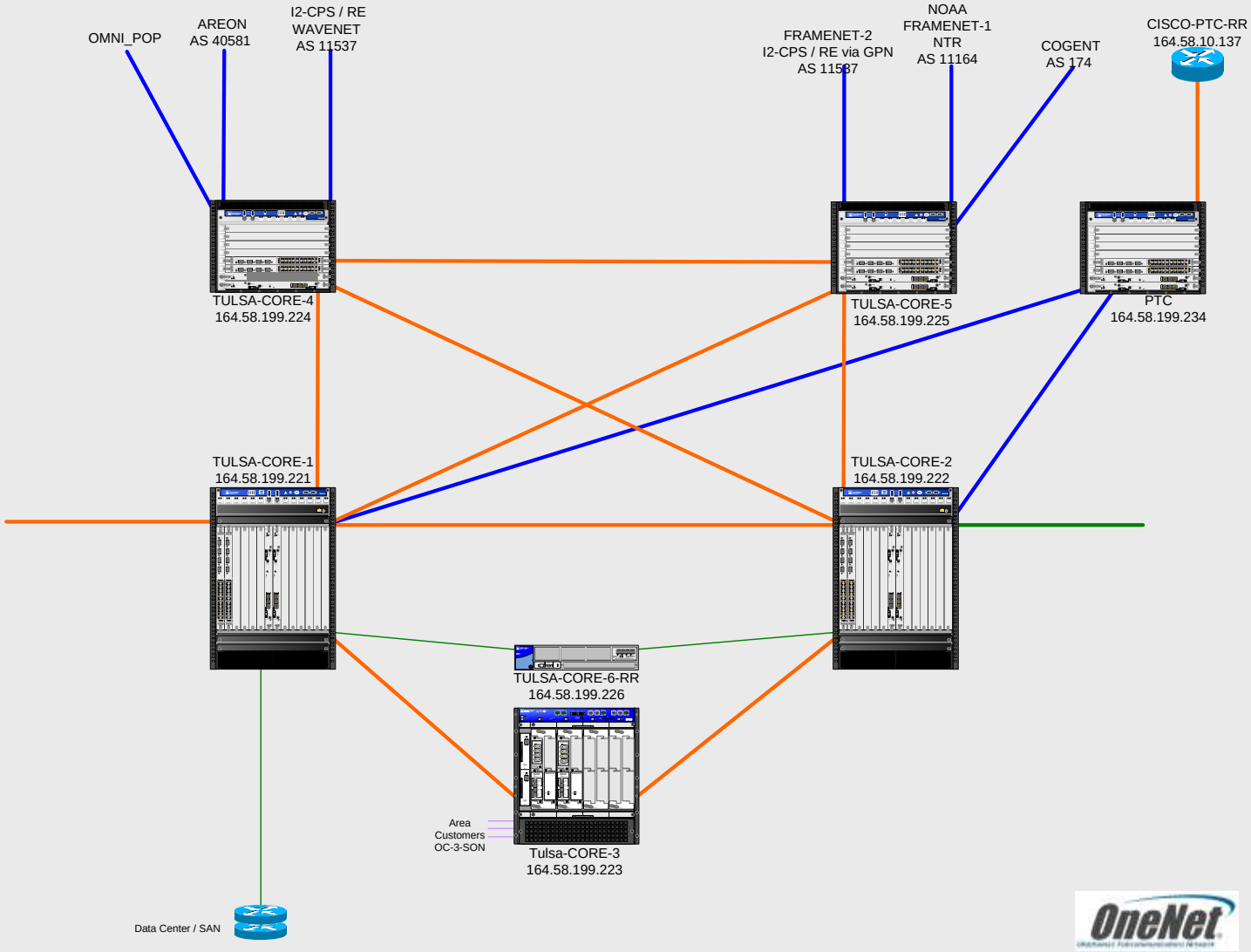
OKC/Tulsa Core



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MPLS

