

# Embracing Gigaband Era, Releasing Network Potential

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# Fixed Broadband Network Entering the F5G Intelligence Era

## Service

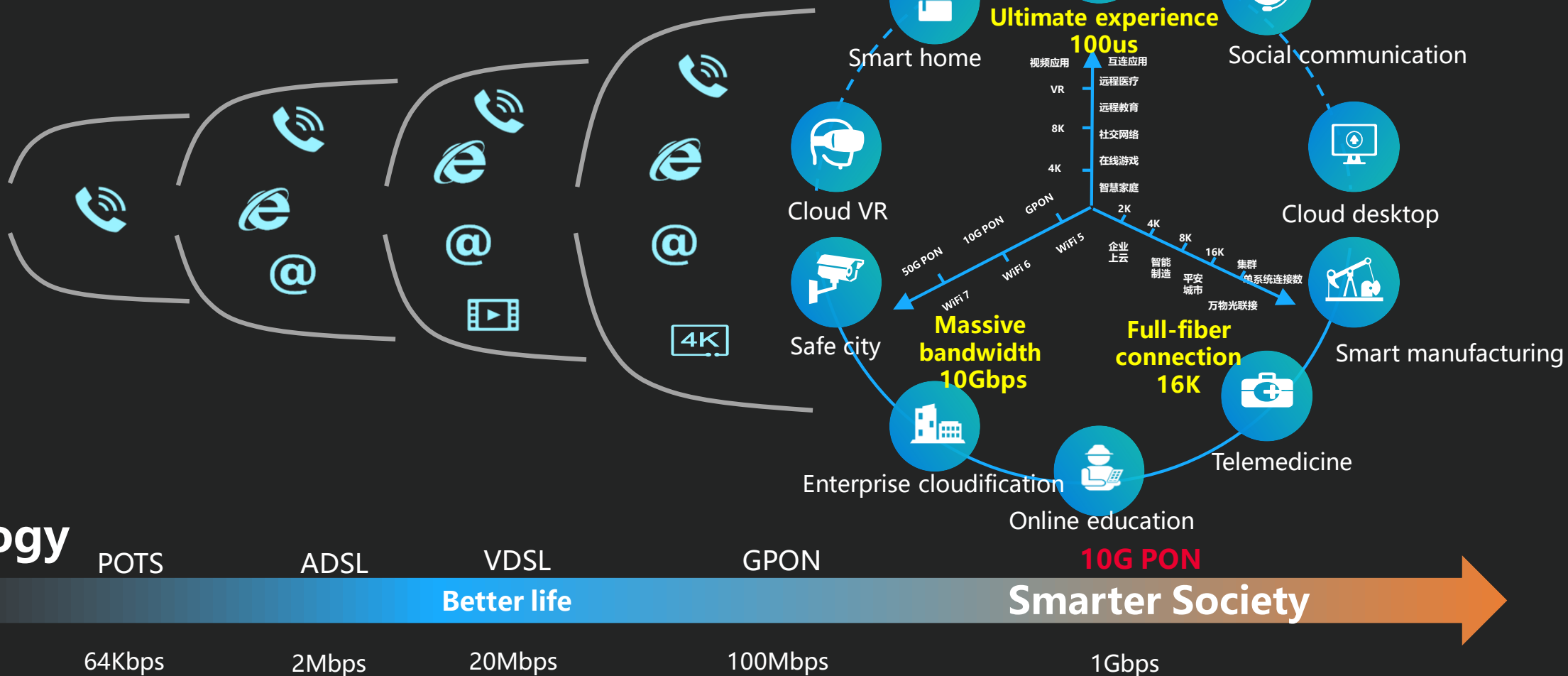
F1G  
Voice Era

F2G  
Web Era

F3G  
Video Era

F4G  
4K Era

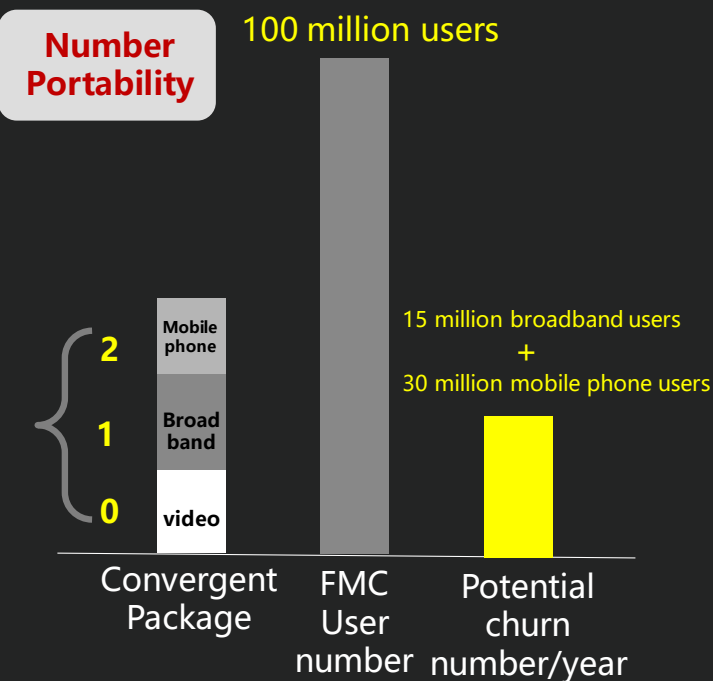
