

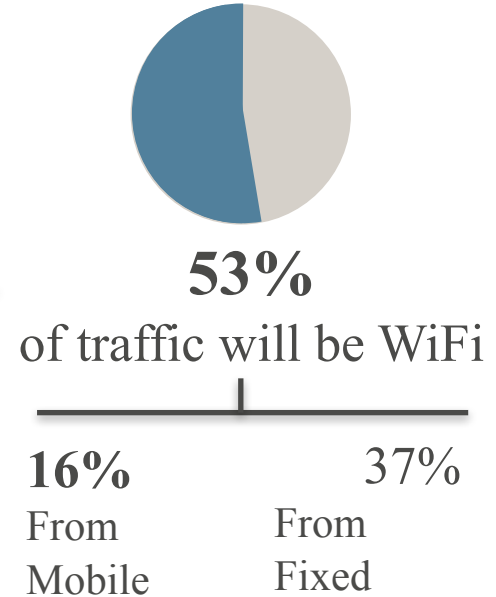
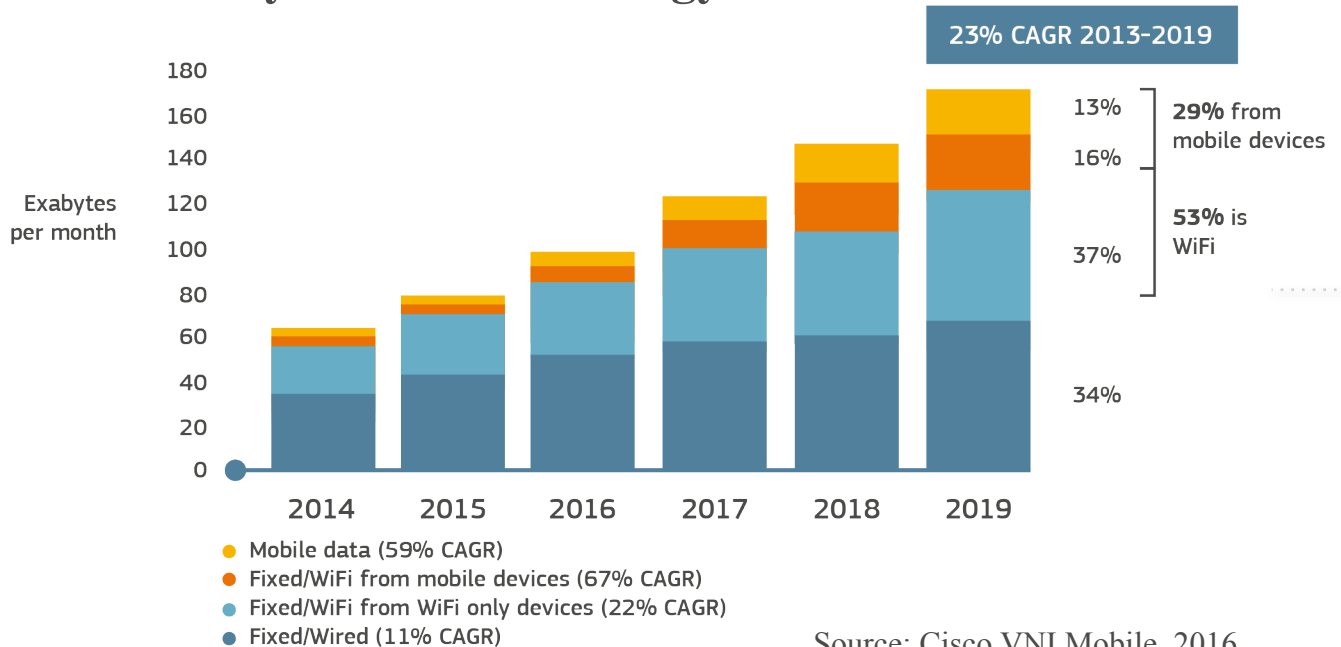