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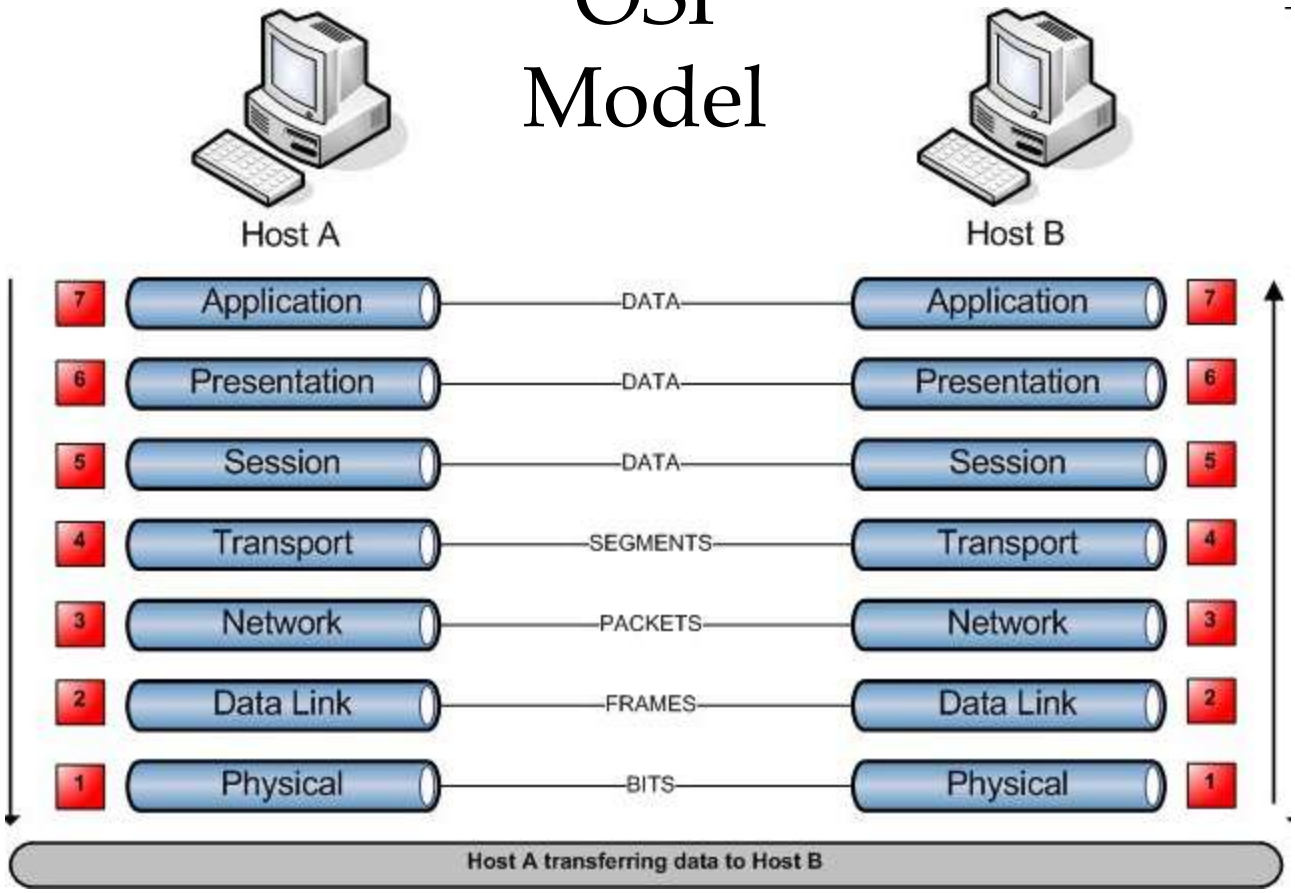
MPLS Services 101....

