

Design Networks (that) Accelerate Digital Future

DNA of Digital Future

HIMANSHU KUMAR

Technology Head – Network Solutions
Sterlite Tech

www.sterlitetech.com




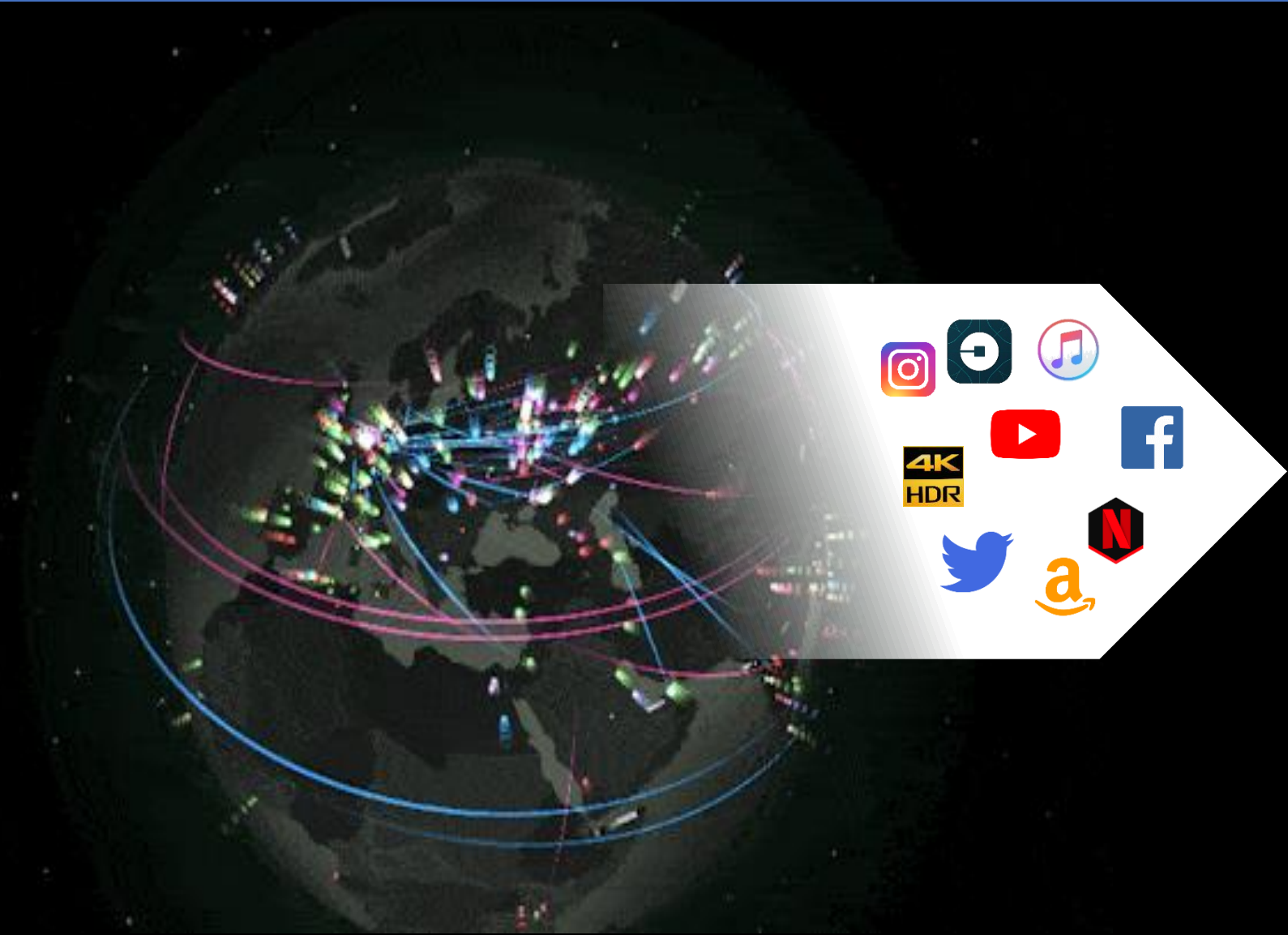
What we'll talk about today

- The need for a smarter network
- Smarter network demands extremities of SLAUC
- Right network design approach for a digital future
- Key challenges in current network design and their impacts
- An integrated approach to design one network for all

What we'll talk about today

- **The need for a smarter network**
- Smarter network demands extremities of SLAUC
- Right network design approach for a digital future
- Key challenges in current network design and their impacts
- An integrated approach to design one network for all

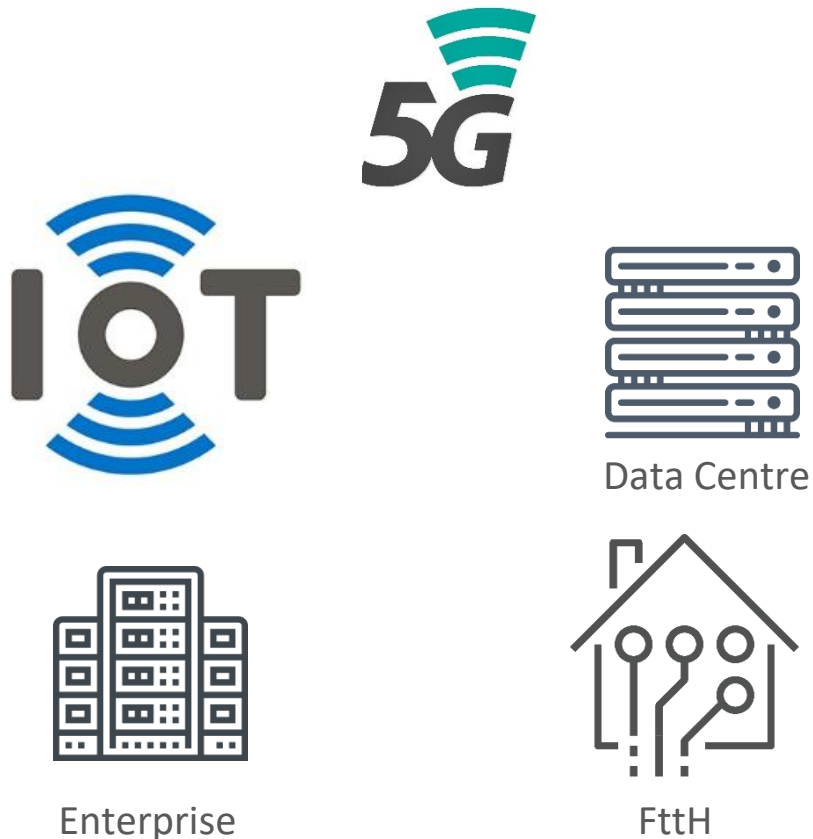
As networking gets complex, network needs to get smarter



Needs a
Smarter Network
to support all kind of
digital applications

What world expects from a smarter network

All kind of digital services over
single integrated backbone...



Requires **optimal mix** of
design imperatives...

