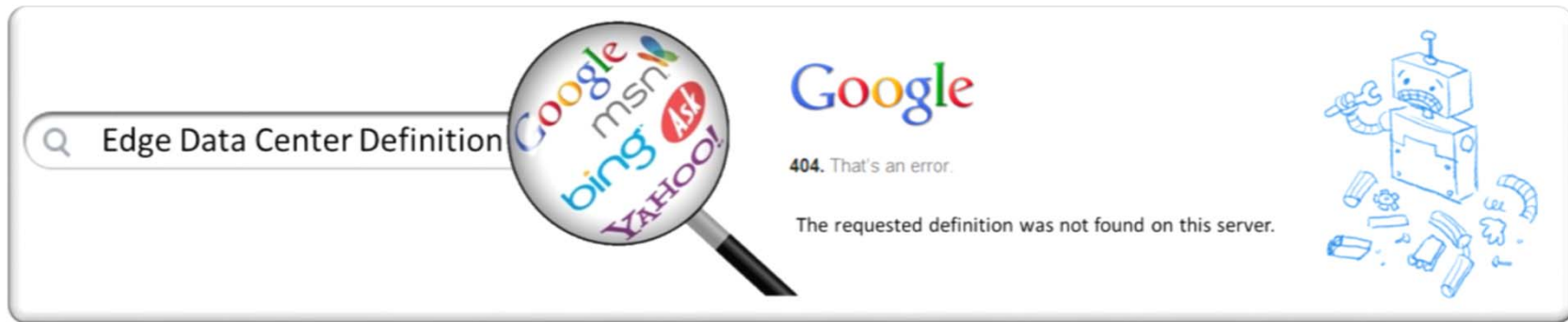# The Definition of an Edge Data Center – 404 Not Found
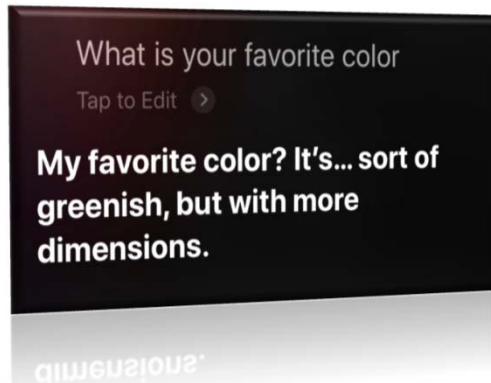

Sean Kelly, RCDD

Technical Account Manager

Rosenberger North America

Buzzword to Necessity

5G Latency IoT IIoT μDC Edge Smart Cloud Industry 4.0

We use them, but do we really know what they mean?

Many people have their own idea of what an Edge DC is

Who is right and who is wrong?

How do we actually define it?

Can we actually define it?
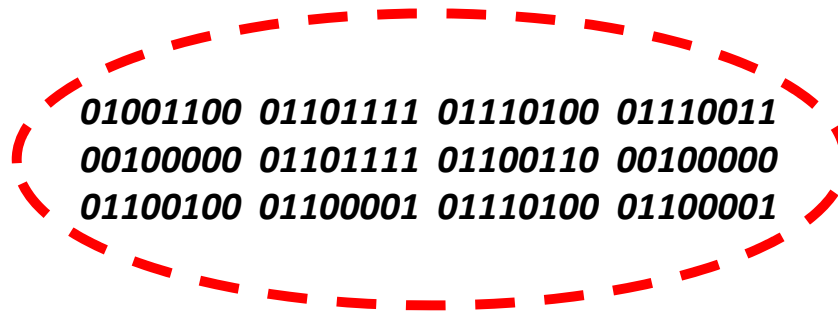
What drives the need for the edge?

"Not everything that counts can be counted, and not everything that can be counted counts."
- Albert Einstein

→

"SOON, everything that counts WILL be ABLE TO BE counted, and everything that can be counted WILL EVENTUALLY count."

01001100 01101111 01110100 01110011
00100000 01101111 01100110 00100000
01100100 01100001 01110100 01100001

Store, Process, Forward, React?

25-50 Billion Connected Devices by 2022

Collecting and communicating lots of data

What do we do with it?

What do we do with the data?

This is almost full

This is almost empty

This is full

Sends a signal to "schedule" a service

Notifies you that Fido's bowl will soon need attention

Sends a message to your device in real time signaling need for immediate attention.

Low Response

Moderate Response

Immediate Response

Do they require different response times?

What do we do with the data?