-Layer2 VPN

-Layer3 VPN

-VPLS

OSI Model



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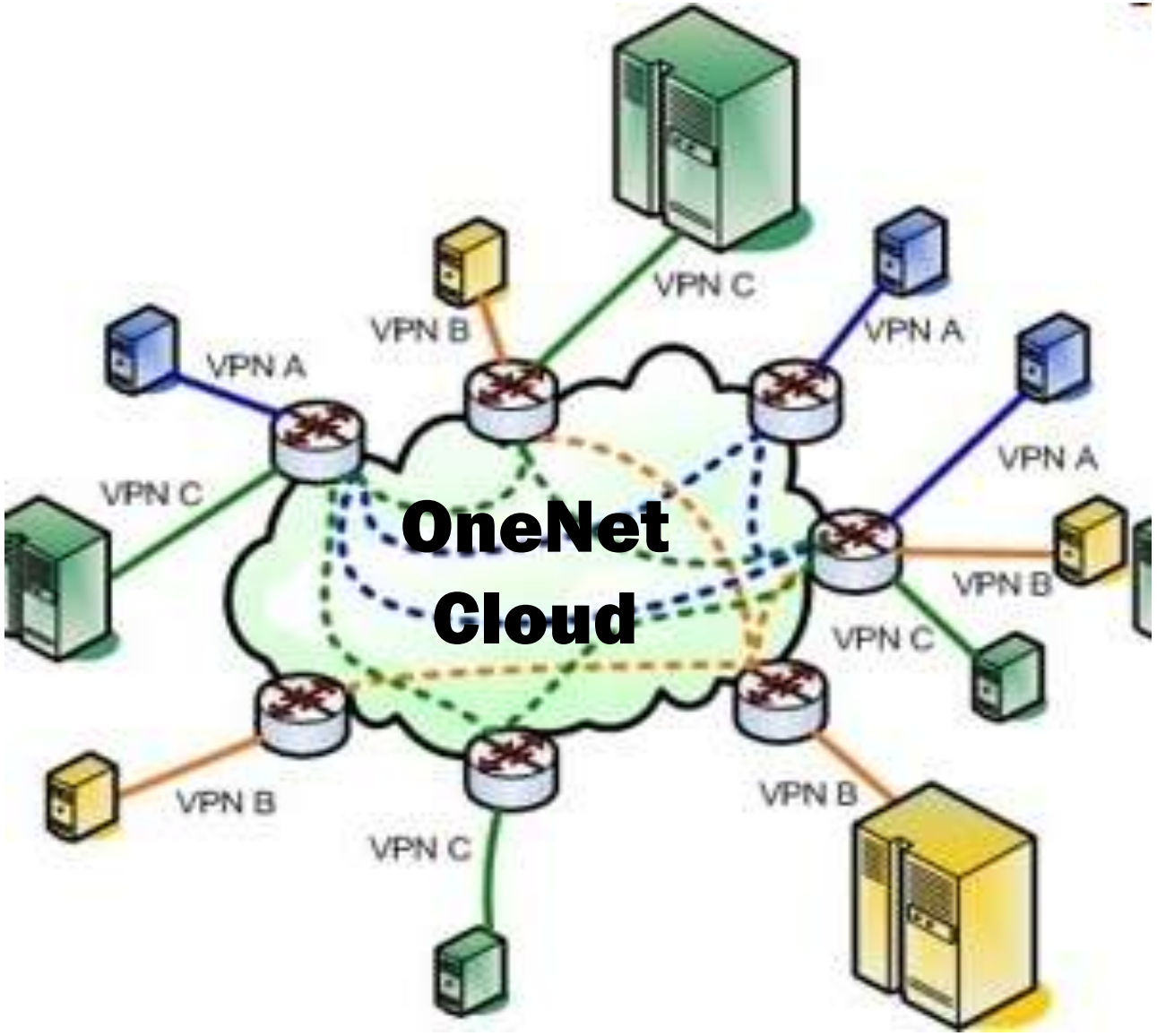
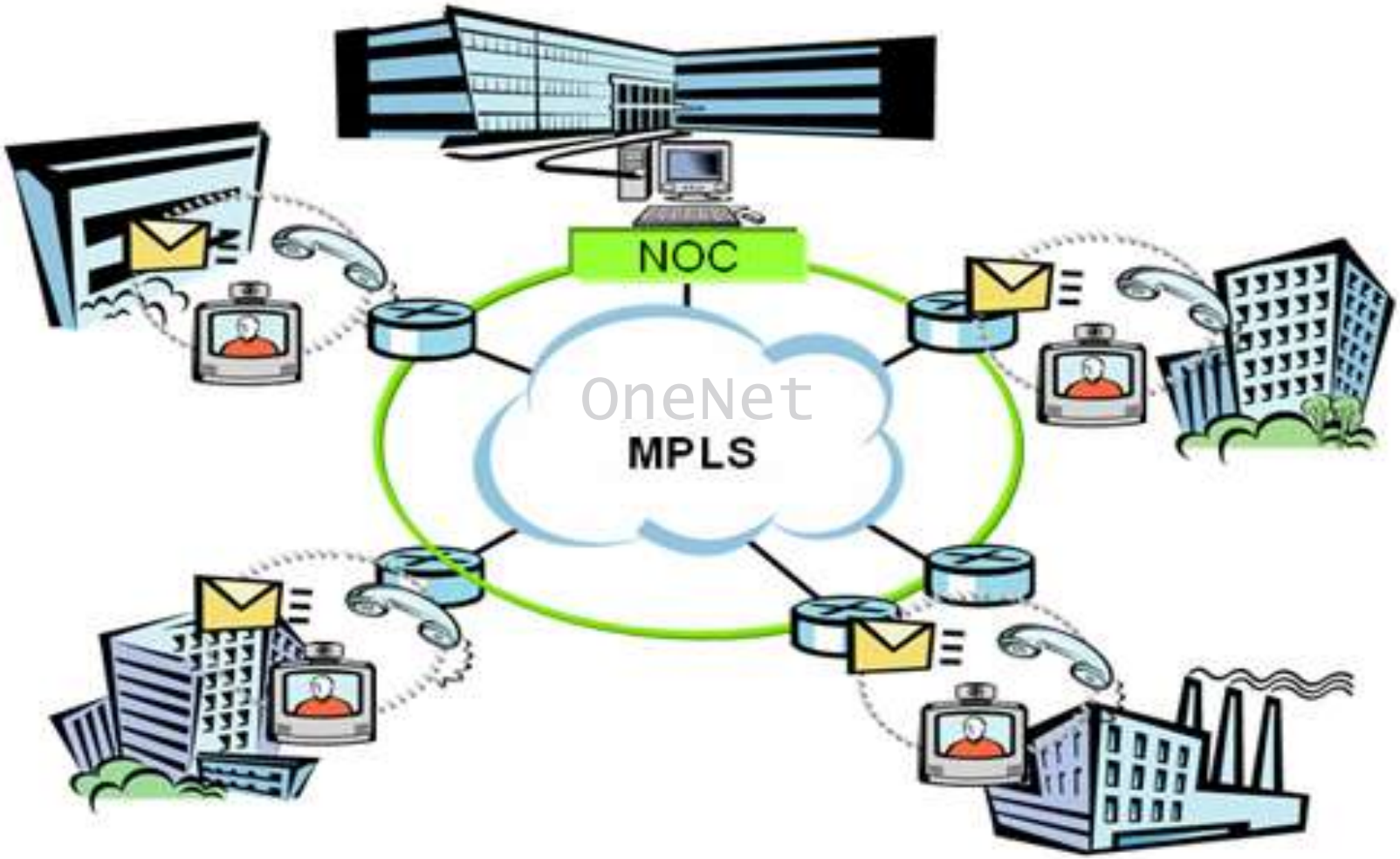
MPLS Services

- **Layer2 VPN**
  - Switched environment (point-to-point)
  - Hardware: Switches
- **Layer2 VPLS**
  - Switched environment (multi-point)
  - Hardware: Switches
- **Layer3 VPN**
  - Routed environment (multi-point)
  - Hardware: Routers





What does this number represent?