Building the Carrier WiFi networks of the future: Connectivity, Coverage & Cloud

Enrique Farfán,
COO

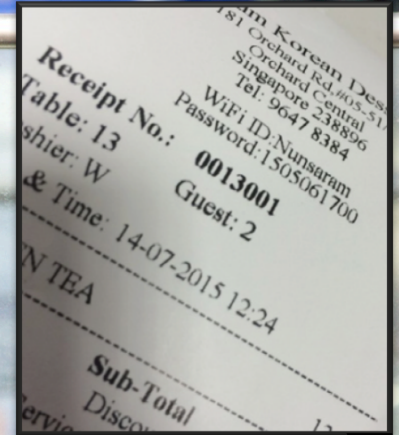
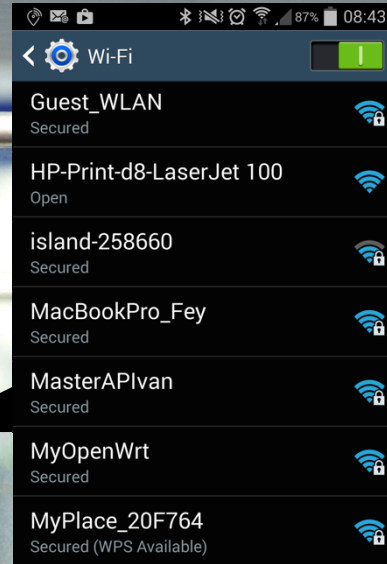
Consumers demand unlimited data: WiFi to carry most of this traffic

IP Traffic by Access Technology



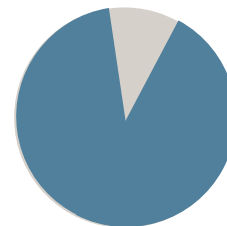
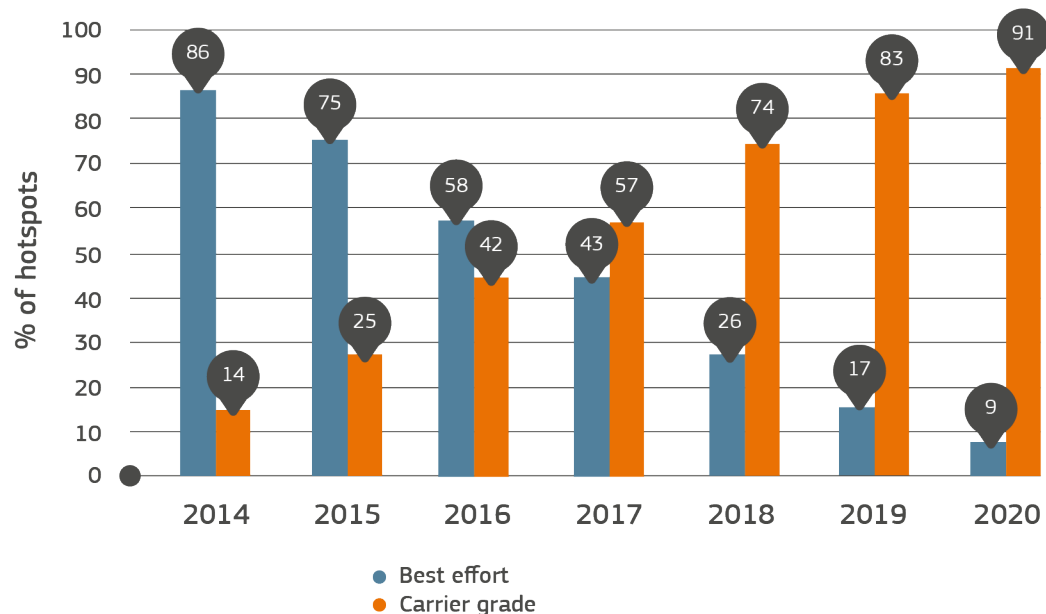
Source: Cisco VNI Mobile, 2016

But the connection experience is still far from great...



