



The Agile Network

You can't predict the future, but you can be ready for it

100 years ago, we crossed the Atlantic by ocean liner



Warnings of icefields had been issued



A sequence of avoidable errors sink the
unsinkable ship



Now we can cross the Atlantic 100,000x faster

59 ms London – New York



Technology adoption is accelerating

**TV: Mainstream
adoption in 28
years**

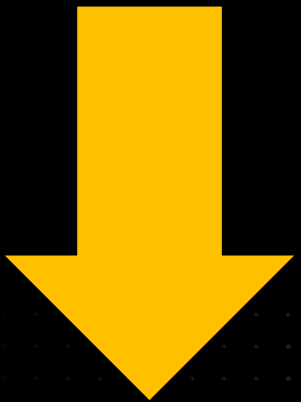
Internet: Mainstream
adoption in 10 years

Facebook: 3.5 years

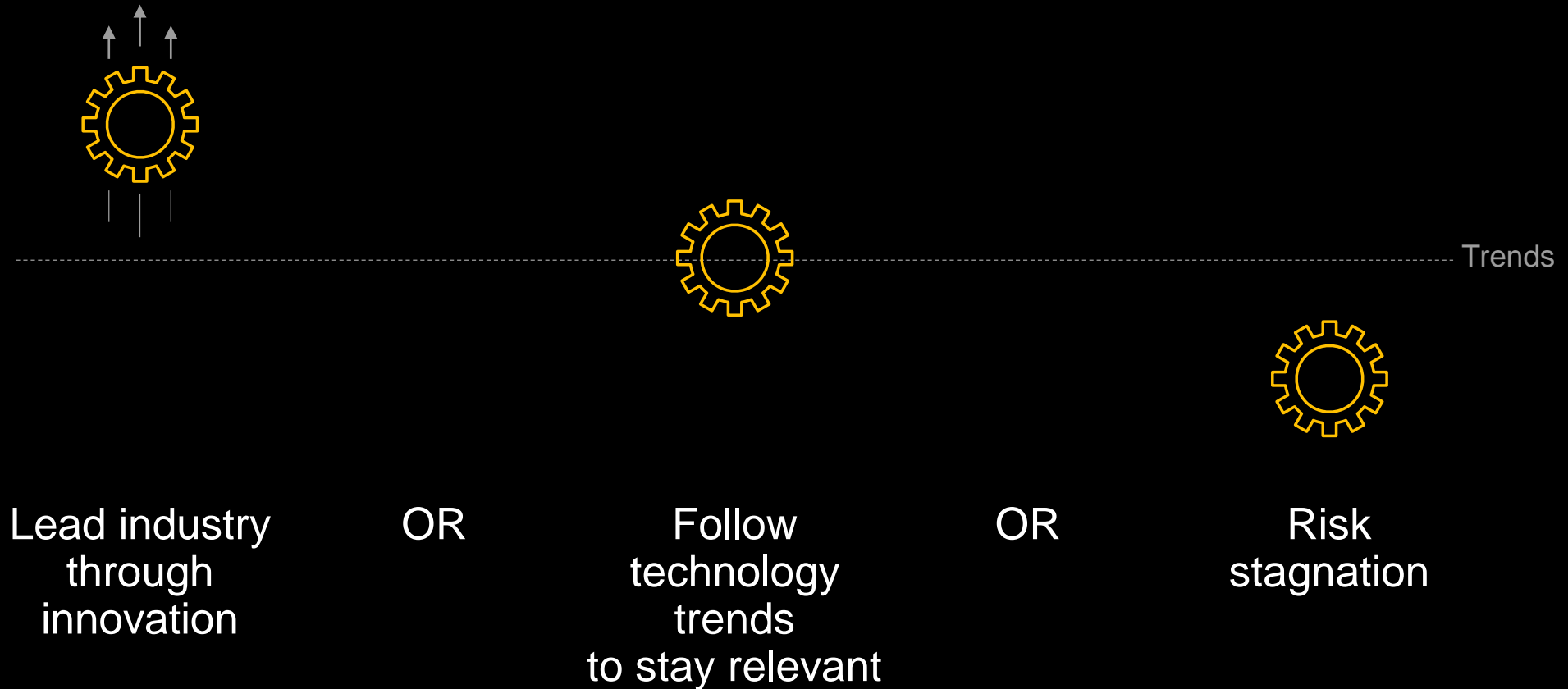


The impact of change should not be underestimated

Corporate survivability is down from 90% to 63%
– *Harvard Business Review*



Traditional Thought for Responding



“

The only sustainable advantage you
can have over others is agility, that's it.

— *Jeff Bezos*

Cloud services are the new homes for applications

SaaS to grow

↑ **14.6%**

CAGR 2018-23

IaaS to grow

↑ **22.2%**

CAGR 2018-23

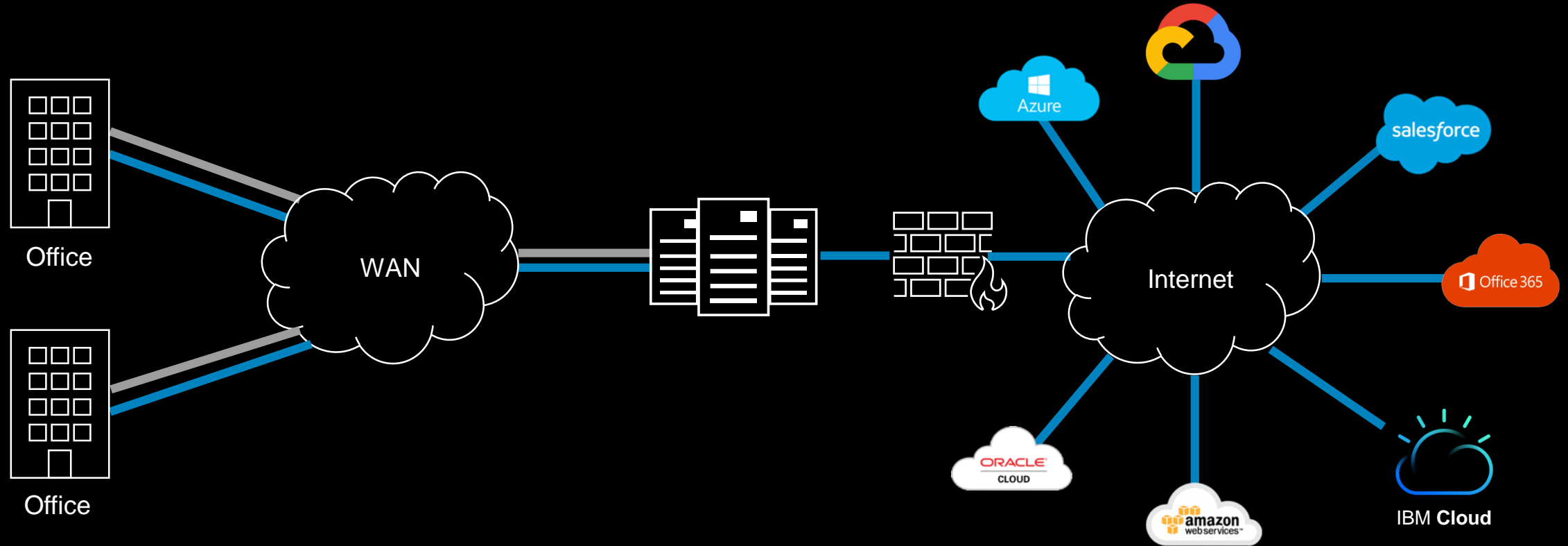
IT Strategy 101: The network is an afterthought

“ My company has agreed on a cloud first strategy, but our WAN is designed for connecting our offices and data centers, not cloud applications.