SCALE

LATENCY

AGILITY

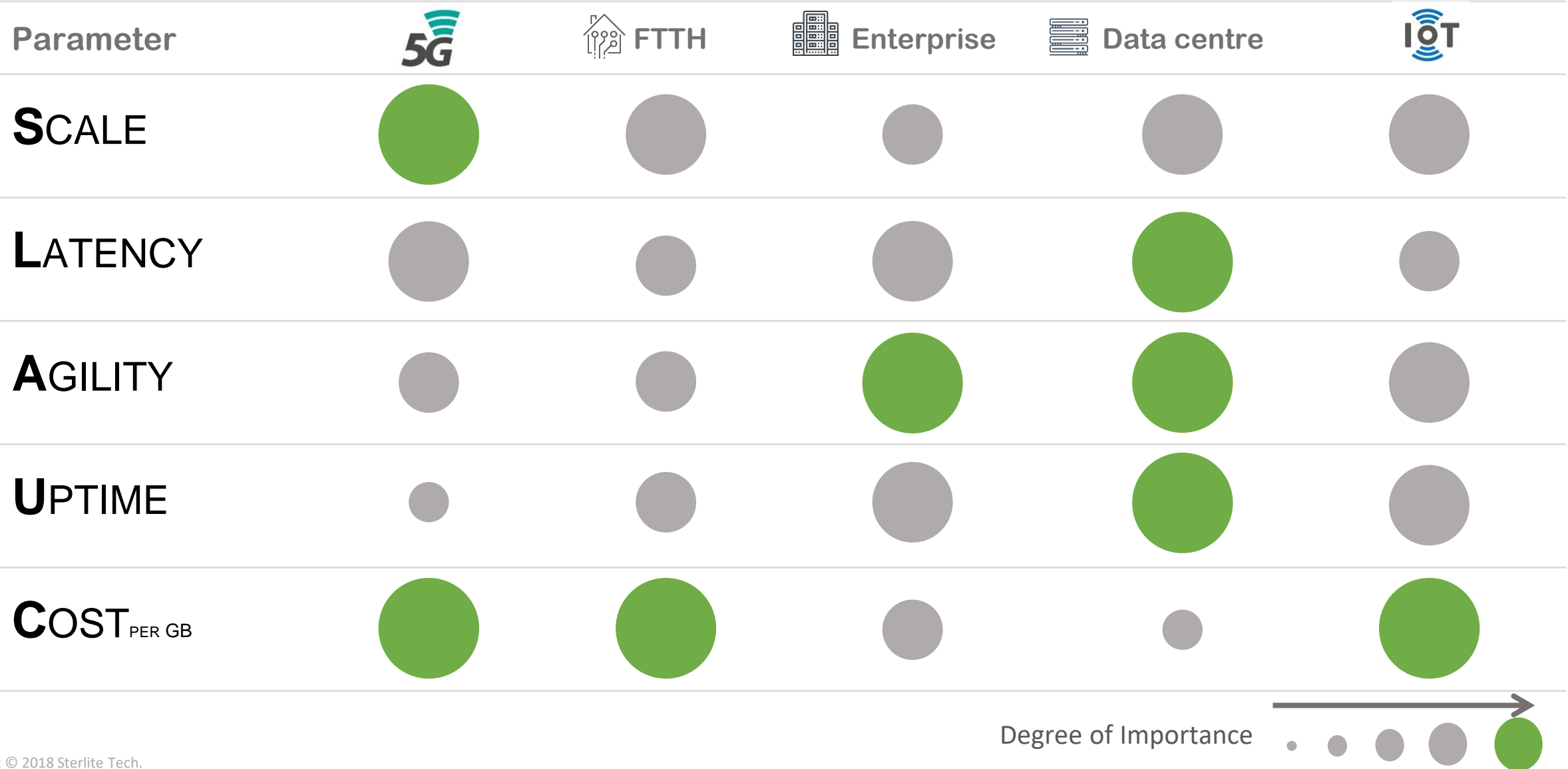
UPTIME

COST PER GB

What we'll talk about today

- The need for a smarter network
- **Smarter network demands extremities of SLAUC**
- Right network design approach for a digital future
- Key challenges in current network design and their impacts
- An integrated approach to design one network for all

Extremities of SLAUC is observed to cater different digital services



An aerial night view of a city, likely Kuala Lumpur, with the Petronas Twin Towers prominent in the center. The city is illuminated with warm yellow and orange lights from buildings and streets. Overlaid on the city is a network of glowing white lines that arc and connect various points across the urban landscape, symbolizing a smart network or digital infrastructure.

Smarter Network

addressing

Extremities of SLAUC

will accelerate

DIGITAL FUTURE

Digital FUTURE

● Robust Network design

Application Layer

Logical Layer

Physical Layer

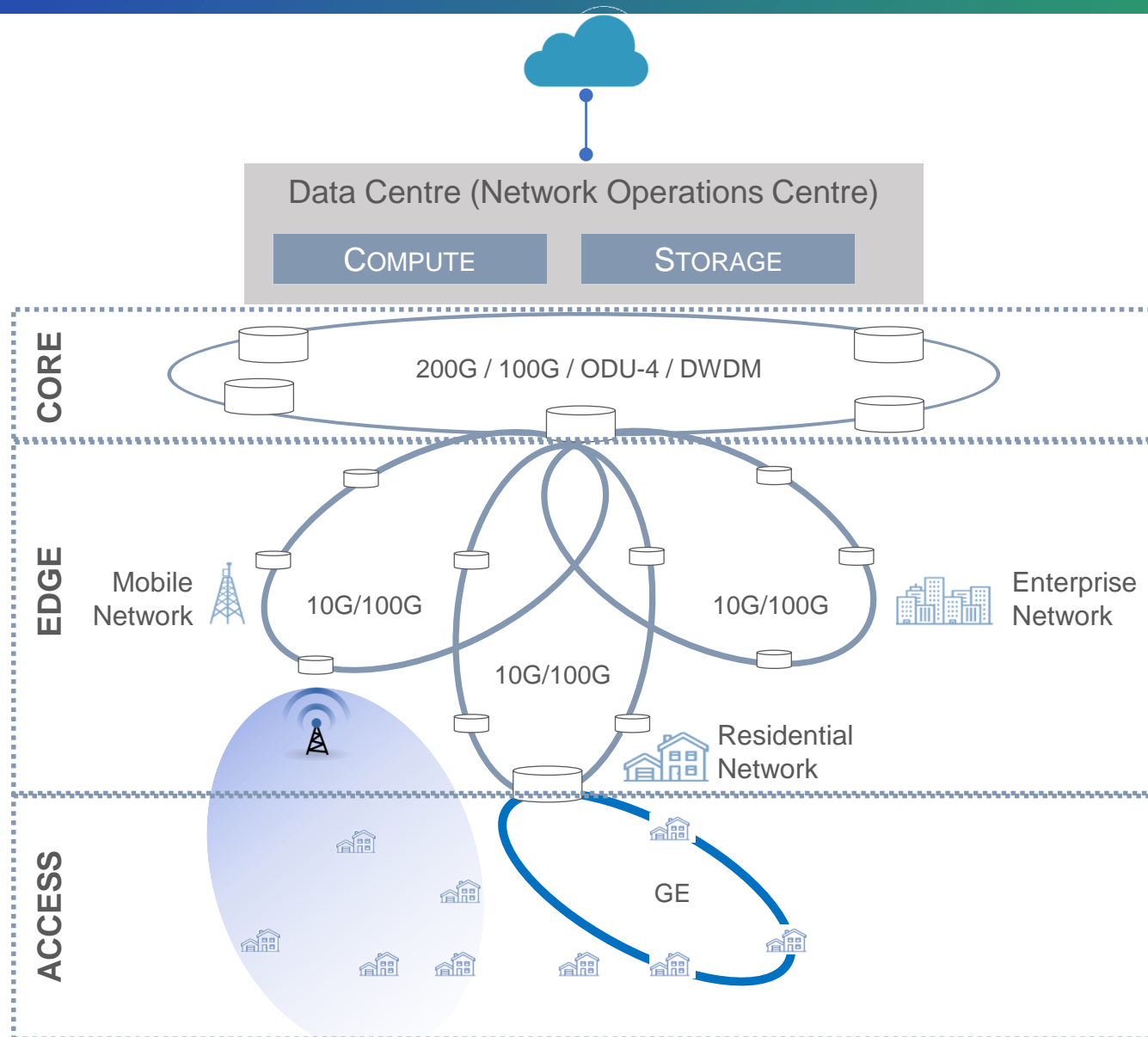


QUIZ
TIME!

What we'll talk about today

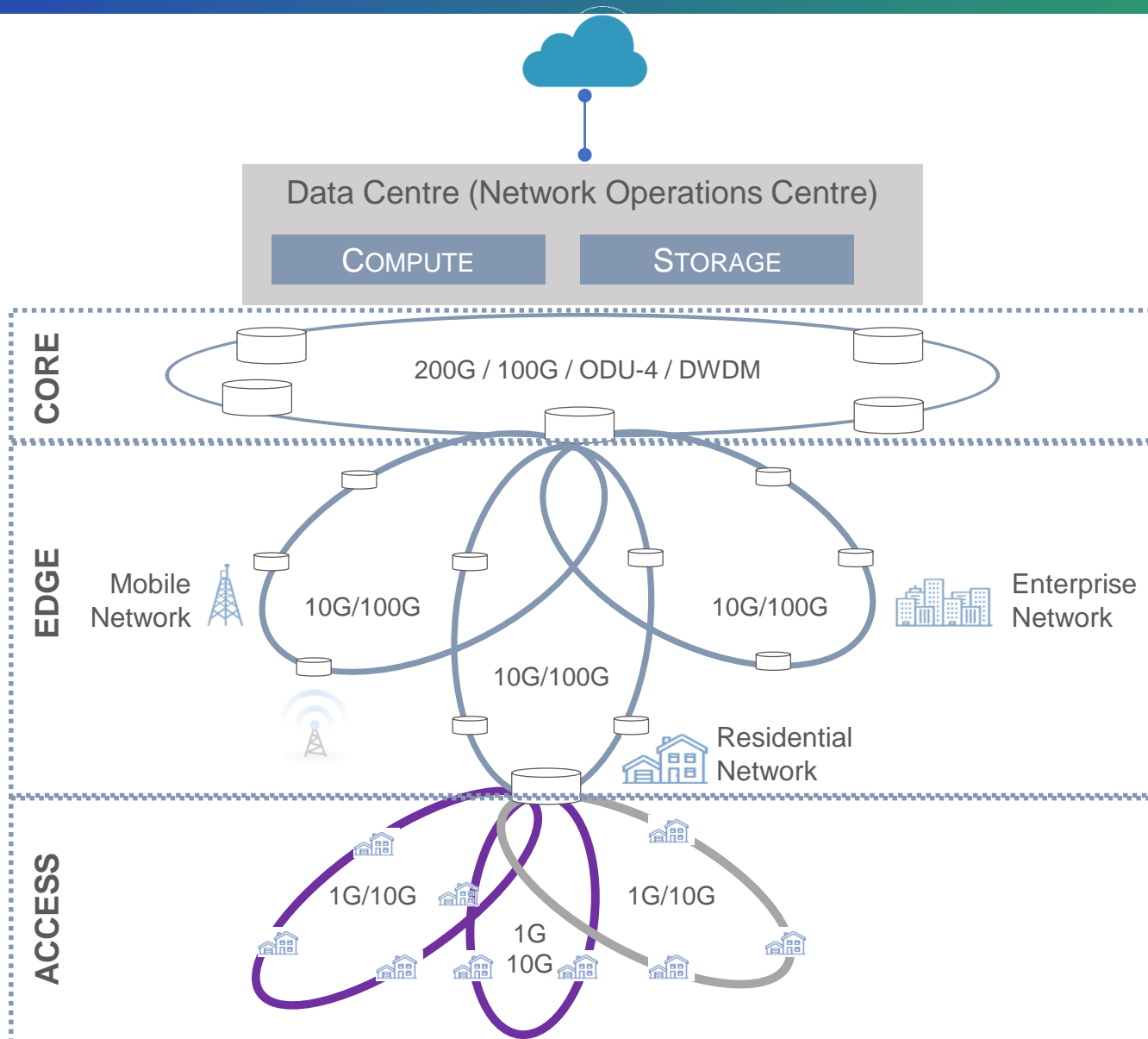
- The need for a smarter network
- Smarter network demands extremities of SLAUC
- **Right network design approach for a digital future**
- Key challenges in current network design and their impacts
- An integrated approach to design one network for all