By 2020, Carrier-grade WiFi will be everywhere

Carrier-grade hotspots will outnumber “best effort” access points



92%

of operators will have a next-generation hotspot network by 2018

New technologies will enable high speed access and better Quality of Experience

Hotspot 2.0

> 6 M

Hotspots supporting Hotspot 2.0
will be deployed worldwide by 2020
(source ABI research)

802.11ac

80%

Hotspots shipped in 2020
will be **802.11ac Wave2**
(Source Strategy Analytics)

HetNets will bring new challenges and opportunities

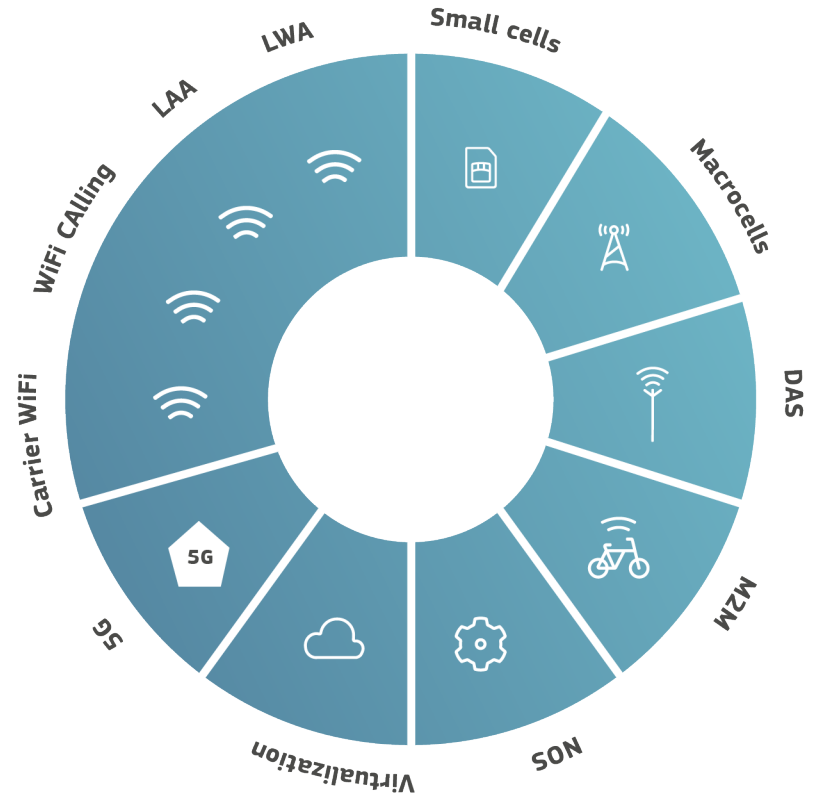
> 13
Billio
n

Investment in small cell, carrier Wi-Fi, C-RAN and DAS by the end of 2016.

15 %

CAGR from 2016 to 2020

(Source: Radiant insights)