Traditional networks are broken

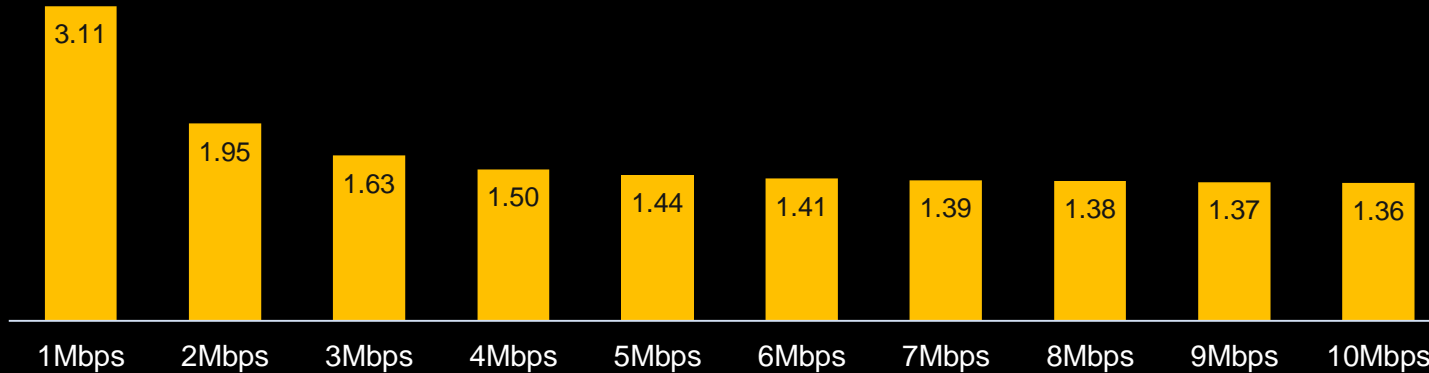


Traditional networks are broken



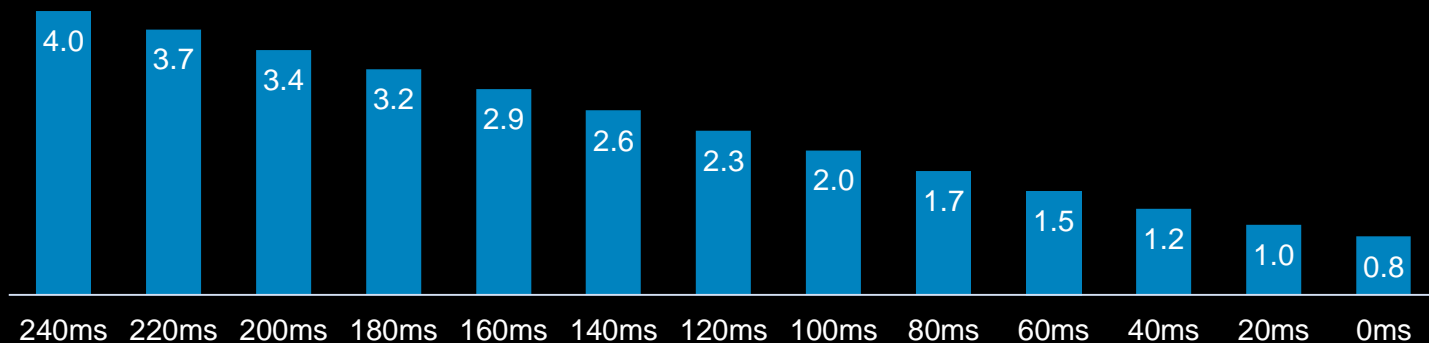
The impact of latency on applications

HTTP page load times (seconds) on a 60 ms latency link



Above a certain value, increasing bandwidth has little impact on improving application performance