Right network design approach will Address SLAUC by changing topology



Addressing SLAUC by changing topology

Addressing the issue of “Scale”



1.

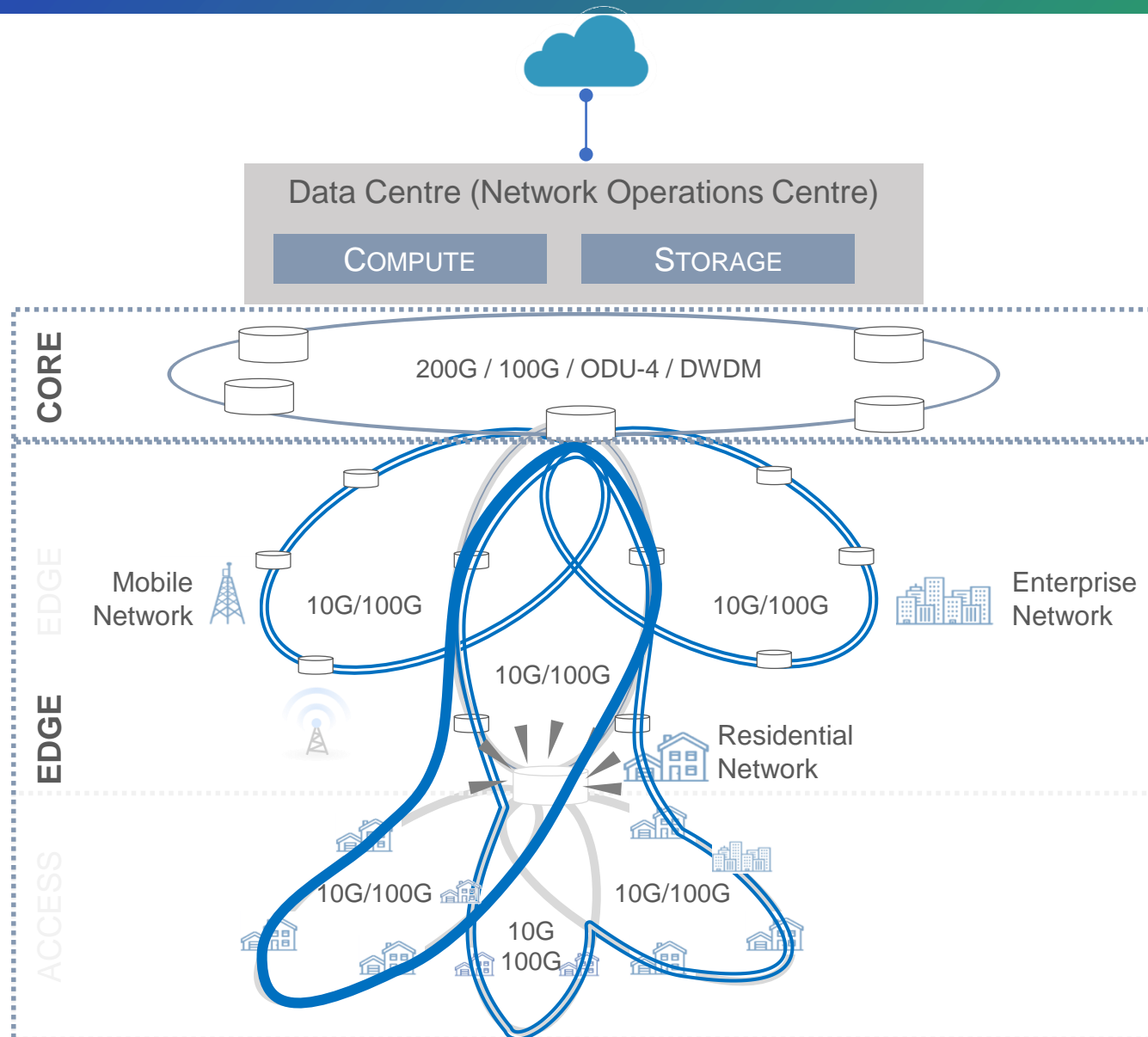
Connect each home with Fibre



SCALE SOLVED

Addressing SLAUC by changing topology

Addressing the issue of “Latency”



1.

Connect each home with Fibre



SCALE SOLVED

2.

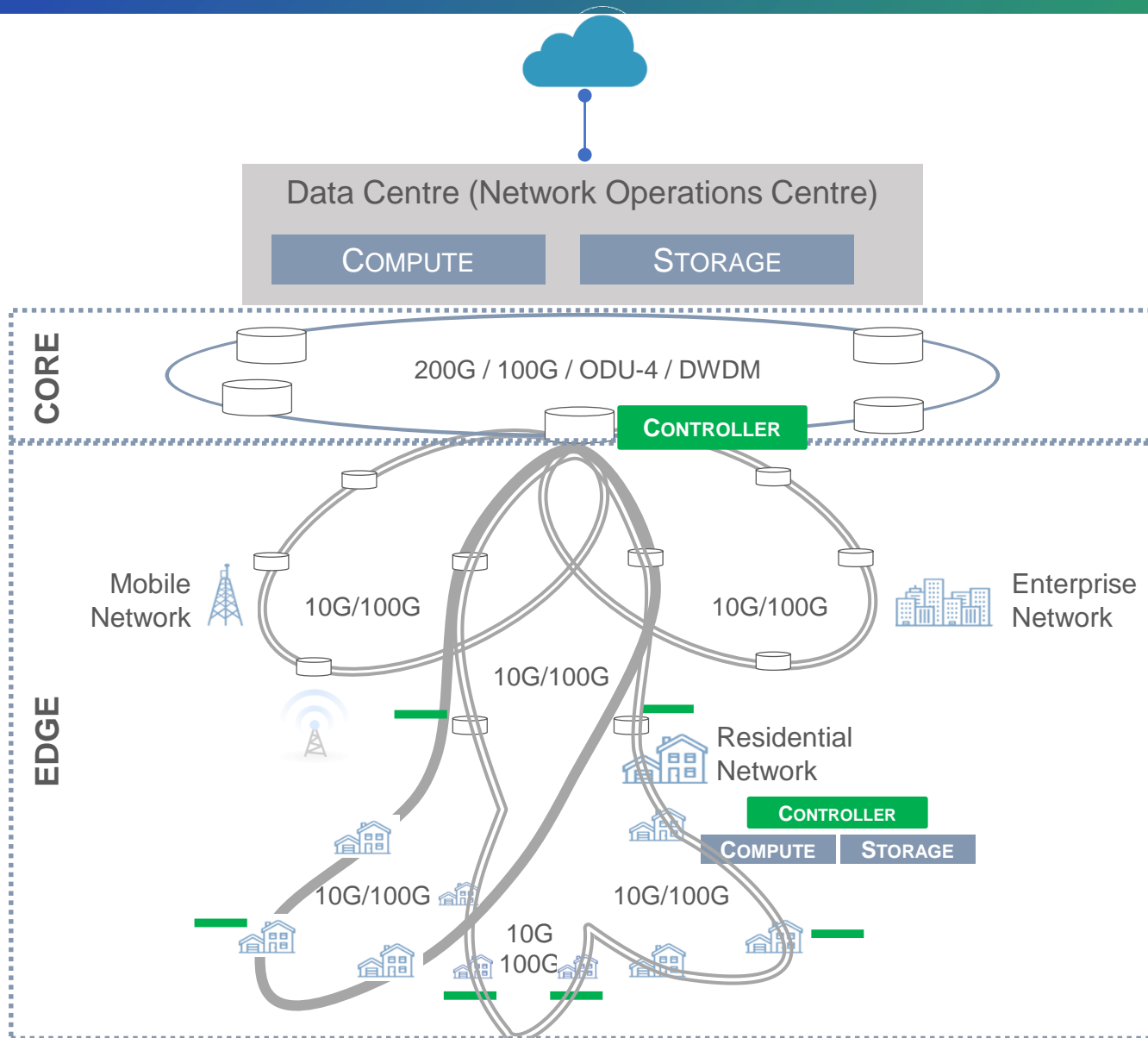
Take Access to the Edge



LATENCY SOLVED

Addressing SLAUC by changing topology

Addressing the issue of “Agility”



1.