**F5G**  
**Cloud VR Era**



# Full-fiber Gigaband, supporting fixed and mobile healthy synergic development

Fixed and mobile convergence reducing user transfer network and protecting network investment

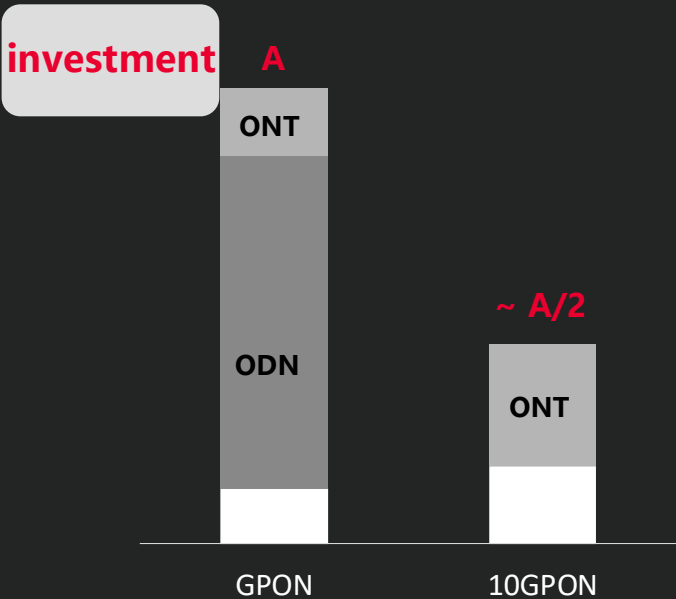
- **one** home broadband user > = **two** mobile phone users
- Churn rate: home broadband (1.2% / month) < Mobile phone