HTTP page load times (seconds) on a 5 Mbps link



Reducing latency has a significant impact on improving application performance

The network is working just fine

```
Command Prompt

C:\>ping www.google.com

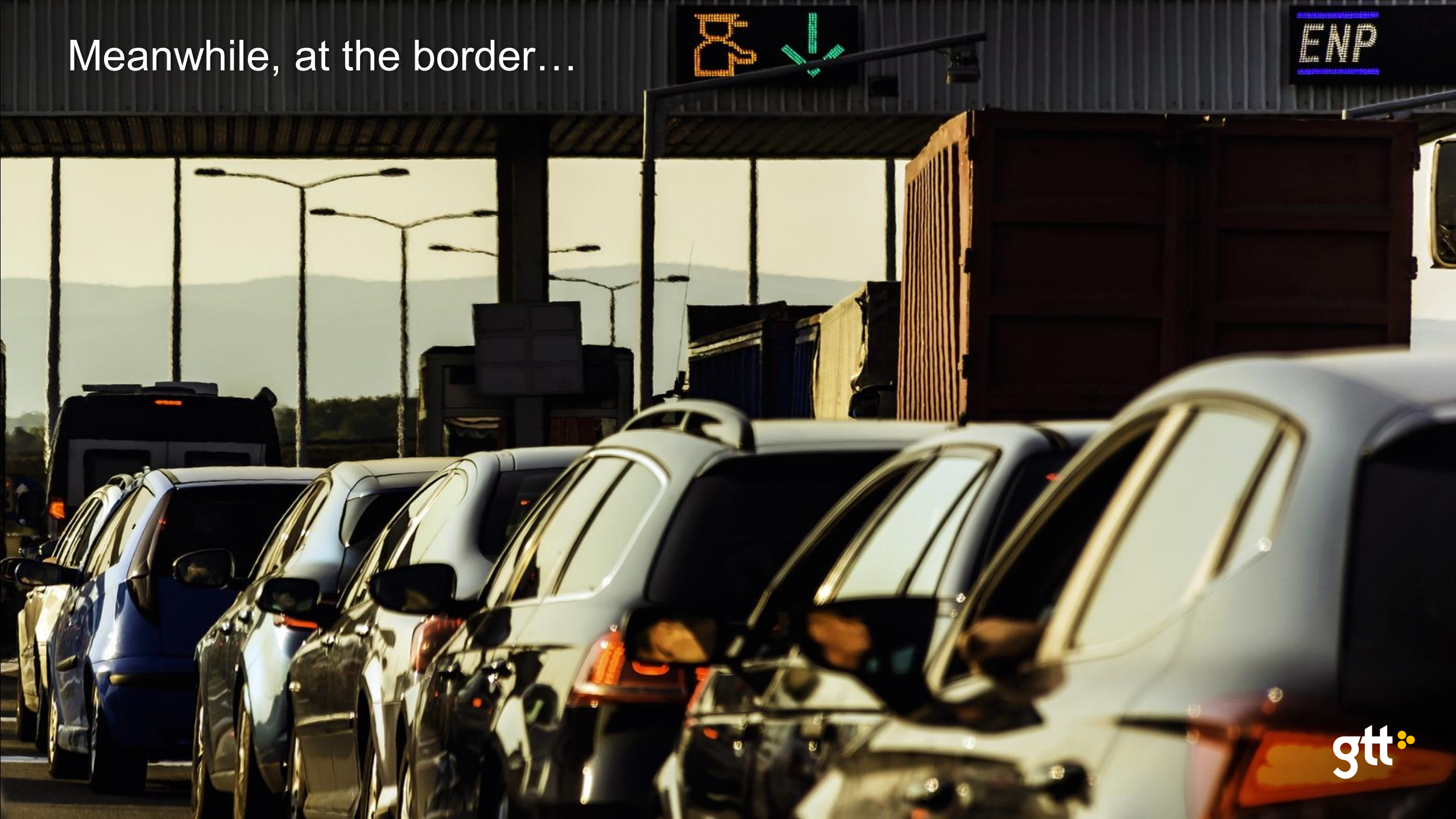
Pinging www.l.google.com [74.125.224.17] with 32 bytes of data:
Reply from 74.125.224.17: bytes=32 time=14ms TTL=52
Reply from 74.125.224.17: bytes=32 time=23ms TTL=52
Reply from 74.125.224.17: bytes=32 time=13ms TTL=52
Reply from 74.125.224.17: bytes=32 time=18ms TTL=52

Ping statistics for 74.125.224.17:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 13ms, Maximum = 23ms, Average = 17ms

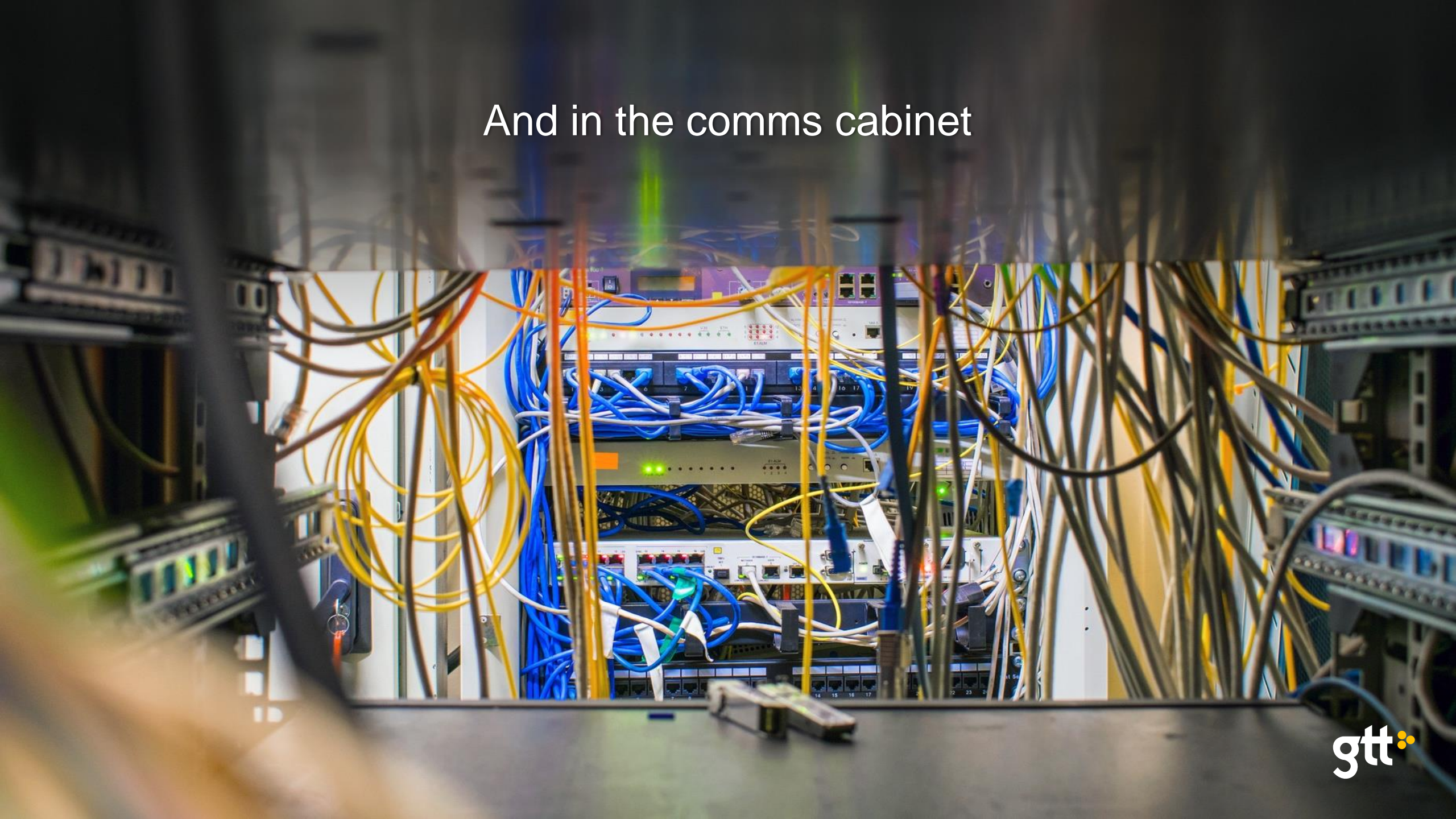
C:\>
```



Meanwhile, at the border...



And in the comms cabinet



SD-WAN – the best thing since...



215624 281825 597
125845 235554 258
421488 564527 25
125058 568285 57
425544 888954 854
551458 518548 548

299 1521 525253468343843353 47 6756056563 7675687
299 1521 525253468343843675 47 6756056563 7675687
299 1521 525253468343265575 47 6756056563 7675687
1521 525253468343843353 51 4534856563 7675687