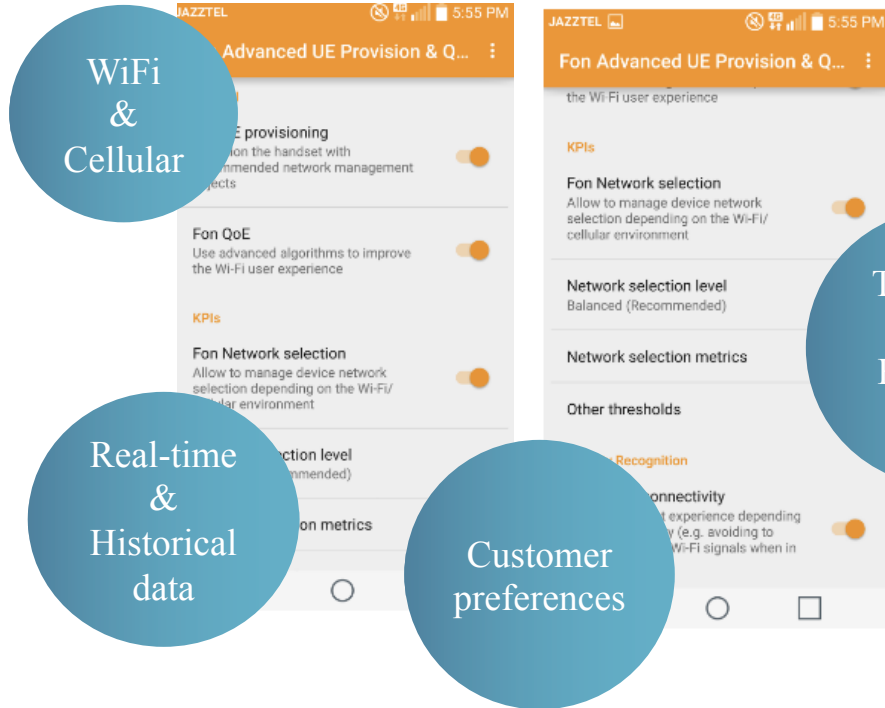


LIVE VOTING QUESTION #1

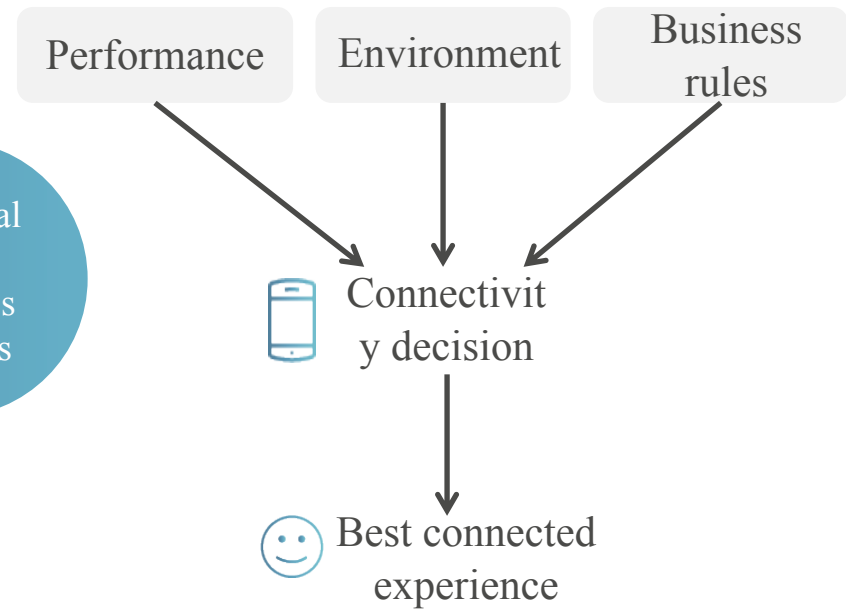
Who should control the connectivity experience?

- (a) Network (Service Provider)
- (b) Mobile APP
- (c) Mobile OS (iOS, Android...)
- (d) Let the user decide

Enhanced connectivity solutions will leverage mobile apps



Input parameters



Use informed decision-making for best connected experience

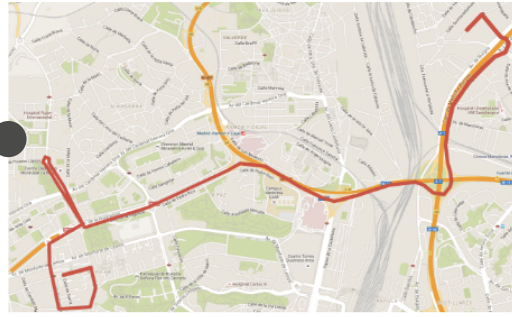
Criteria:

Mobility

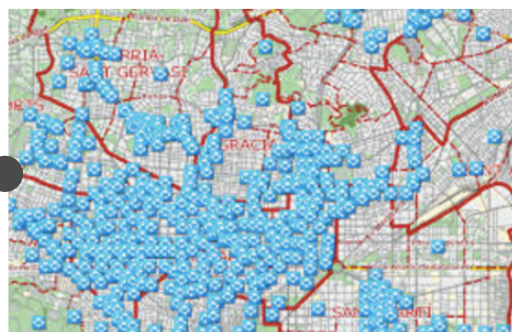
Density

Avoid
useless
connections

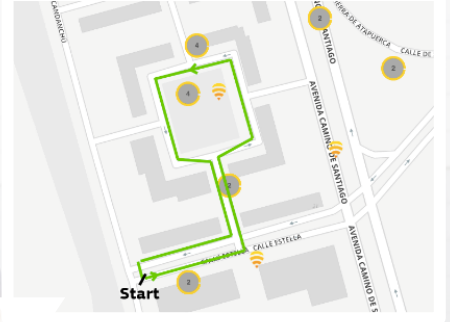
Transport (Fast)