**Operator X:** 150 million home broadband, 70% FMC, 320 million mobile users

10G PON construction, spend less money, do huge things

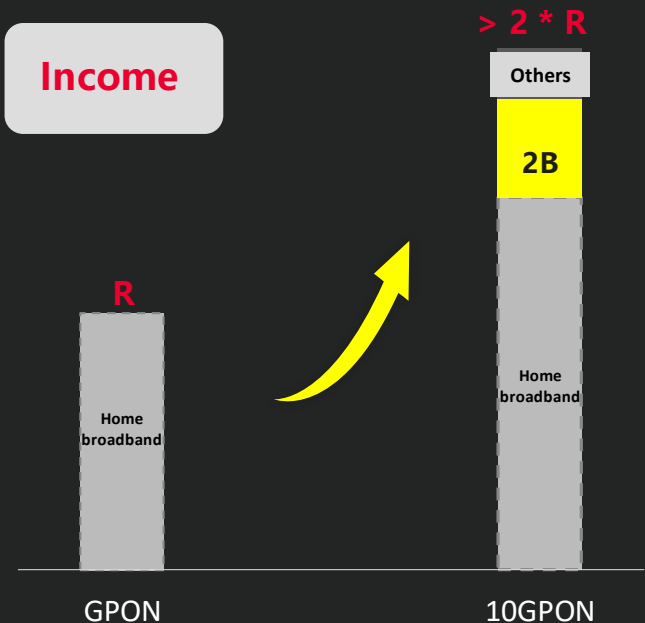
- ODN 0 change
- 10G PON Investment < **1/2** \*GPON



**Operator X:** GPON investment amount is A

Gigabit business scenario extends, revenue doubles

- Bandwidth upgrades help users and ARPU upgrades
- Income: 10G PON=**2\*** GPON



**Operator X:** Home Broadband Income is R (one year)



# Broadband value operation, a new goal for F5G era; Four scenarios boosting business revenue

Gigabit strategy leads and pushes **bandwidth upgrade**



**Value operation**

Gigabit access  
+  
"X" business

Introduce AI O&M, achieve **network experience upgrade**



**Business income increase**



**Cloud  
VR**

VR/4K/8K,  
education, music,  
health, games,  
sports, local  
programming, etc.



**Game  
Broadband**

Exclusive broadband,  
smart identification,  
peak optimization,  
dynamic acceleration,  
delay protection, etc.



**Enterprise  
cloudification**

Cloud desktop, cloud  
Wi-Fi, cloud video  
conferencing, cloud  
line, cloud storage,  
etc.



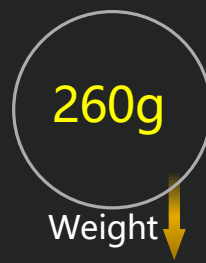
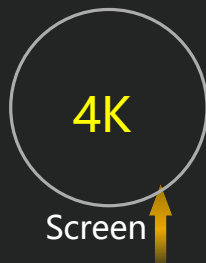
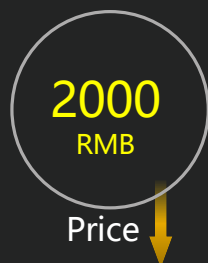
**Full-Fiber  
campus**

Gigabit to school,  
100 megabytes to  
class, campus Wi-Fi,  
cloud teaching,  
cloud office, etc.

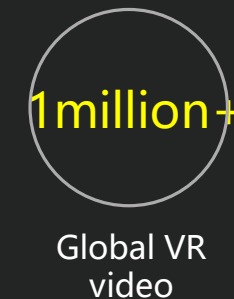
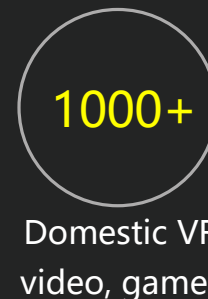
# Cloud VR entering the mass commercial service stage

## Cloud VR Industry Mature

Terminal maturity



Rich  
content



## Cloud VR increase the value of Gigabit pipelines

Unique  
advantages



400 million home  
broadband & 200  
million IPTV users



Gigabit fiber  
broadband  
network



0.2 million  
+  
Business Hall

- Fill pipe, Broadband ARPU 2X ↑ , Increase the revenue of the fusion package
- GZ Telecom : 100M 158 RMB/month upgrade to 500M 269 RMB/month ; FJ Mobile VR: 50 RMB/month basis package