Connect each home with Fibre



SCALE SOLVED

2.

Take Access to the Edge



LATENCY SOLVED

3.

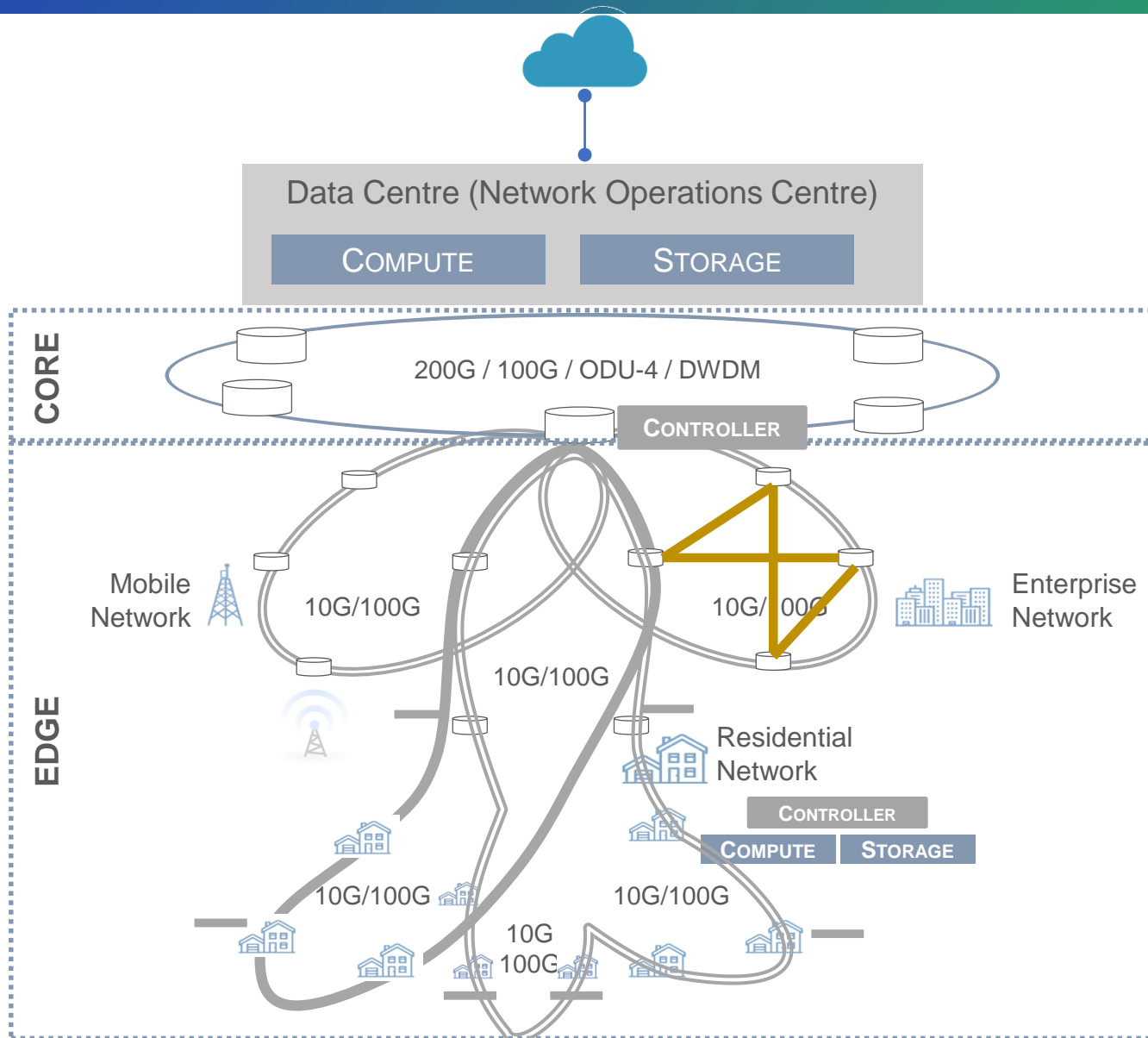
Centralize SD Control Layer



AGILITY SOLVED

Addressing SLAUC by changing topology

Addressing the issue of “Uptime”



1.

Connect each home with Fibre



SCALE SOLVED

2.

Take Access to the Edge



LATENCY SOLVED

3.

Centralize SD Control Layer



AGILITY SOLVED

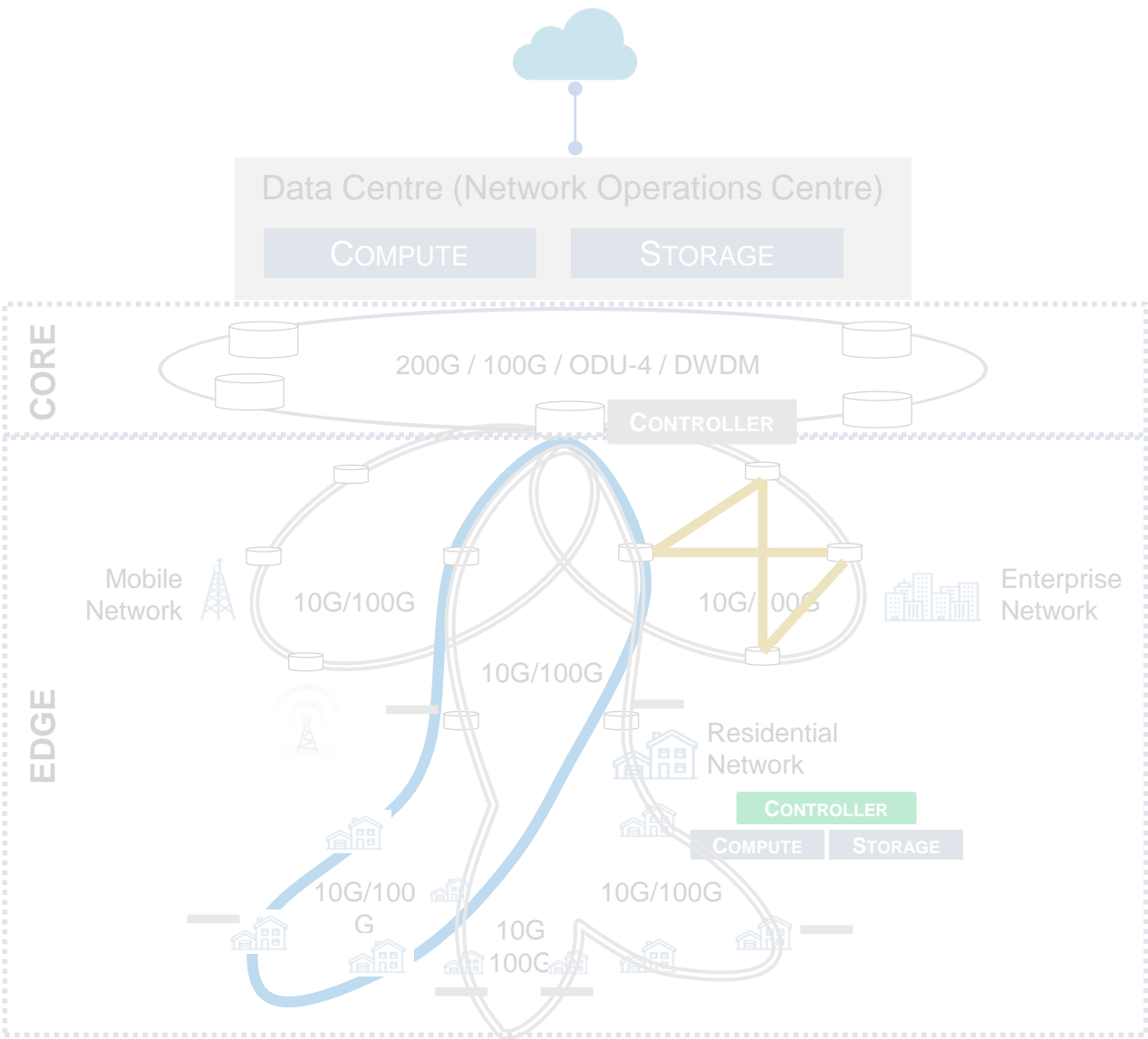
4.

