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# SDN Controller to Enable Network Slicing and Efficient Sharing of Resources

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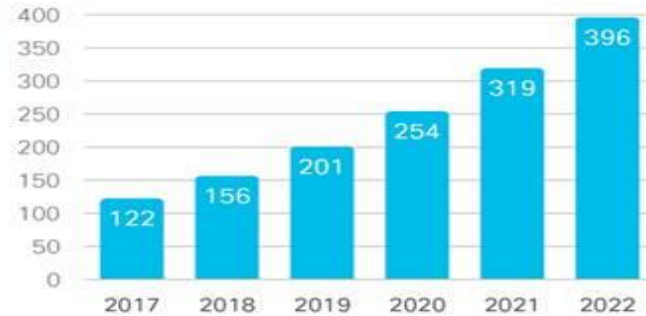
***Simon Tse***



# Network Slicing to Address tremendous world-wide growth in Traffic/Devices

26% CAGR  
2017-2022

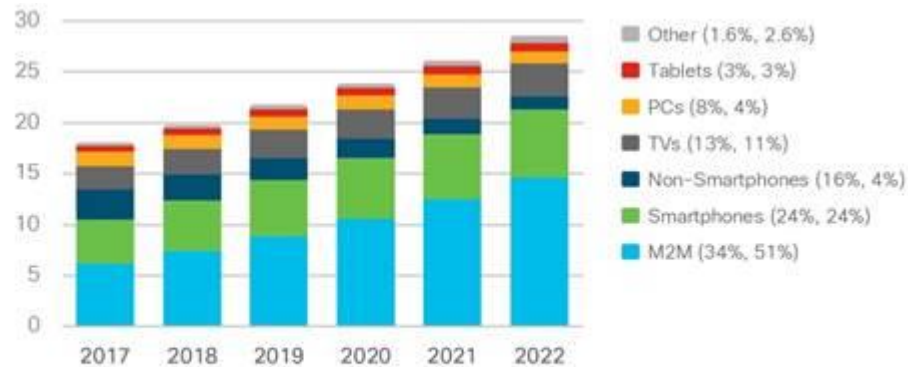
Exabytes  
per Month



Source: Cisco VNI Global IP Traffic Forecast, 2017-2022

10% CAGR  
2017-2022

Billions of  
Devices



\* Figures (n) refer to 2017, 2022 device share

Source: Cisco VNI Global IP Traffic Forecast, 2017-2022

In order to meet the high demand we need a network that is:

**Flexible:**

Easily adaptable to support future services

**Scalable:**

Easily expandable to support growing demands

**Robust:**

Provide a great variety of services while maintaining SLA and QoE for each individual customer with unique service demands.