6 7
7 0 2
9 9 7



299
299
299

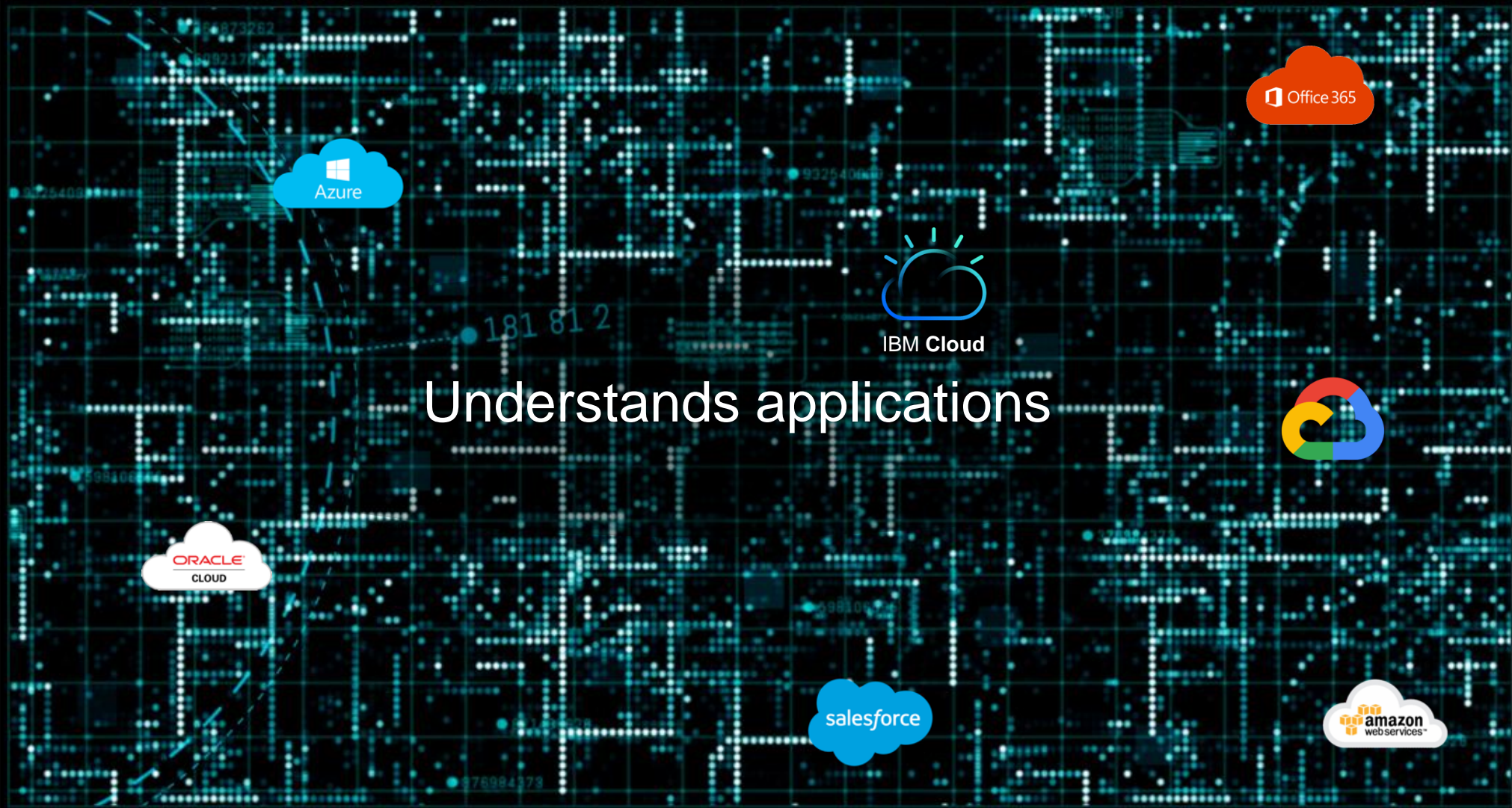


Encryption

5649792
2356469663
1245386522
1245386522
346767077
2356469663
4578616

12312312312312 23231231
231231231231231 32132121
21312312312312 21311231
231231231231231 23126566
321231231231266 55656451
616216512121231 55321312
200220202020202 32123123
231213213212313 31231231
212166556615151 16113136

6 0 5 8 2 9 4



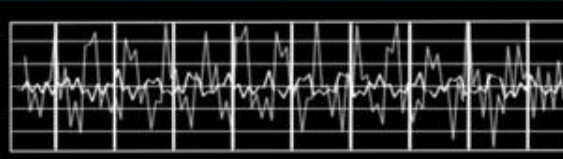
013131 13213 340134 42
7013131 723132 5231321 70
212131 320205 7236156 73
1231231 431233 2023311 32
3123133 236416 2312311 33
7030133 265366 2234563 56
2431313 231666 2131166 23
2313211 74716 2313613 25
3073155 140011 7566411 26
2312313 211161 231311 26
2223123 231211 231111 56

9033 3333309
3022 3130233
9323 2163230
6723 3760124
9336 2001336
5673 2625636
9131 2013276
2653 9007661
0475 1015266
9167 2763330
9212 2670165
2916 0561533
0121 9660365

32531 23921323
22365 23 311212331
7183913265632 1721
21020 12810212
11254 12 200101220
8092802154521 0810
07808 40618070
77032 70 088787008
68-0680932309 6676
78777 47587967
88921 89 777878977
574577821298 7587



3009 299 18 1 6 80202280 19012010
3009 299 18 9 5 29010820 10120020
3009 299 18 2 7 12010055 52015105
10015050 11501055
12501501 02510505
10520505 50050055
81201055 015555500