Data Stream

01001100 0111011... ...10011
0010...000011... ...00100000
0110... 01100001 01110100 01100001
Collected 10-1-2019 12:02:00105

Expires: 12nS from collection time

EXPIRED!

Do they require different response times?

Definitions of Latency

- The time required online or in a network for the one-way or round-trip transfer of data between two nodes. *(dictionary.com)*

- The time it takes for data to travel from one user, over the network to the central processor and back again. *(verizonwireless.com)*

We all want the lowest latency, but is it needed, practical, or affordable?

Interesting related latency definition

- In virtual reality and other types of simulation, the discrepancy between the time delay of stimulus and response in the simulation as compared to the real-world equivalent. *(dictionary.com)*

Where is low latency "needed?"

...Monitoring Risk...
Drowning
Stroke
Breathing
...Normal...

FUTURE...

At work

At rest

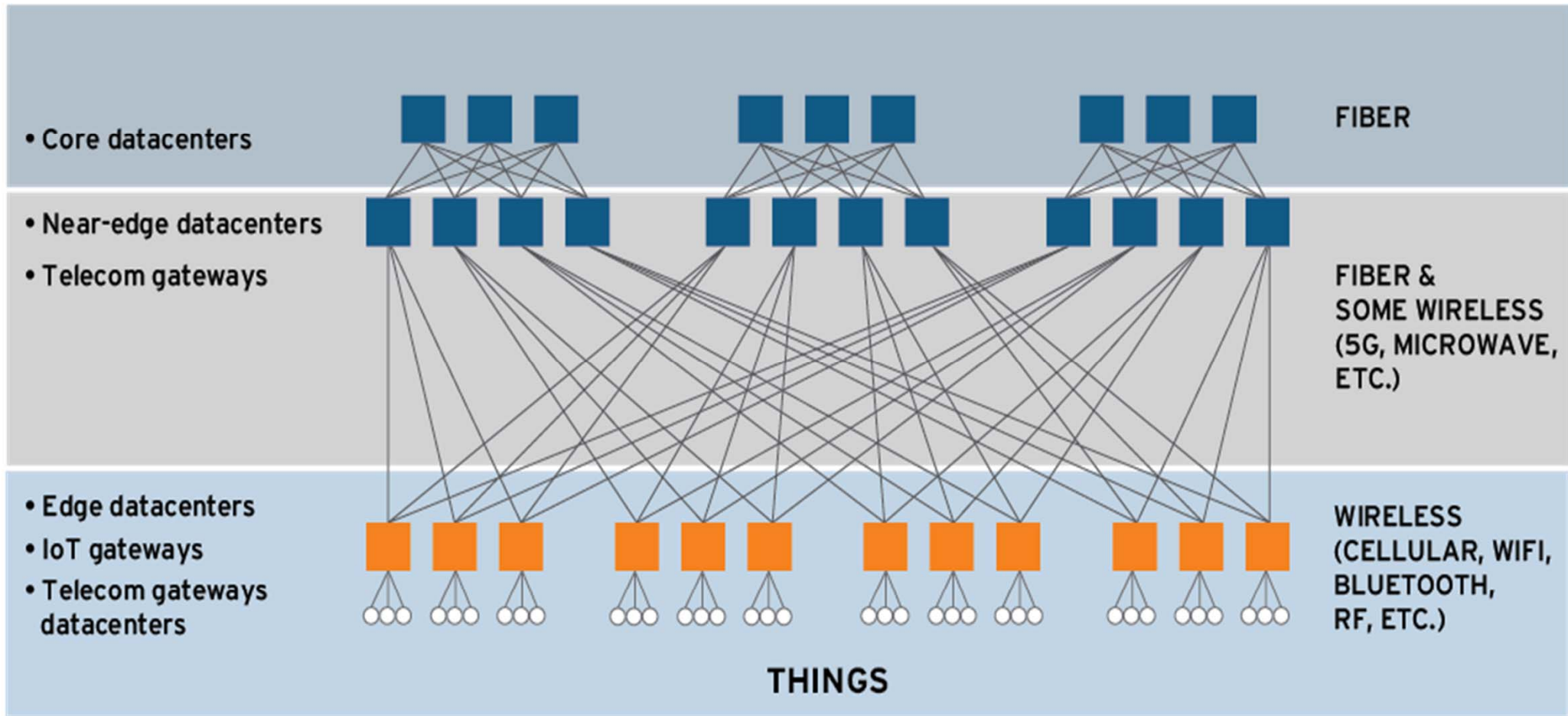At play

Life Safety / Health Monitoring

Predictive Machine Failure

Autonomous Vehicles

Architectures, types, functions

- Core datacenters

- Near-edge datacenters
- Telecom gateways

- Edge datacenters
- IoT gateways
- Telecom gateways datacenters

FIBER

FIBER &
SOME WIRELESS
(5G, MICROWAVE,
ETC.)