Commercial  
value

## Operator launch pilot



China  
Telecom



China  
Mobile



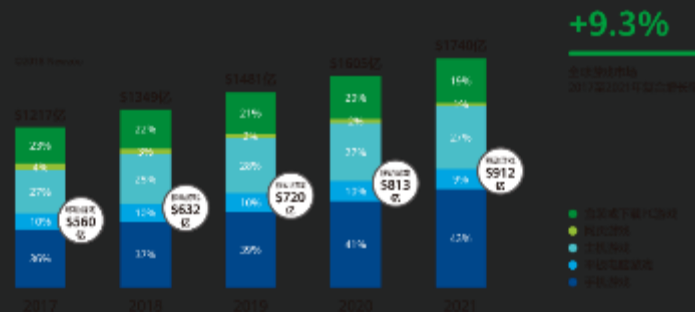
China  
Unicom

- BestTone intensive operation, 500M and beyond broadband users opened
- 10 cities start pilot , 2019 user number target XX million
- FJ Mobile: FZ monthly activity is 62.9%, Plans to pilot in XM and QZ
- ZJ Mobile start pilot work , MIGU as an intensive platform
- Release Cloud VR Fusion Platform , BJ Unicom launches VR pilot
- TJ TV Center as VR Intensive Center

# Exclusive Game Broadband helping Operators Improve ARPU

**Game industry massive space, users have high willingness to pay**

2017-2021 Global  
Game Segment  
Revenue Forecast



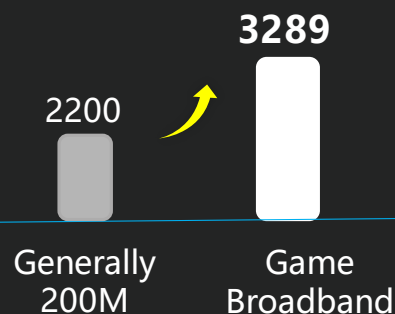
- China's game market space of **210 billion RMB/ year**, **360 million PC gamers**
- Game market average annual compound growth rate of **9.3%**
- **47%** of users are willing to pay for the game experience

Source: newzoo & "2018 China Game Industry Report" / iResearch

**GD Telecom: Launched game broadband package**



200M package price (¥/year):



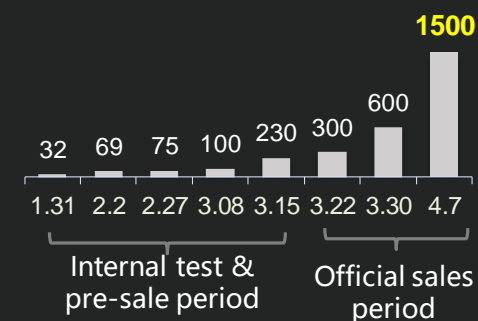
**Launch private game broadband package, generally 200M package price increase**

**50%**

**FJ Telecom: Launching game acceleration value-added services**



Official sales for 2 weeks,  
development of users 1500+

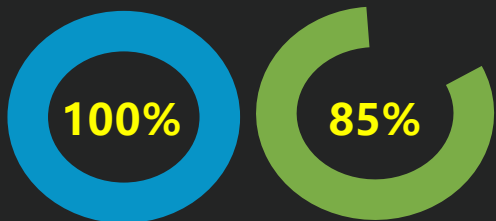


**Launch game acceleration value-added services, monthly ARPU revenue increase**

**30RMB/month**

# Enterprise cloudification generating value-adding opportunities

## Millions of enterprise cloudification, huge private line market

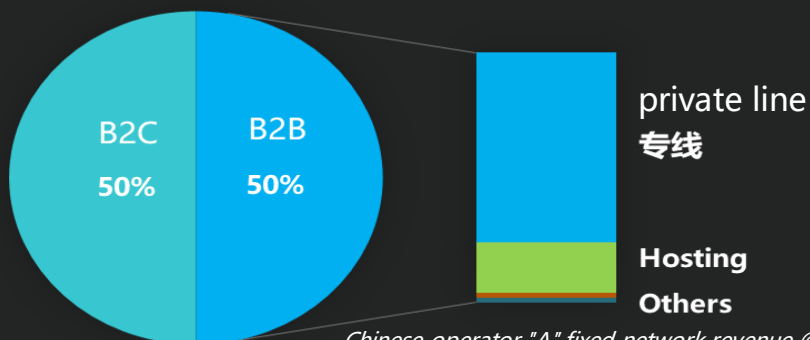


Source: Huawei MI

- Expected by 2025: **100%** of enterprises connect to the cloud, and 85% of enterprises application cloudification