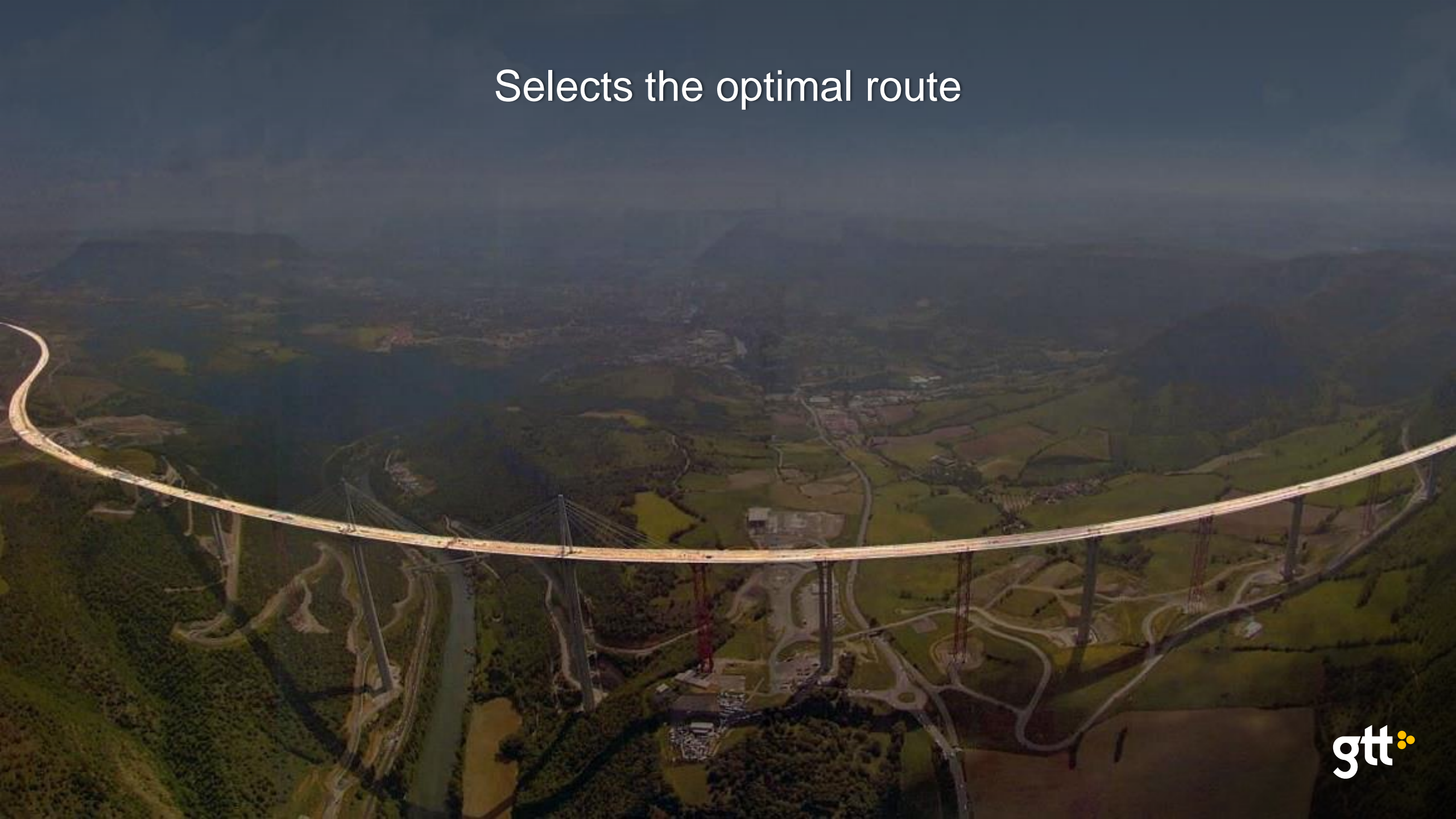


An aerial view of a multi-lane highway at night. The image is overlaid with a digital interface for traffic monitoring. Numerous cars are visible on the road, each with a yellow rectangular bounding box and a yellow cone-shaped sensor field extending from it. A large white truck is also visible on the left side of the road. The background shows a dark landscape with some trees and a building. The overall color scheme is dark blue and black, with yellow highlights from the sensor fields and bounding boxes.

Understands real-time traffic conditions

Makes intelligent
decisions

Selects the optimal route



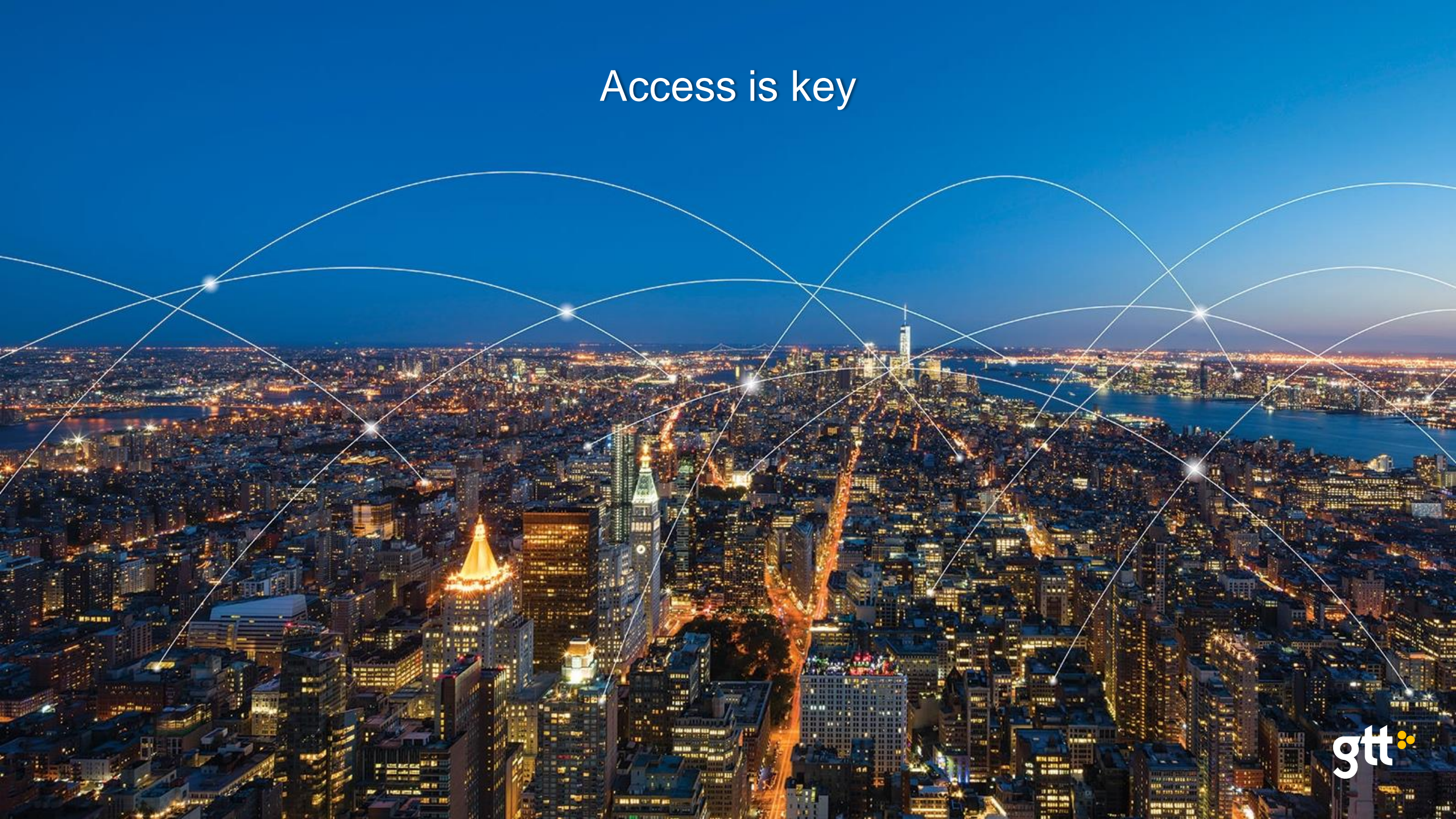
Application performance is now visible



But its not all plain sailing, there are icebergs ahead...