4,294,967,296

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What does this number represent?

340,282,366,920,938,463,463,374,607,431,768,211,456

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IPv6

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IPv6 101….

- While IPv4 allows 32 bits for an Internet Protocol address, and can therefore support 232 (4,294,967,296) addresses, IPv6 uses 128-bit addresses, so the new address space supports 2128 (approximately 340 undecillion or 3.4 1038) addresses.
- 340,282,366,920,938,463,463,374,607,431,768,211,456
- This expansion allows for many more devices and users on the internet as well as extra flexibility in allocating addresses and efficiency for routing traffic. It also eliminates the primary need for network address translation (NAT), which gained widespread deployment as an effort to alleviate IPv4 address exhaustion.

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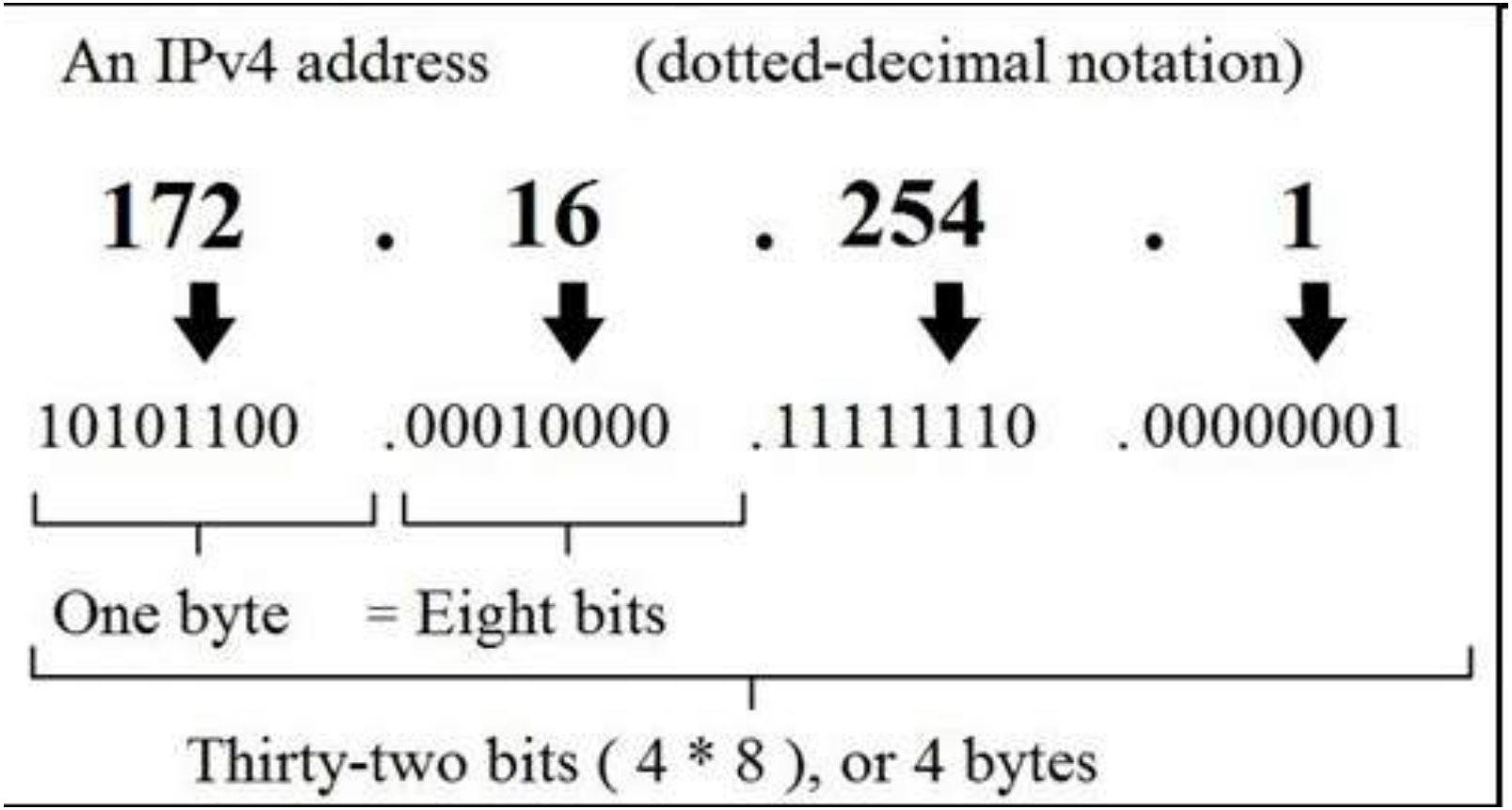
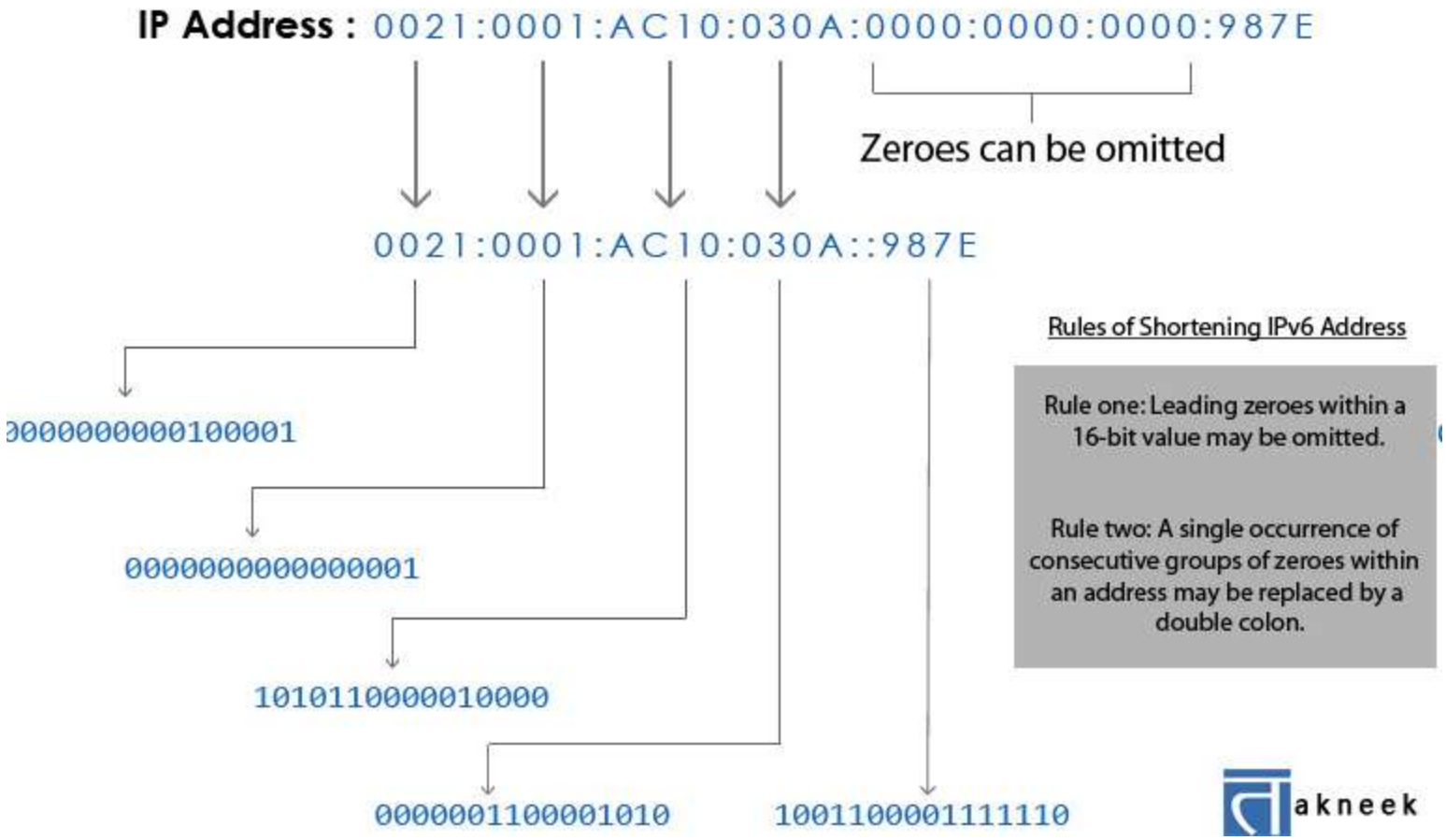