# Benefits of Network Slicing

- **Benefits to Customers:**

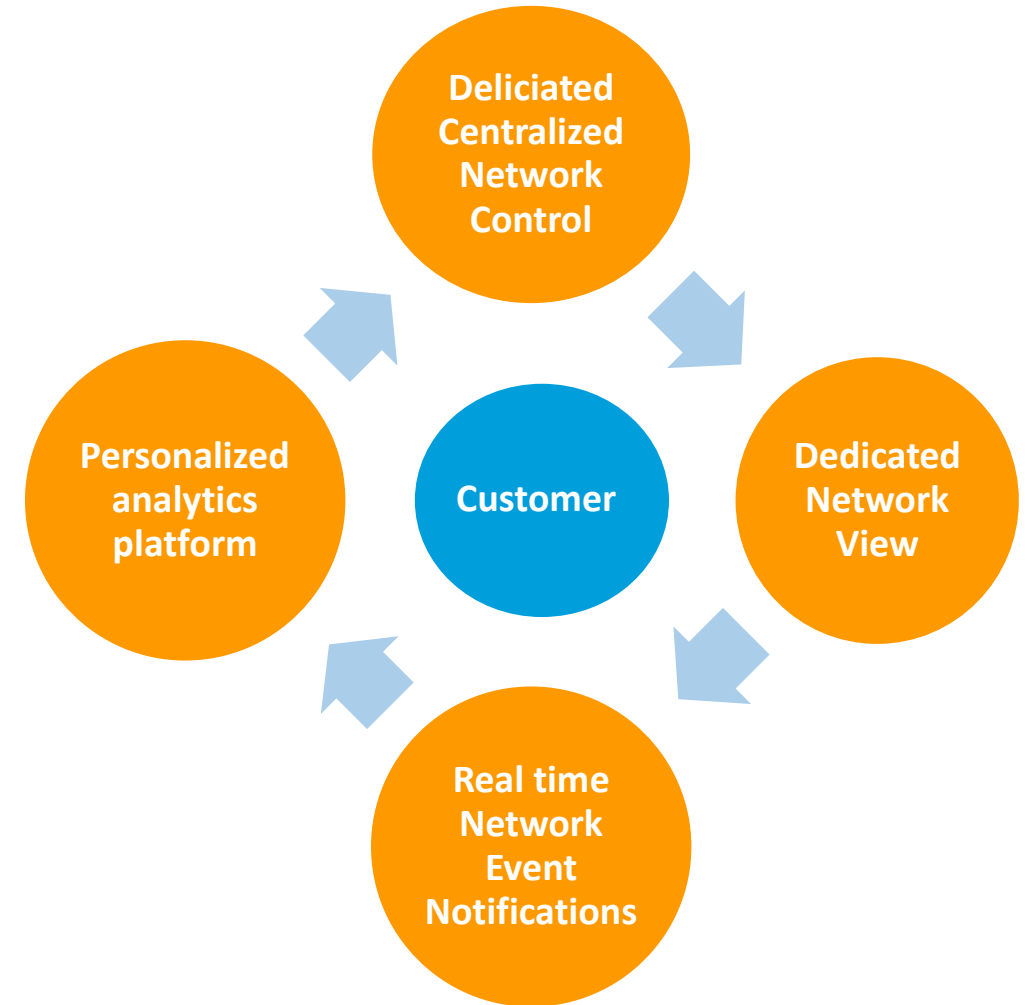
With Network slicing we can provide personalized services where every customer can see and control their own network. It can be achieved by:

- **Data plane Separation ->**

Customer feels that they have their own network with appropriate capacities, QoS, routing etc. without sharing with other customers

- **Control plane separation ->**

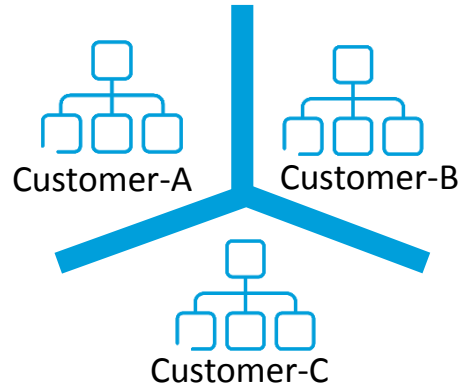
They feel that they have their own control plane (BGP, OSPF, IS-IS etc.) which is immune to the meltdown of control planes of other users



# Benefits of Network Slicing Cont'd

- Benefits for Service Provider:**

Opens opportunity to increase customer base by offering new set of personalized services



Separate networks for each customer yields to higher cost and higher time to deploy.

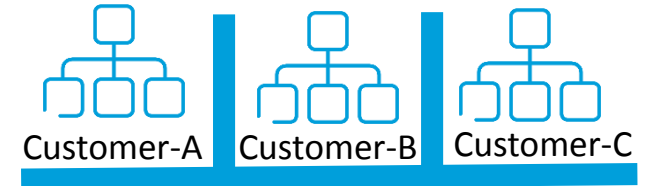


Time and expense increases with dedicated network creation

Intelligent sharing of resources



High cost savings



Common Network Resources (VNF/PNF)

Network Services sharing global network resources yields to higher cost saving and time saving to deploy the service