Access is key



a) Enforced private network last mile from legacy players

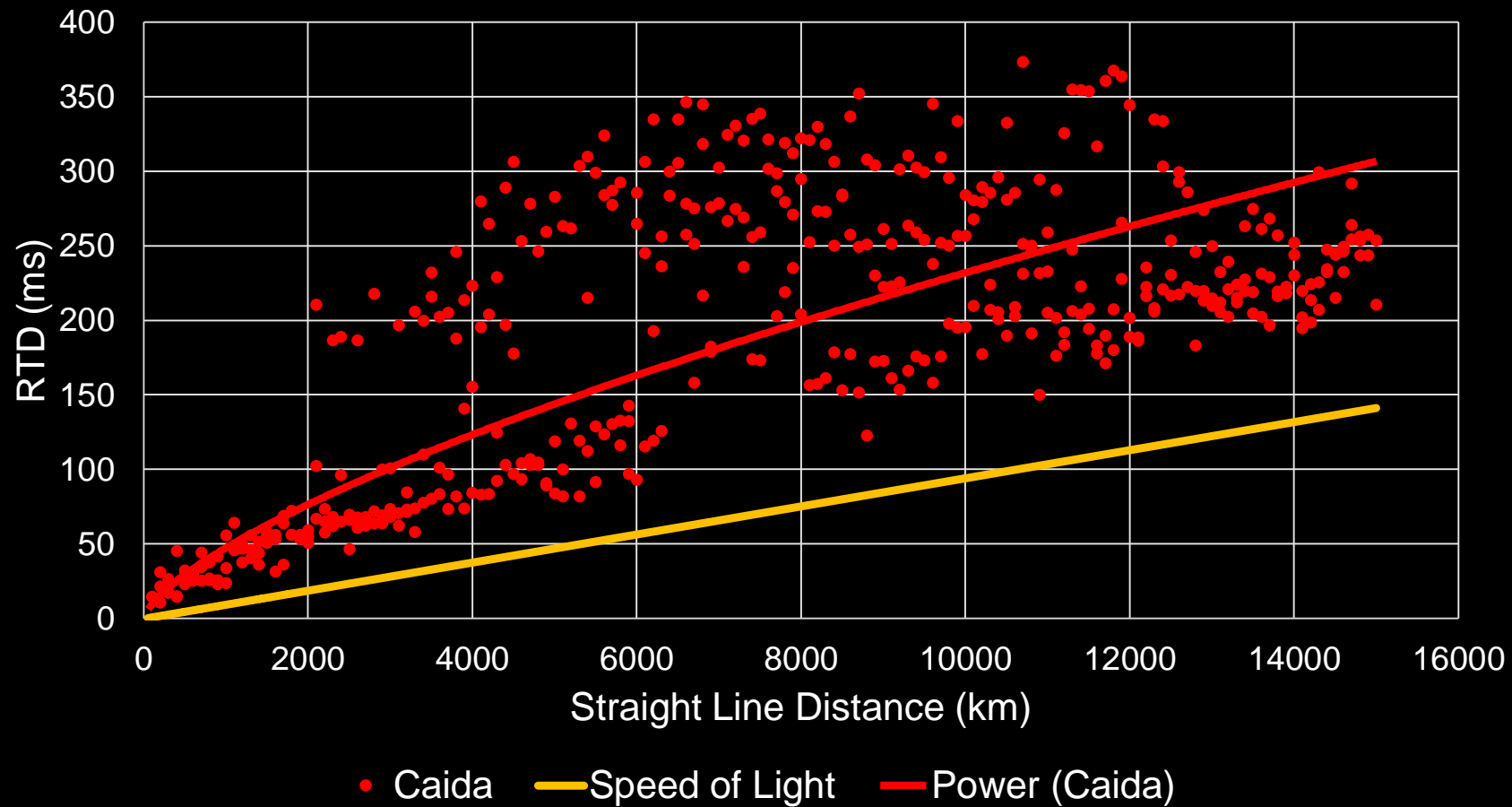


b) Or the choice of thousands from a top 5 Internet provider?