Multipath Redundancy



UPTIME SOLVED

Addressing cost by right balance of SLAU vs C



5.



OPTIMAL COST

SCALE

LATENCY

AGILITY

UPTIME



RIGHT BALANCE OF SLAU vs C

What we'll talk about today

- The need for a smarter network
- Smarter network demands extremities of SLAUC
- Right network design approach for a digital future
- **Key challenges in current network design and their impacts**
- An integrated approach to design one network for all

Key challenges in current network design and their impact on business needs



KEY CHALLENGES

NETWORK IMPACT

BUSINESS IMPACT

1.

DISINTEGRATED APPROACH

Design gap among different layers

AGILITY + COST

2.

INCREMENTAL PLANNING

Inadequate resource dimensioning

SCALE + AGILITY

3.

MULTI PHYSICAL LAYER

Inefficient resource utilization

AGILITY + COST

4.

EXECUTION CONSTRAINED PLANNING

Unoptimized Planning

UPTIME + SCALE

5.

POOR NETWORK INVENTORY DATABASE

Unoptimized usage of existing asset

AGILITY + COST

What we'll talk about today

- The need for a smarter network
- Smarter network demands extremities of SLAUC
- Right network design approach for a digital future
- Key challenges in current network design and their impacts
- **An integrated approach to design one network for all**

Presenting

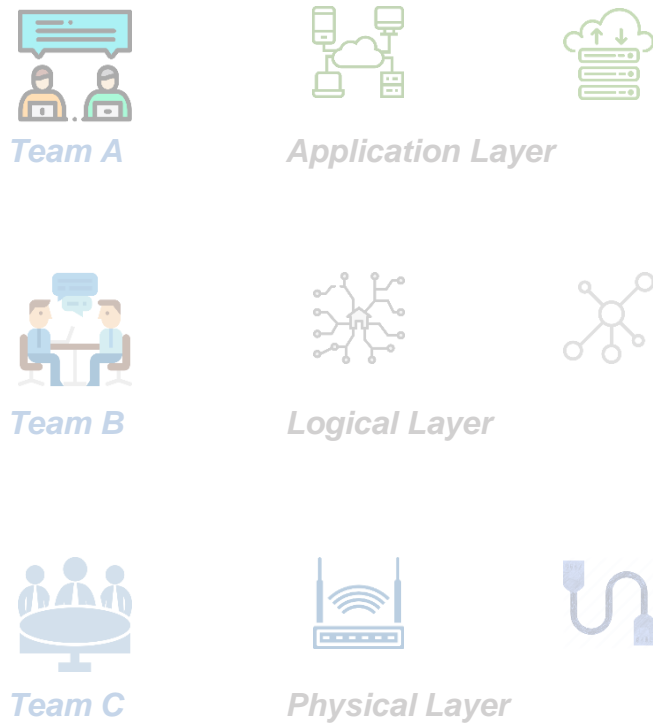


A Transformative Approach to Design One Network for All

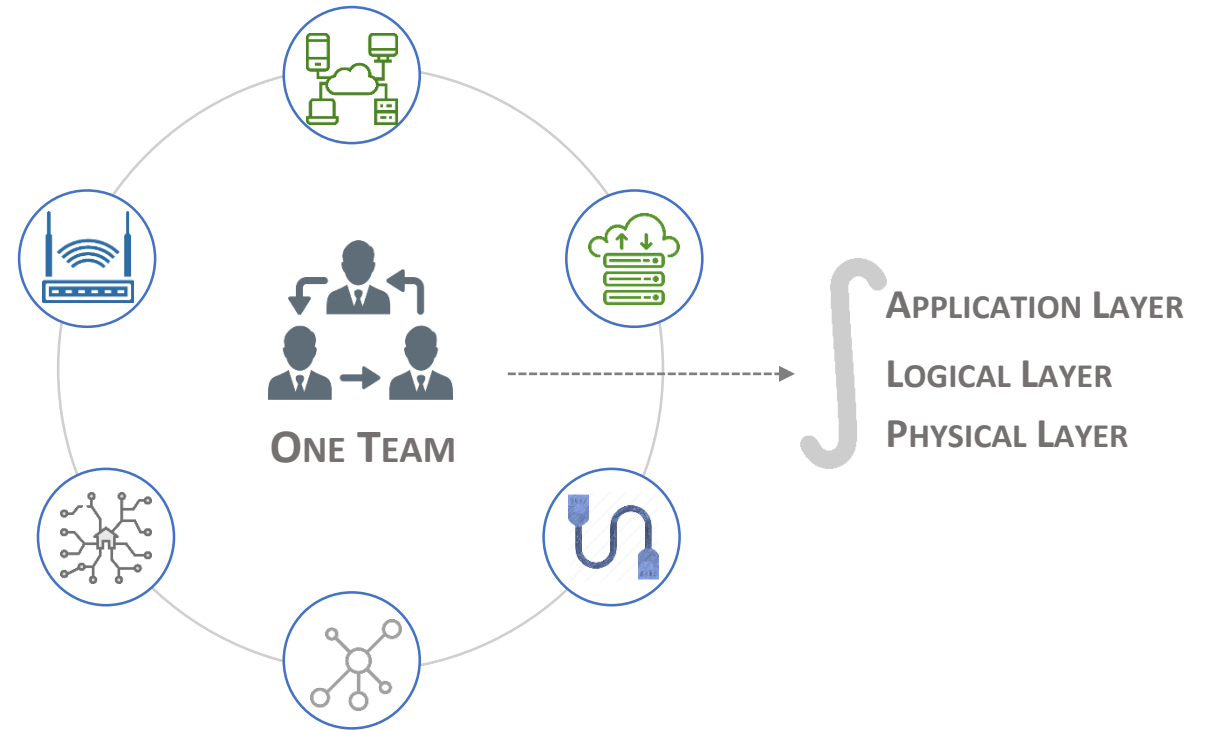
I-CORE approach for designing network to support all digital needs



Disaggregated approach..