IPv6



OneNet Status Check.....

- **OneNet infrastructure is IPv6 enabled**
- **OneNet Customers may acquire an IPv6 address allocation via:**
  - **ARIN IPv6 address assignment**
  - **OneNet IPv6 address pool allocation**

OneNet is…….

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Quality of Service (QoS)

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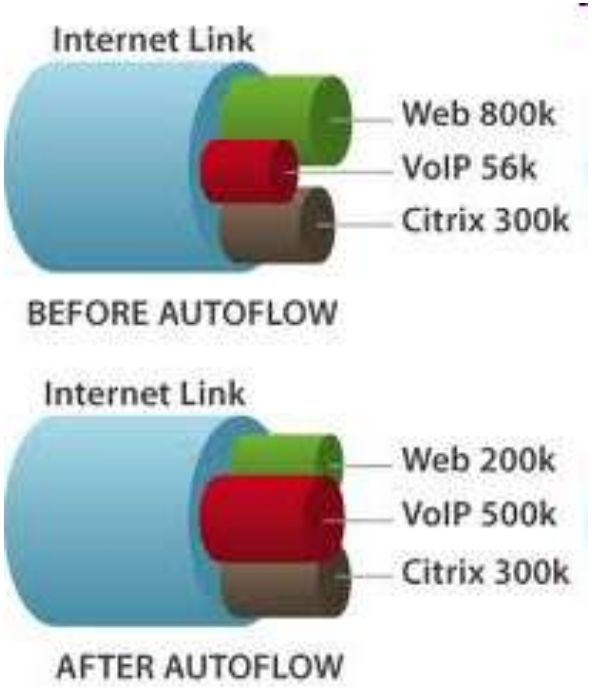
Quality of Service(QoS)

- **Data**
  - Internet traffic
- **Video**
  - Video Conferencing
  - Distance Learning
- **Voice(VoIP)**
  - Call quality

Where can QoS impact your service?