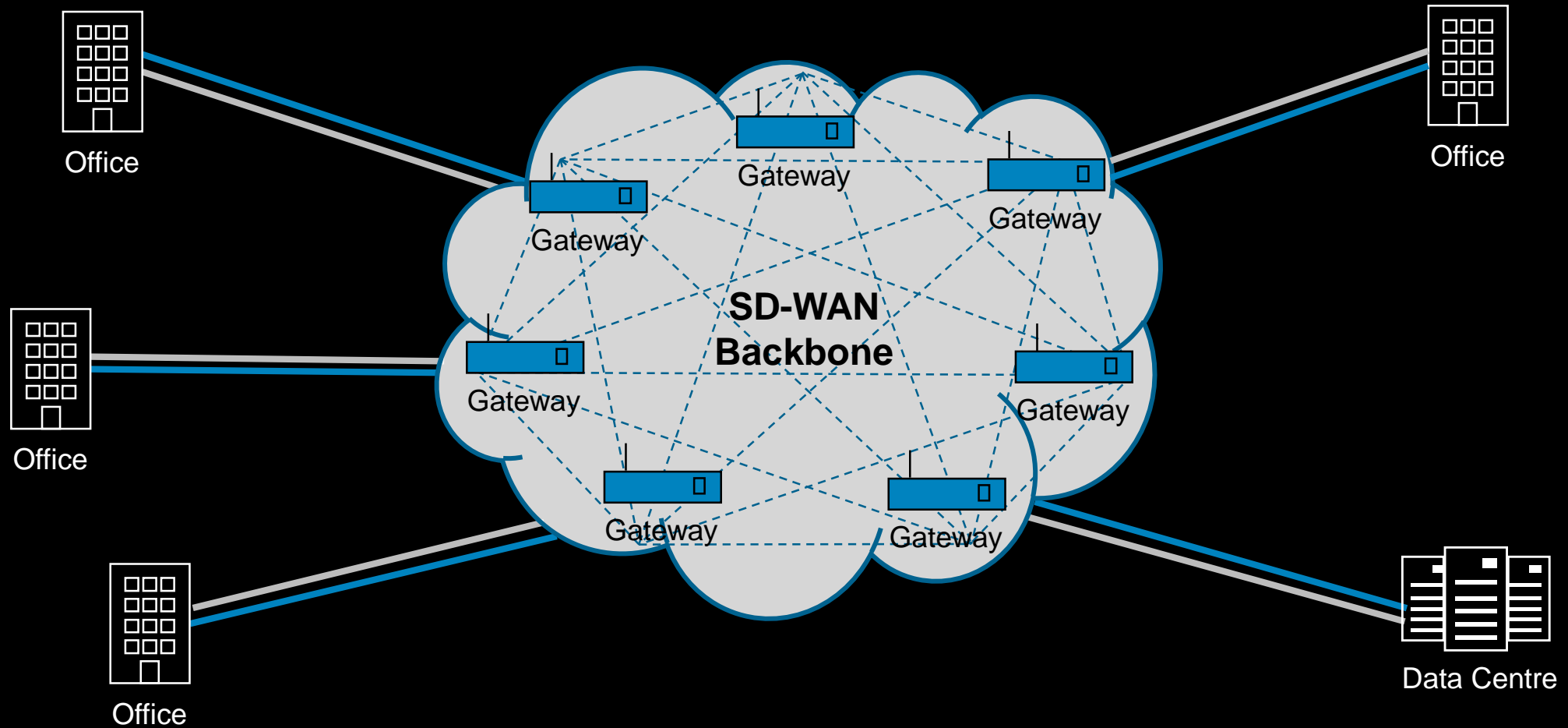
3,500+

a) Commodity Internet Performance

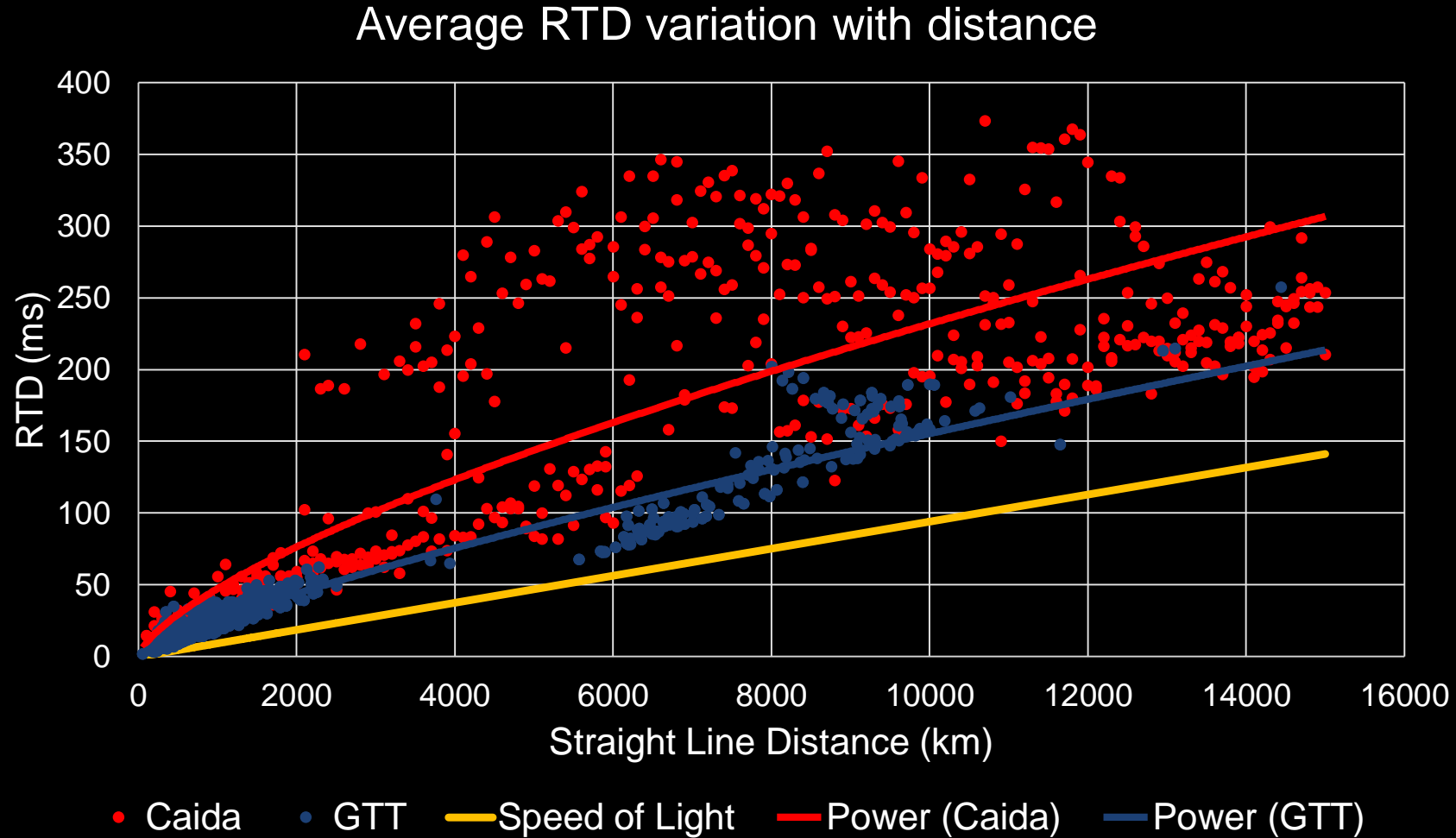
Average RTD variation with distance



b) Or Internet gateways connecting to an SD-WAN backbone?



Commodity Internet Performance vs GTT SD-WAN Backbone

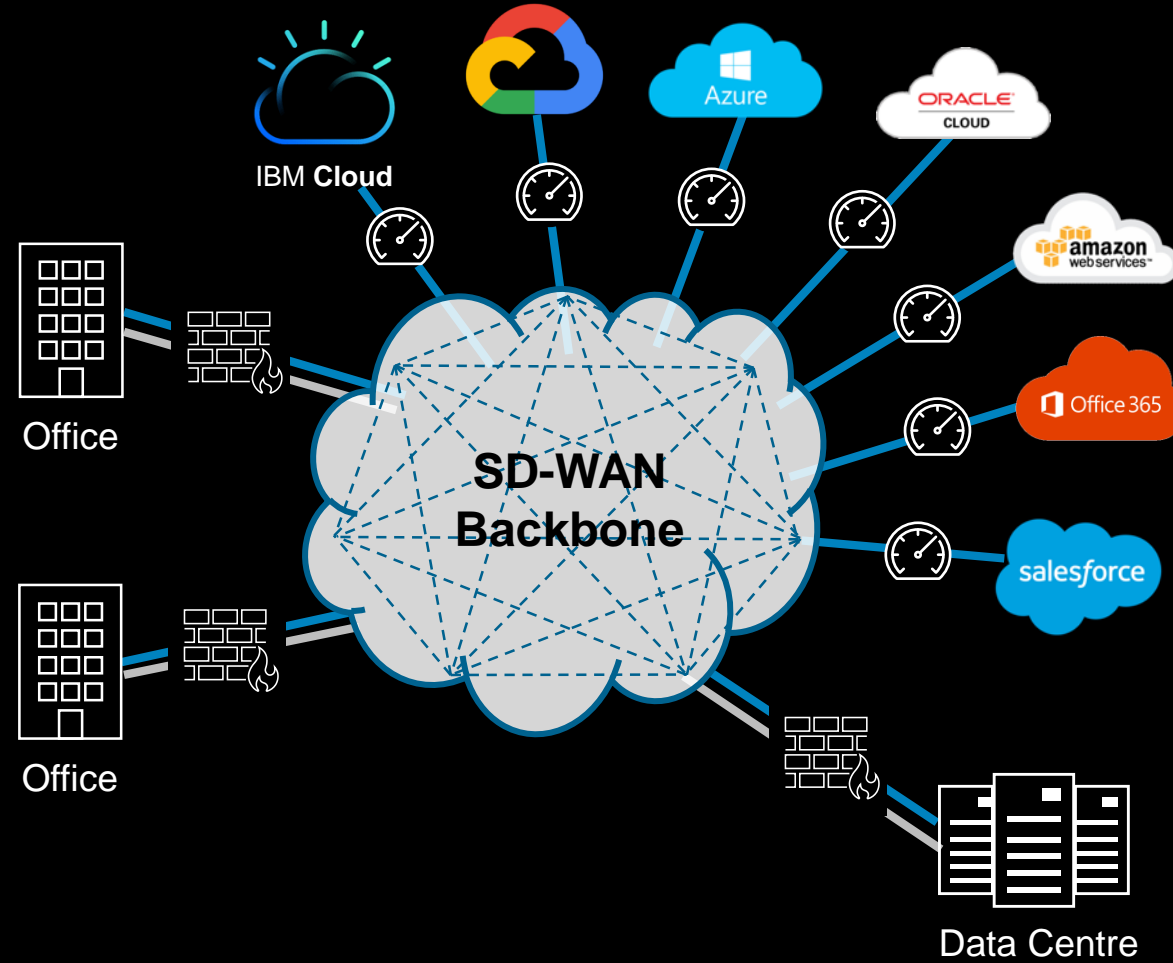




A high speed route to nowhere?



Or native integration with the cloud in the core?