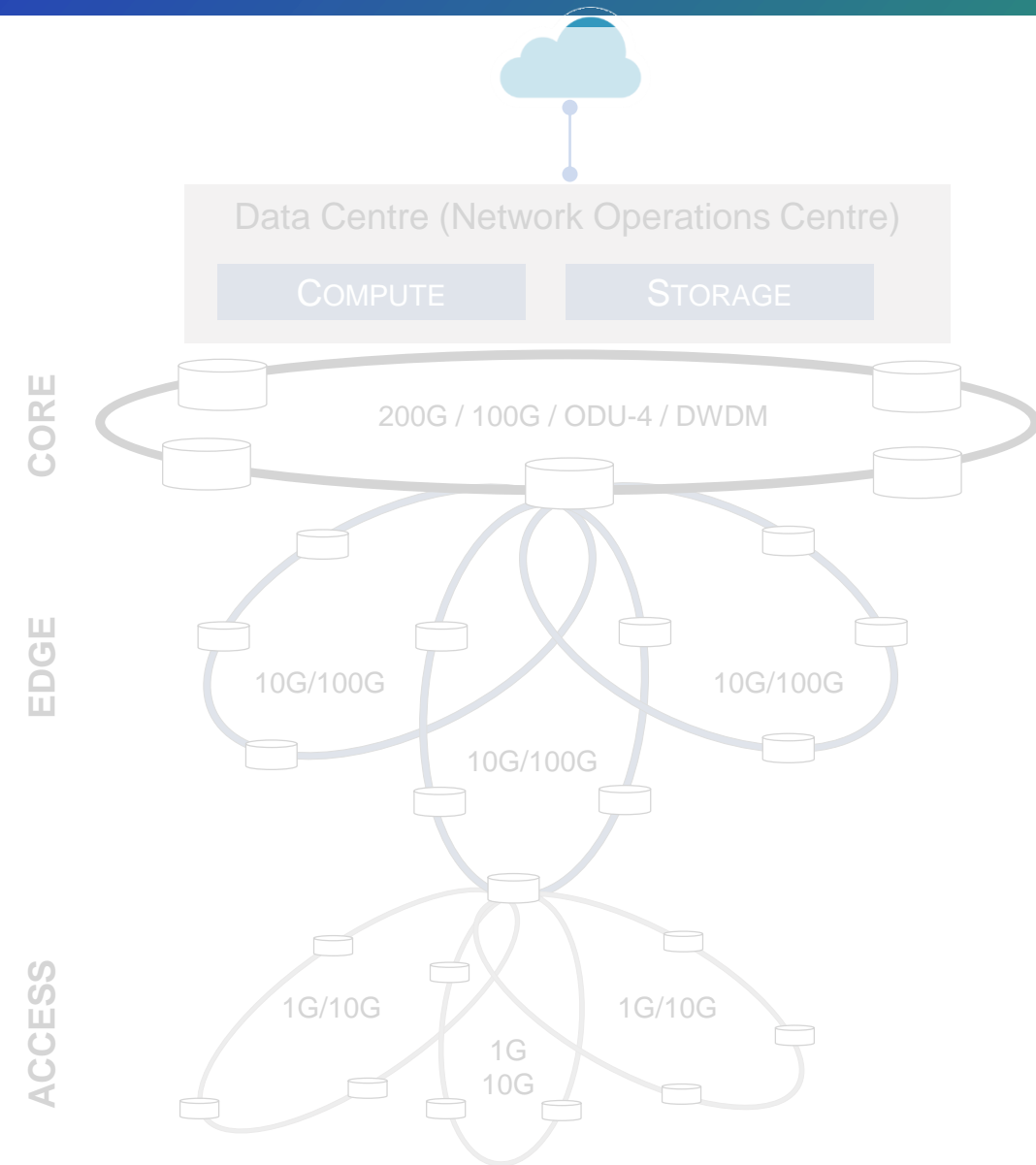


E2E Integrated Play across 3 layers...