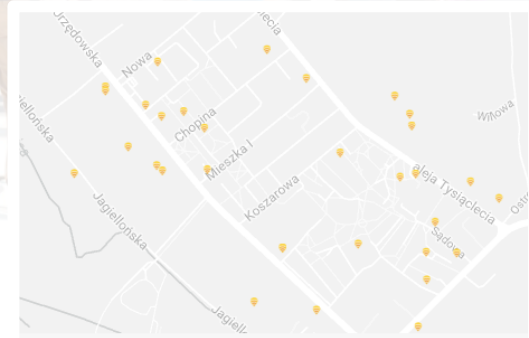
High Coverage



Walking (Slow)



Low Coverage



When you need interaction, make it simple

The image illustrates a user's journey through several steps:

- Windows Desktop:** A Windows 8 desktop with a blue background. A notification panel is open, showing options to connect to various Wi-Fi hotspots like 'FON_FREE_INTERNET' and 'MSFTOPEN'.
- OneConnect App - Wi-Fi Data Plans:** The user opens the OneConnect app, which displays a list of available Wi-Fi data plans.

Plan	Description	Price
1 Hour	Perfect for quickly checking e-mail, social media, and a quick Skype call.	\$3.99
1 Day	Perfect for a long layover or a day out and about where you need a Wi-Fi connection.	\$8.99
3 Days	Perfect for a short business trip or weekend getaway.	\$12.99
7 Days	Perfect for a longer business trip or vacation.	\$29.99
- Microsoft Store Authentication:** A dialog box prompts the user to reenter their password for the Microsoft Store. The user's email is 'a_user@outlook.com'.
- Buy Confirmation:** A 'Buy' dialog box shows the selected '1 Hour' plan for \$3.99 plus tax. The user's payment method is a VISA card ending in **1234 12/2020.
- Confirmation Message:** A final message says 'You're online and good to go' and instructs the user to select the Network icon in the taskbar.

Coverage: Dense networks needed for future applications

People and things will need data everywhere, on the move, particularly in urban areas

High density is essential for smart cities & IoT



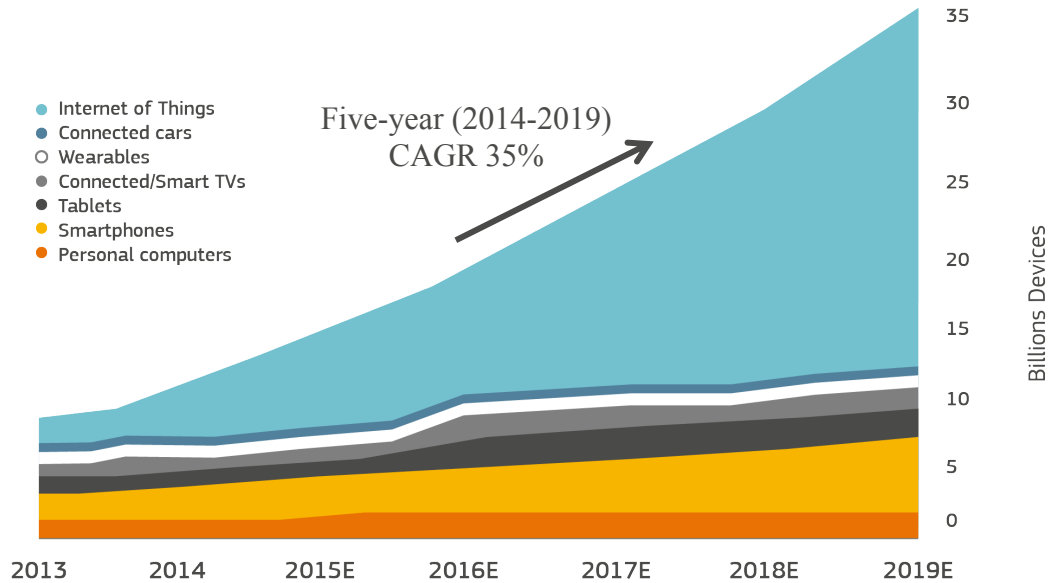
LIVE VOTING QUESTION #2

What network will IoT use the most?