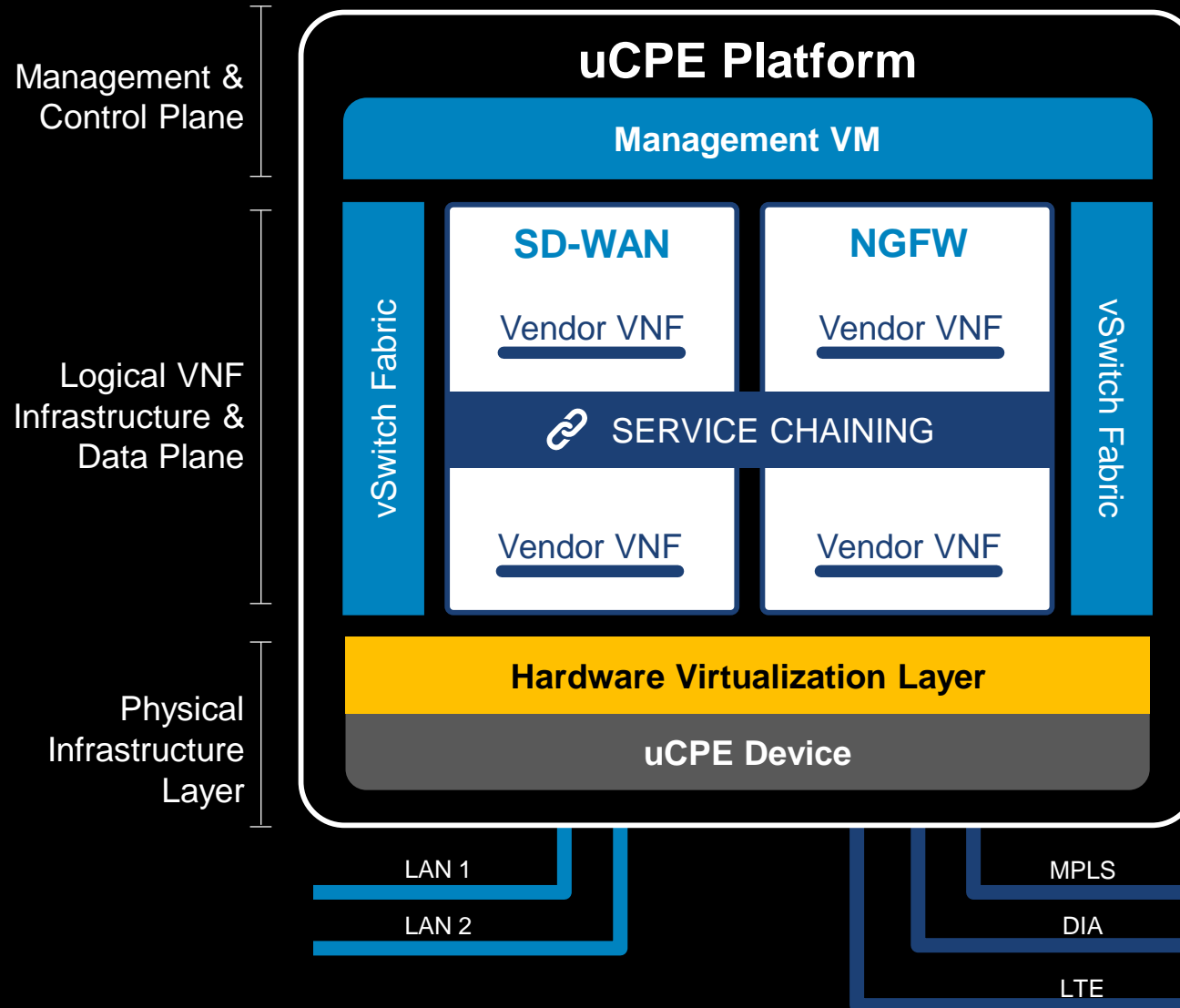


What about edge agility?

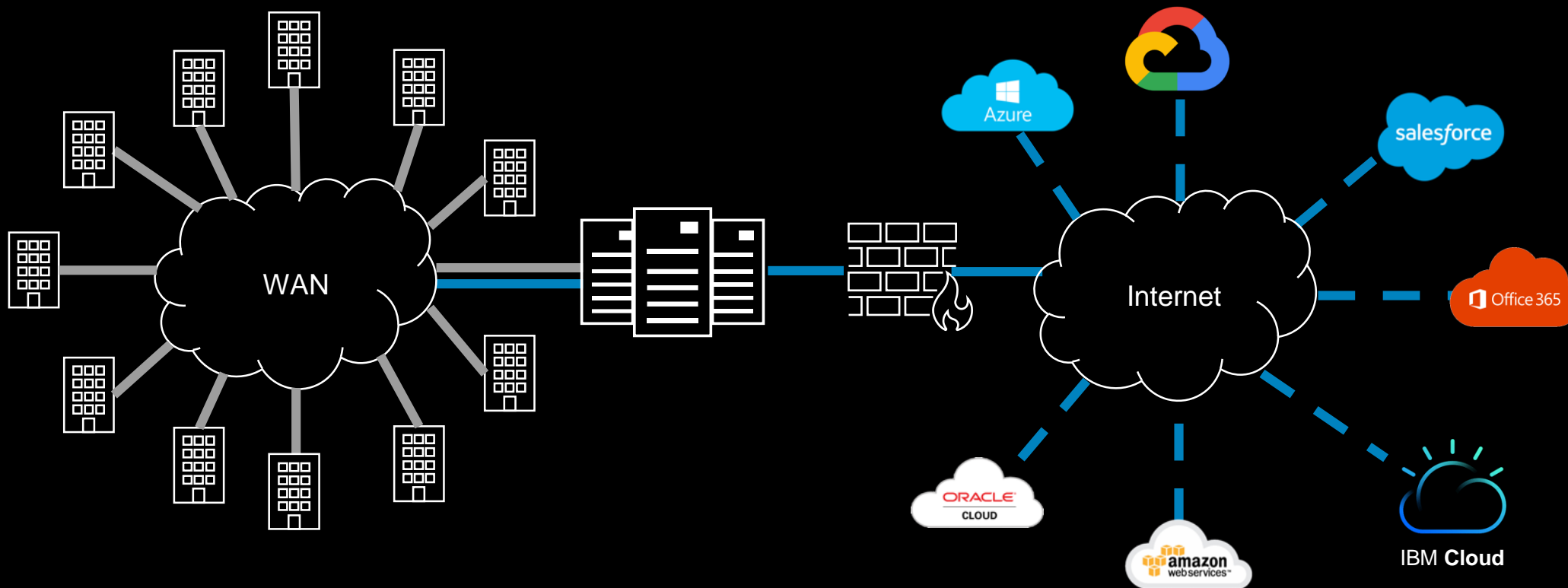
The traditional hardware telco edge..



...becomes a software defined edge



What if a change in security policy demands a firewall deployment at each site?



a) Complex, lengthy project



b) Or a software change?



So.... what do the analysts say?



The combination of cloud and edge poses significant organizational, culture and skills challenges:

- Cloud and Edge architects needed
- ***Networking and Connectivity are critical***
- ***Security must extend to all cloud and distributed systems***
- Data ownership?
- How will AI/ML impact the cloud/edge environment?

The Agile Network – Software-defined Infrastructure vs. Traditional Telco

Application aware

Adapts in real-time

Accessible via any access

Internet centric but not restrained

Cloud integrated

Secured everywhere

Flexible & on-demand

Controlled by policy

An aerial night photograph of a city, likely San Francisco, with a winding road in the foreground. The road is illuminated by long-exposure light trails from cars, showing a mix of white, yellow, and red lights. The city below is densely packed with buildings, their lights creating a bright, textured background. The overall scene is dark, with the city lights providing the primary illumination.

Questions?

Find us on the
Cloud Expo floor,
opposite the VIP
lounge

www.gtt.net

gtt