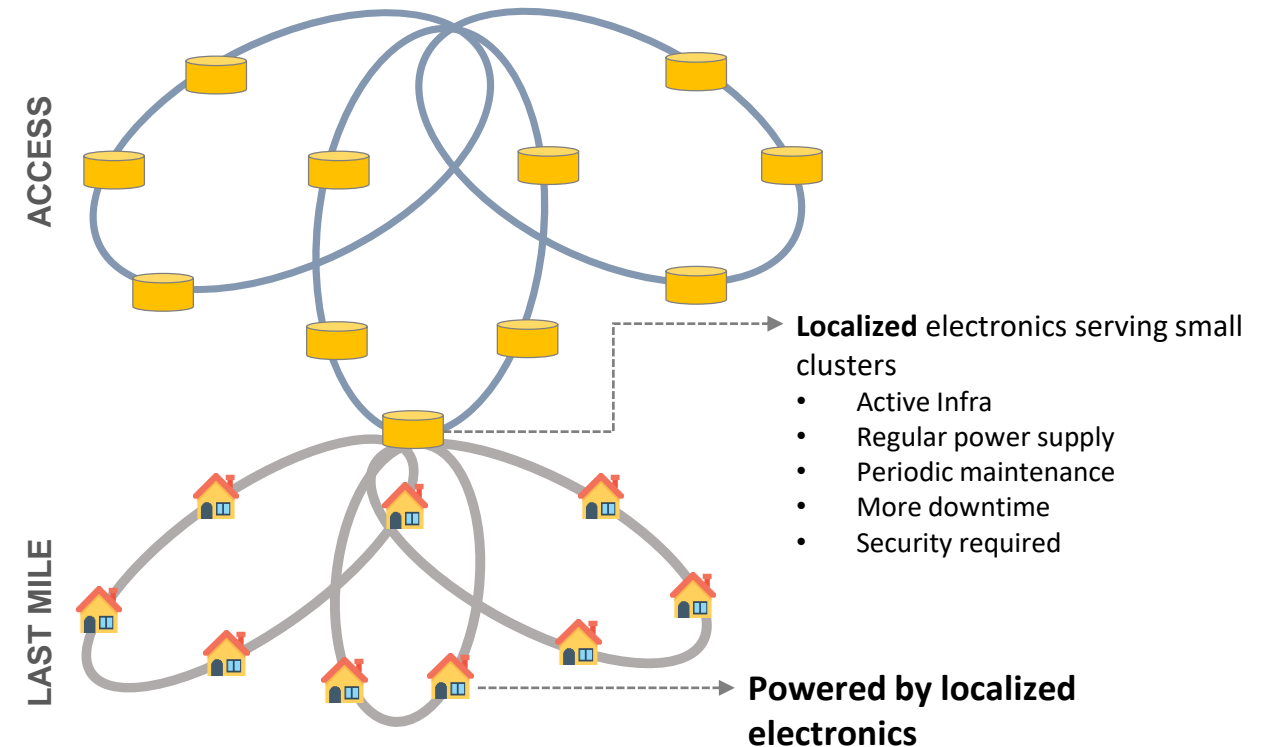


Centralized network planning

- Transition from decentralized



DECENTRALIZED NETWORK PLANNING

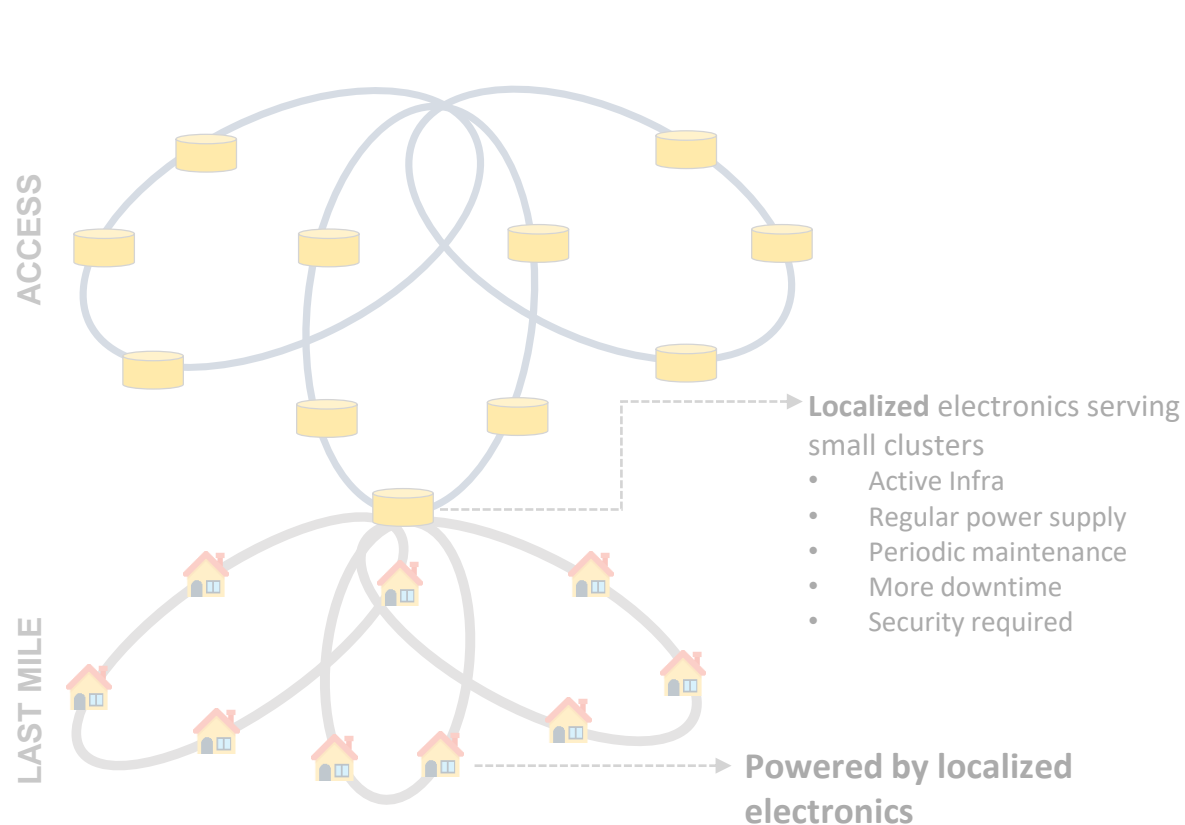


DECENTRALIZED to CENTRALIZED

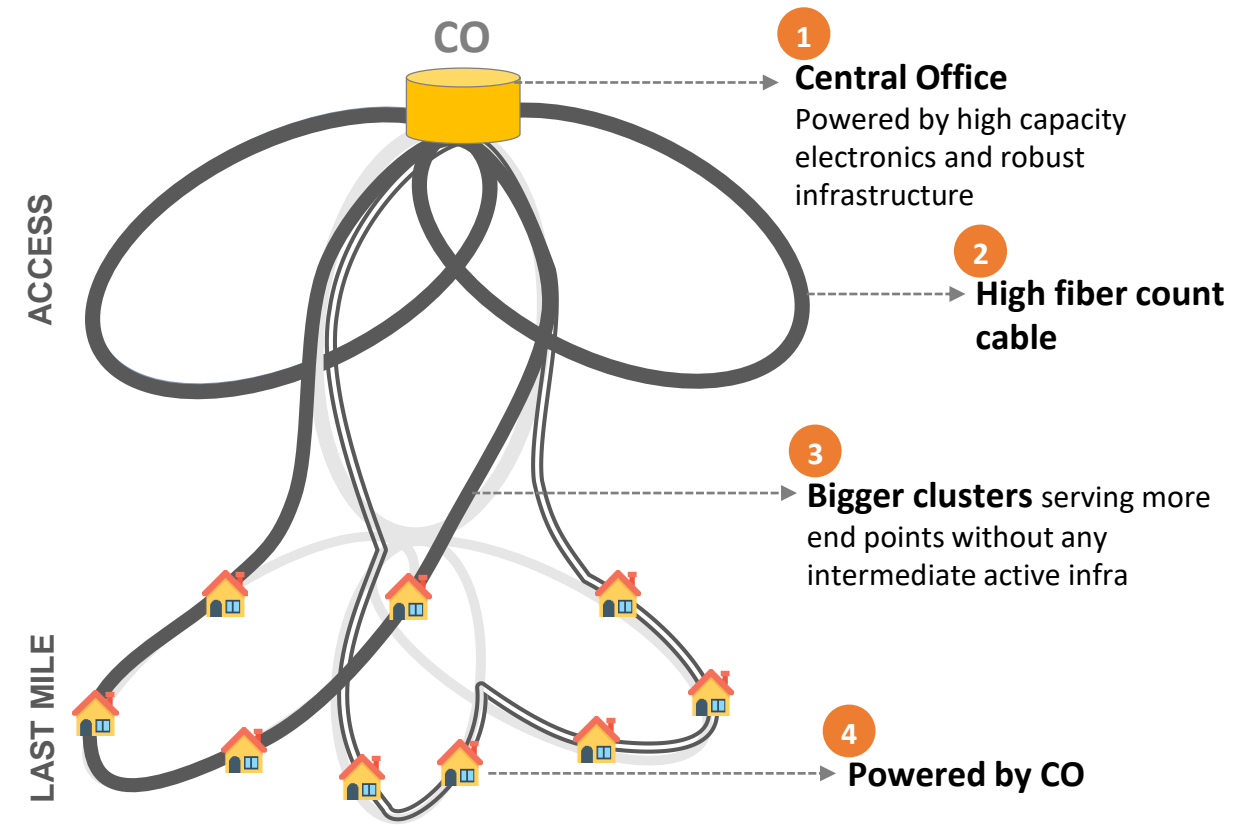
Centralized network planning

- Transition from decentralized

DECENTRALIZED NETWORK PLANNING



CENTRALIZED NETWORK PLANNING



*CO – Central office

A map of the Indirapuram area in Delhi, India. The map shows various landmarks, roads, and localities. Key locations include Sahibabad, Vasundhara, U S Cinemas, Yashoda Hospital, Miraj Cinema, Vijay Nagar Police Station, Max Super Speciality Hospital, Lal Bahadur Shastri Hospital, Fortis Hospital, and several sectors like Sector 62 and Sector 65. The map is overlaid with a semi-transparent grey box containing text.

Sterlite Indirapuram Cluster

A live use case for

Decentralized Vs Centralized approach

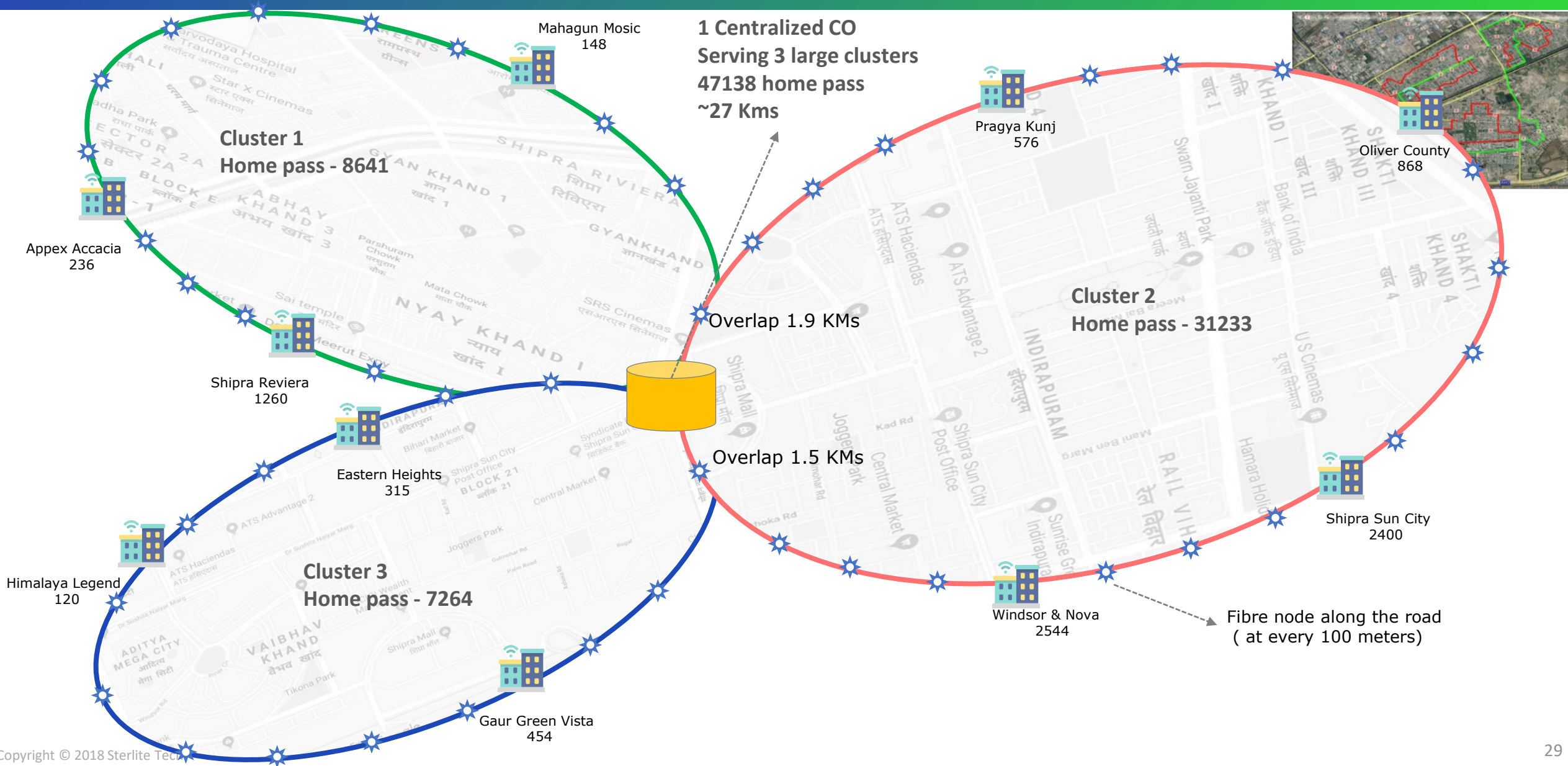
A live example- Sterlite Indirapuram Cluster

Decentralized approach



A live example- Sterlite Indirapuram Cluster

Centralized approach



While **Mini-Clusters** address immediate business needs, but for **Long term agility and reliability**, one should look for **centralised architecture**

Value Derivation on:

Deployment Speed

Low, Moderate and High

Ease of Deployment

Aerial and Underground
Low Fibre and High Fibre Count

Scalable

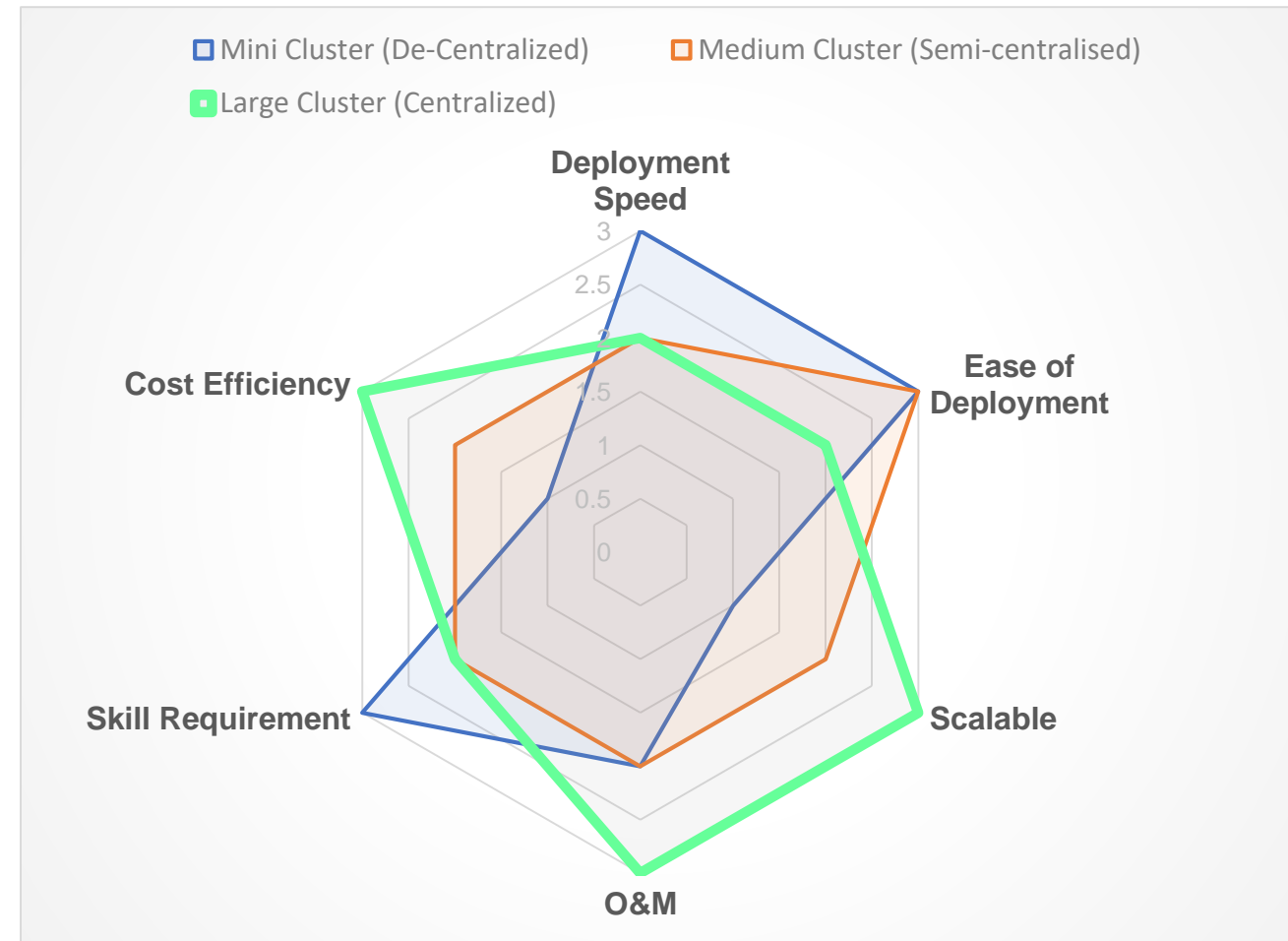
Transition to SDN

Operation & Maintenance

Number of CO Locations

Skill Requirement & Cost Efficiency

Low, Moderate and High



One integrated physical backbone to cater all digital needs



Applications Layer



Smart Home & Buildings, Industrial Automation



Accident/Disaster/Smart Healthcare Smart Education



Smart Communication



Smart Transportation



Utilities Environment



Connecting poles, Street lights



Connected Cars



Smart Security & Surveillance

Logical Layer

Cloud/DC



IaaS
PaaS
SaaS

Transport



IP/MPLS
DWDM/OTN
SD-Core/SD-Access

Access devices



Router
Switches
OLT/ONT

Future Proof highly scalable Physical layer

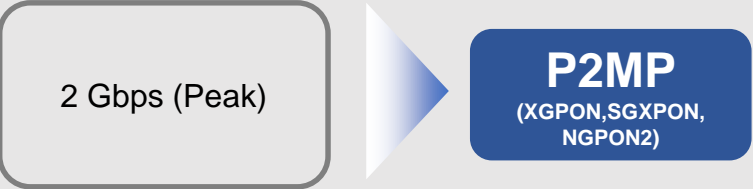
Scale calculation to design a future proof physical layer



825 Fibre strands (incl. 20% extra for maintenance and future uncertainties)

EXAMPLE: Suburban area with 20,000 population per sq. km. density

Home	
No. of Persons in a Household	4
No. of Households	5000
Households that can afford	75 %
Market Share of an operator	30 %



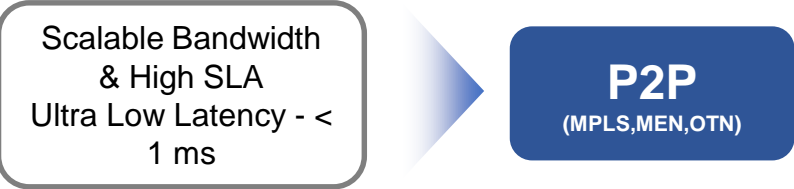
141 Strands

1125 Homes

8 Homes/GPON Port

Enterprises	
Number of Enterprises	20

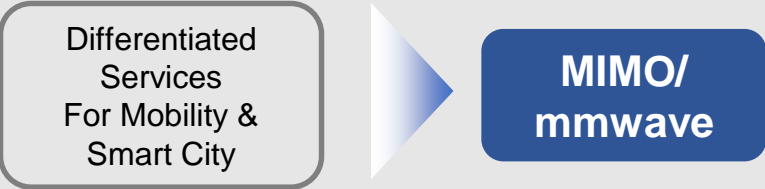
Market Share of an operator	50 %
-----------------------------	------



20 Strands

10 Enterprises * 1 Pair of Fiber/Enterprise

Small Cells	
Street Length (km)	9
Distance between Poles (km)	0.1



540 Strands

90 Poles * 3 Pairs of Fiber/Pole

Re-use existing infra

for network enhancement



Service Intelligence

- Leverage already laid duct utilities
- Tracking of unused passive infra
- Surveillance of active and passive equipment



Robust information database

- Centralized database for passive and active infra deployed
- Extensive use of GIS
- Geo tagging of network resources



Optimize active & passive elements

- Consideration of centralize Vs decentralize planning
- Optimize space and power need by proper assessment
- Less electronics will reduce overall cost

Leveraging existing infra will optimize scale and reduces overall cost

Everything Survey

to assess existing network infra



TECH ENABLED SURVEY TECHNIQUES



Online Digital Survey Platform



Digital Measurement Tool

Survey Monitoring from Control room

Iterative design based on info collected

Extensive use of design tools



IMPACT ON NETWORK CREATION

- Leveraging the current capacity of already laid infra
- Survey results reduces network planning time
- Optimizes requirement of active and passive infra

I-CORE networks designed for the most challenging terrains and extreme weather conditions



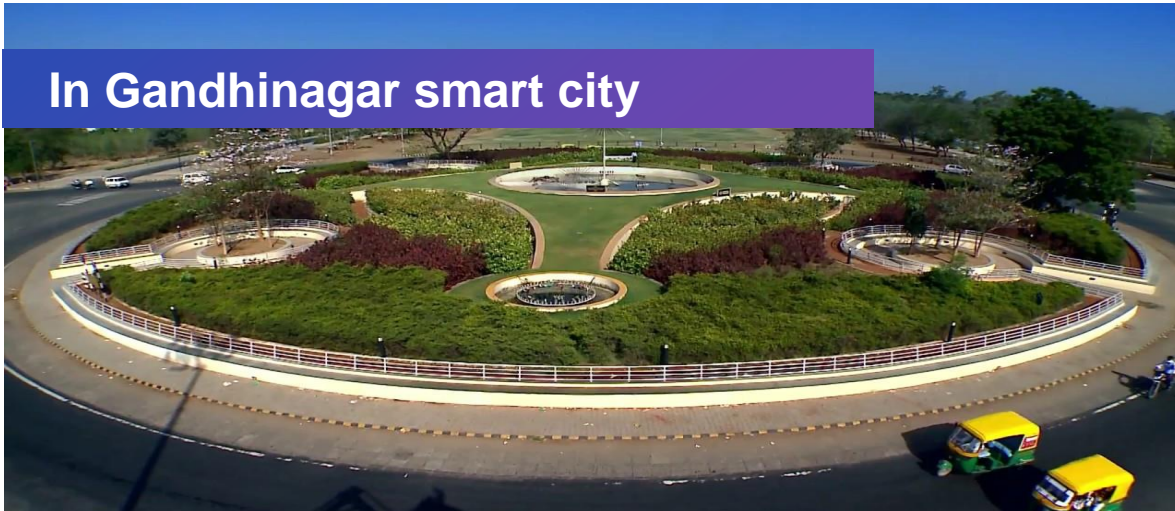
In the dense Madhya Pradesh forest



In India's defence applications



In Gandhinagar smart city



In Kakinada smart city



OUR CAPABILITIES ACROSS THE VALUE CHAIN

Optical Fibre & Cables



System Integration



Programmable Networking



Fibre Roll Out



Software & Intelligence



Presence in over
100
countries

Partnering with
8 of top 10
Global Telcos

3 Research
Labs

7 Production
Facilities

Designing, Building and Managing Smarter Networks

Please send in your questions and comments on Twitter/ LinkedIn

#stlwebinar

Go to **sterlitech.com/webinars/** to listen to this and many other SterliteTech webinars