WIRELESS
(CELLULAR, WIFI,
BLUETOOTH,
RF, ETC.)

THINGS

Process proximity to user or data

Core Data Center

General Data

Ashburn, VA
Hanover, VA
OBX, NC
Atlanta, GA

Near Edge Data Center (Fog)

Critical Data

Hanover, VA
OBX, NC

Edge Data Center

Near Real Time Data

Real Time Data

Micro Edge Data Center
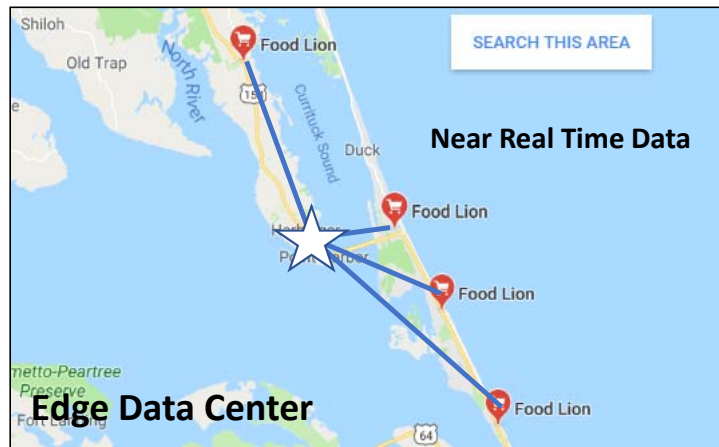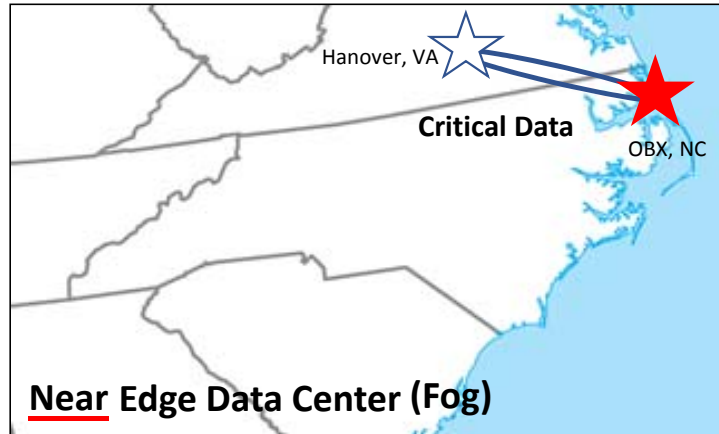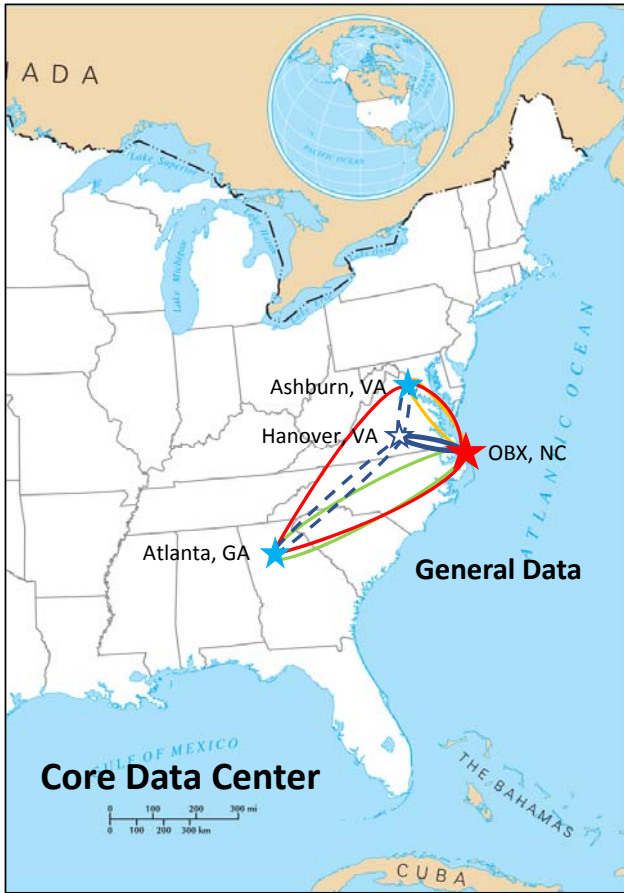
Where to find Edge Data Centers

Latency • Reliability • Cost • Proximity to Data

| Devices/IoT | Mobility & connectivity | Public Cloud & service | Analytics & automation | Applications & services | Enterprise & Private Cloud |

As the number of devices increase, and latency requirements become more critical, costs and reliability of transporting and processing data will become areas of more concern and force the edge to locations almost unimaginable today.