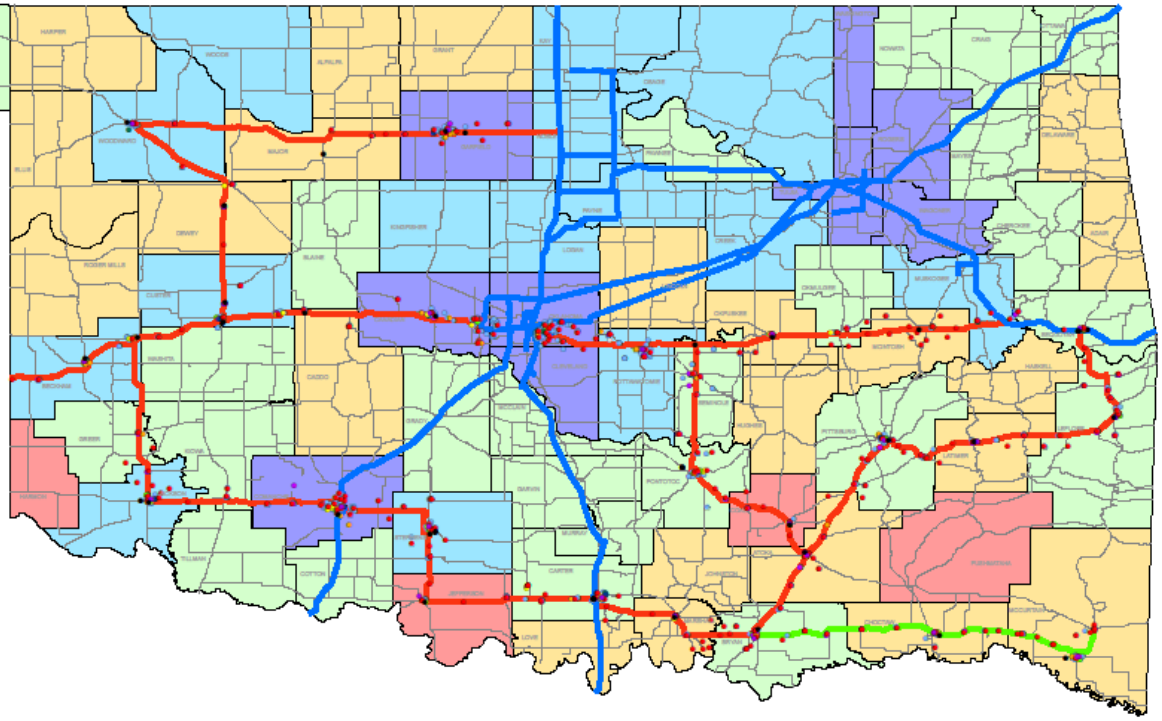
- **Data Preferential Treatment**
  - Video traffic vs. Peer-to-Peer traffic
- **Circuit oversubscription**
  - Temporary solution
- **Rogue Traffic**
  - Temporary solution



The Future of OneNet

- **Network expansion**
  - Broadband Technology Opportunities Program (BTOP)
  - Oklahoma Community Anchor Network(OCAN)
  - Experimental Program to Stimulate Competitive Research(EPSCoR)

State of Oklahoma Map - Broadband Proposal for Fiber Backbone



Legend

- ODOT Facilities within 5 Miles of Fiber - 40
- County Seats within 5 Miles of Fiber - 23
- FireStations within 5 Miles of Fiber - 240
- DPS Troop HQ within 5 Miles of Fiber - 7
- Correctional Institutions within 5 Miles of Fiber - 72
- Police Departments within 5 Miles of Fiber - 137
- Libraries within 5 Miles of Fiber - 51
- Health Departments within 5 Miles of Fiber - 24
- Hospitals within 5 Miles of Fiber - 43
- HigherEd within 5 Miles of Fiber - 18
- VoTechs within 5 Miles of Fiber - 9
- Private Schools within 5 Miles of Fiber - 32
- Public Schools within 5 Miles of Fiber - 443
- Indian Health Service within 5 Miles of Fiber - 15

- State Fiber - 1100 Miles
- IRU Fiber Backbone - 107 Miles
- Proposed Fiber Backbone - 1005 Miles

Counties

CSMG Broadband Penetration Data

- 4 Counties (25% - 27%)
- 23 Counties (28% - 35%)
- 25 Counties (36% - 43%)
- 16 Counties (44% - 50%)
- 9 Counties (51% - 63%)

77% of Counties Touched by Broadband Proposal

89% of Population Touched by Broadband Proposal

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