Time and expense decreases as customer base increases



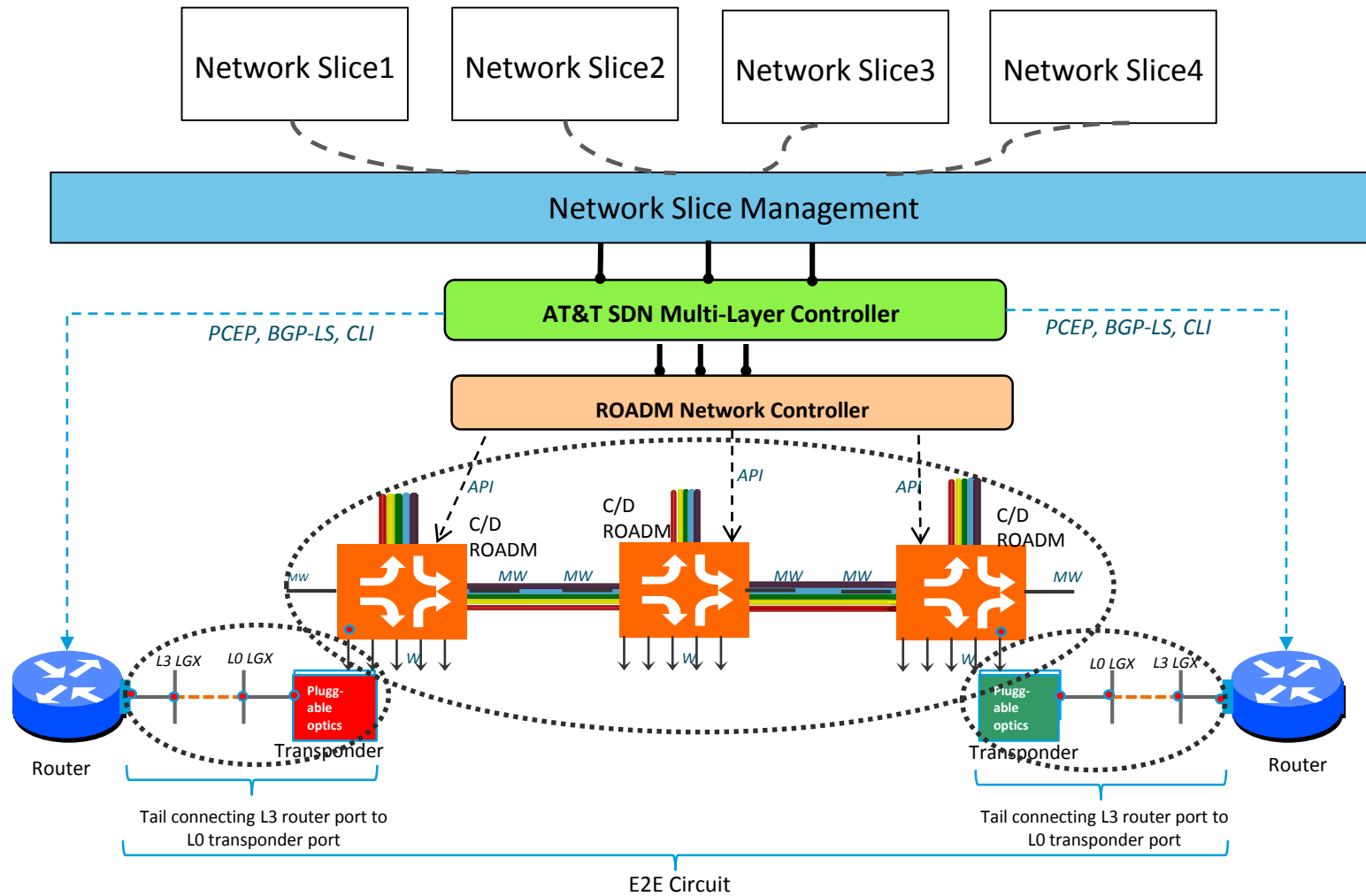
# Challenges for Service Provider with Network Slicing

- **Challenges:**

- **Usage prediction** for each network slice including failure scenario (Machine Learning is an ideal tool for this purpose)
- Having sophisticated **optimization algorithms** to minimized overall data-plane and control-plane resource usage while maintaining agreed QoS/SLAs for customers.
- **Overall network security**
- **End to end service delivery and slice management**



# Network Slicing Architectural view



Available opensource solutions



ONAP



TransportPCE



OpenROADM





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