- (a) Home WiFi
- (b) Carrier WiFi
- (c) Mobile (SIM)
- (d) Other networks

Connected “things” will outnumber connected people

Diversification of connected devices market



Source: BI Intelligence

The vast majority (80%+) of IoT connections will occur on unlicensed wireless frequencies

WiFi to be the enabler of the IoT, like copper was to the landline and 3G-4G to the mobile Internet

Goldman Sachs Research

“WiFi will emerge as essential to the IoT”

Wi-Fi Alliance

Service providers will pursue aggressive deployments

377
million

Residential

**Households with ISP-supplied
802.11ac supporting an open
second SSID by 2019**

11
million

Public

**Public Wi-Fi access points
by 2019**

Third-party initiatives offer alternatives to traditional service providers

LinkNYC



European Union Initiative

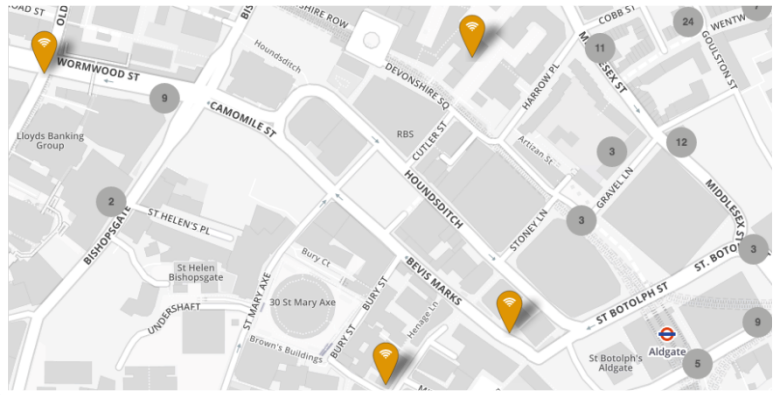


Google Station

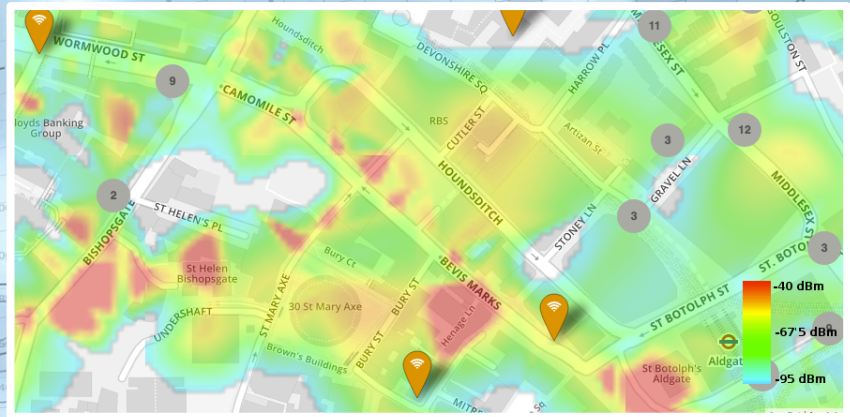
A new internet access platform

How will we measure coverage?

of hotspots not the best indicator



Understand network quality instead



Contextual data and QoE metrics help understand coverage and gaps

Massive amounts of information can be fed into SP's systems for continuous improvement strategies

The role of cloud in Carrier WiFi

Cloud managed WiFi was born out of the need to:



Reduce TCO

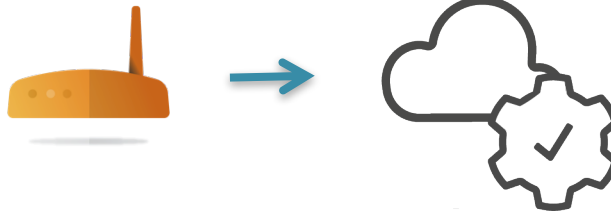


Provide centralized
management plane



Gain flexibility &
reduce upgrade cycles

Move intelligence from the access point to the cloud:

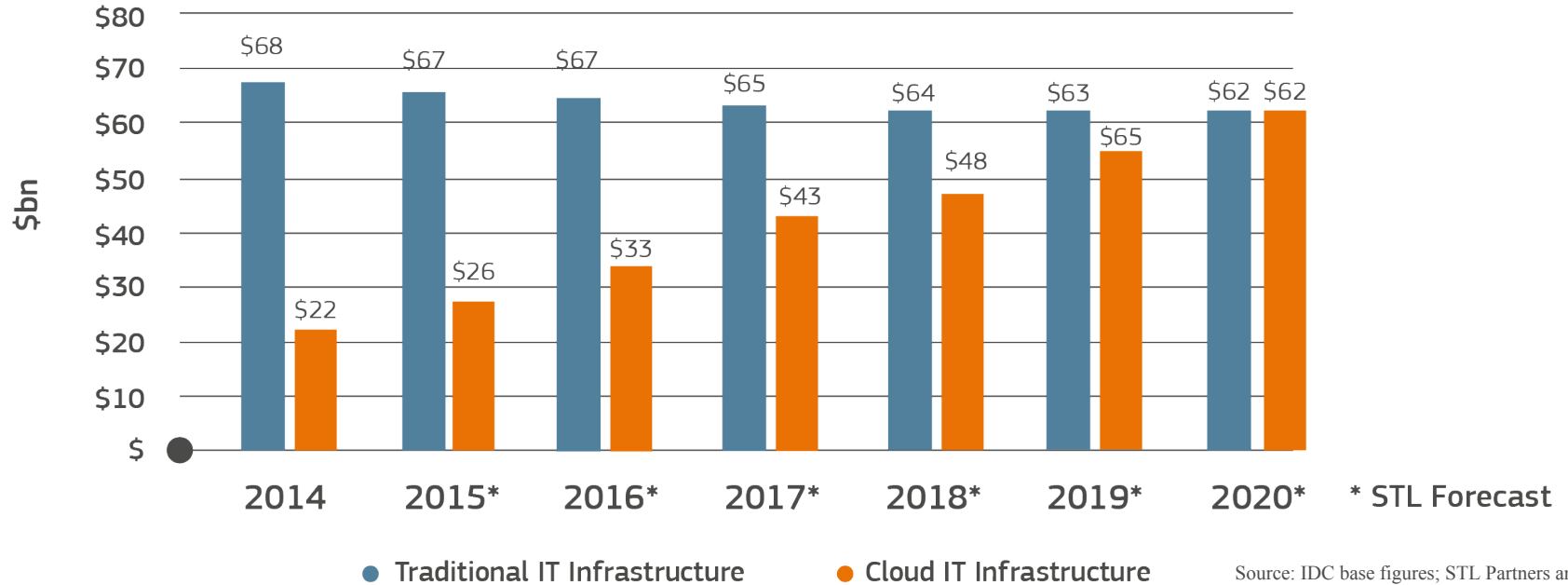


The cloud is being increasingly relied on as a vehicle for agile, scalable and elastic solutions - Gartner

Investment shifts from on-premises to cloud

By 2018 CSP digital platforms investment will be **10% to 30%** of total CapEx

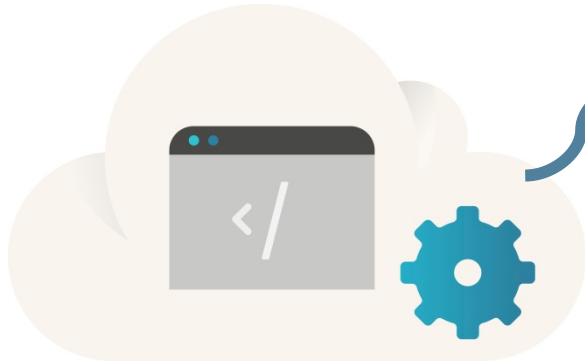
Cloud vs Traditional IT Infrastructure Spending (\$bn) 2013-2020