"The Edge of the Edge..."

What they look like

A dedicated data center or a functional area within

A micro data center within a building or tower shack

Mobile/Temporary

In the neighborhood

In the house
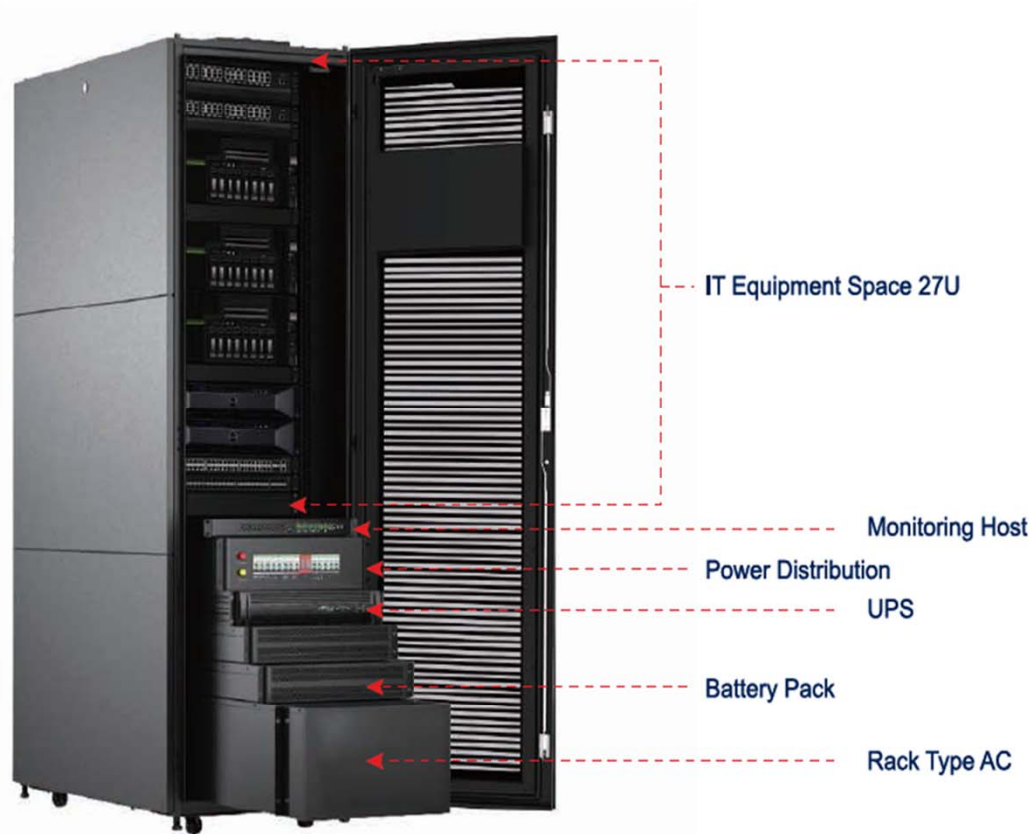
On our person

TODAY   **TOMMORROW**   **BEYOND**

Edge data centers are defined more from their function of being close to the data source than appearance or physical location. In the future, what we consider and edge may be much different than we imagine today.

Hiding in plain sight

IT Equipment Space 27U

Monitoring Host

Power Distribution

UPS

Battery Pack

Rack Type AC

As these data centers migrate closer to the device, they may become smaller and be located in non-Telecom type spaces. This may require them to be more self contained and function a little different.

And probably "Un-manned"

Remote Monitoring

Definition of an Edge Data Center

Definition (Almost) Found – *A constantly evolving, size independent space, containing switch, storage, and compute equipment, located geographically close enough to meet response and latency requirements of the application(s), while balancing cost and reliability to achieve expected results.*

Only time will tell what an Edge Data Center will look like and how we will define it in the future. For now, we can only speculate that it will be "sort of greenish, but with more dimensions" while adhering to the principles mentioned in the definition above.

Thank you!