Cloud solutions integrate into CSP's operational framework

“Hybrid will be the most common usage of the cloud - but this requires the public cloud to be part of the overall strategy”
(Gartner)

WiFi Service
Management
Solutions

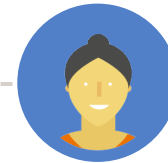


Operational framework

Billing &
Charging



Service
Provisioning



Customer
Care



BI systems

Cloud as revenue generator: CSPs adopt a “marketplace” approach to SaaS

\$ 31
billion

In revenue generated by Cloud applications and services in 2015

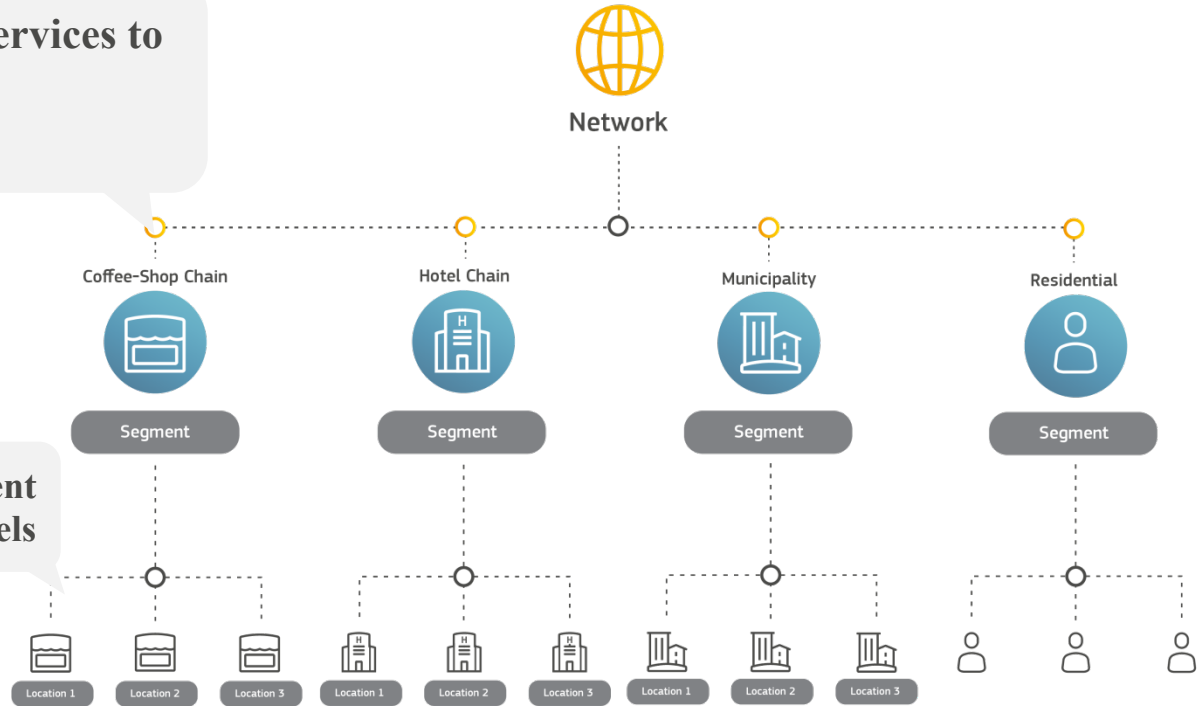
20 %

Estimated growth in 2016

How about Wi-Fi as a Service?

Deliver WiFi services to verticals with one platform

Tailor to different business models



Bringing it all together: WiFi Service Management Platforms



WiFi as a Service

Guest WiFi Solutions for the business segment



Wholesale access

Wholesale unused WiFi capacity



WiFi On the Go

WiFi connectivity on the move



WiFi On the Spot

WiFi access on a pay per use approach



WiFi Calling

Complement cellular coverage

An aerial night view of a city skyline, likely Dubai, featuring numerous illuminated skyscrapers and a river or coastline on the right. The city lights are reflected in the water.

fon
Solutions



The solutions you need
to provide the WiFi services
your customers want