## The Chinese government promotes the "Enterprise Cloudification" program



Chinese operator "A" fixed network revenue @2015

- Leading operator private line revenue accounts for **50%-70%** of total B2B revenue
- The private line becomes the main engine of the operator B2B growth

## SH Telecom enters cloudification, help enterprise development

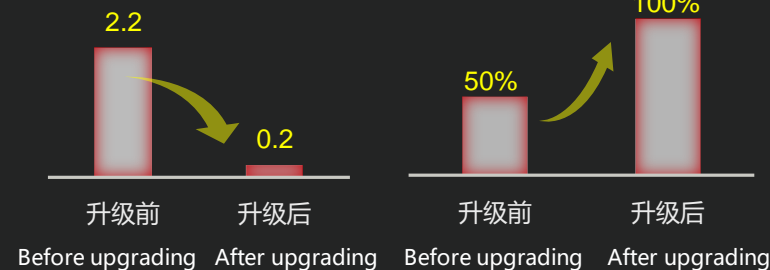


Shanghai Telecom provided **500M cloudification private line service** for Shanghai Bingshi Information Technology Co., Ltd. to improve corporate office efficiency and customer satisfaction, and boost its own private line revenue by X times.

Propagation time: **10 times ↓**

Propagation stability: **2 times ↑**

Enterprise value



Operator value

## Brand Benefit

The first to open **500M into the cloud private line**, and has the ability to enter the cloud private line of 500M~1000M.

## Economic Profit

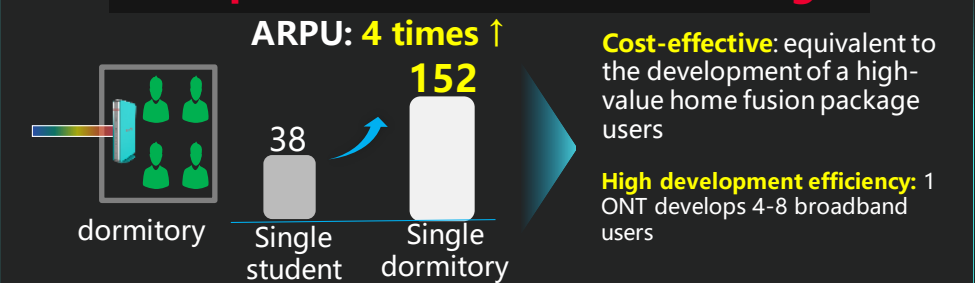
Relying on high-quality boutique line, **the price is increased by X times**

# Considerable full-fiber campus market space, High ARPU, Widely demand massive bandwidth

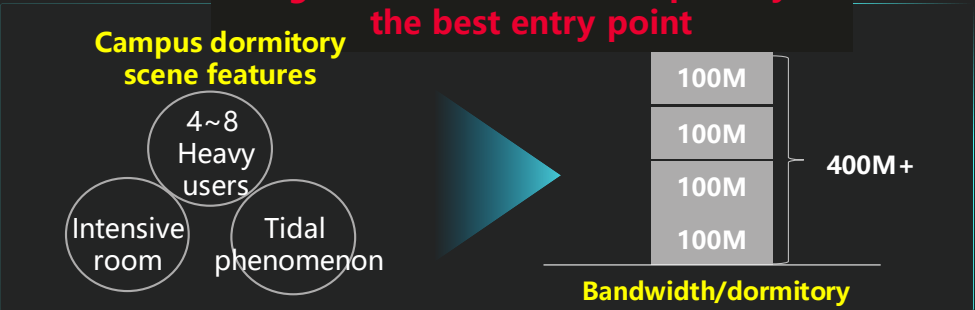
## Campus network market space



## Campus broadband ARPU is high



## Large bandwidth access capability is the best entry point

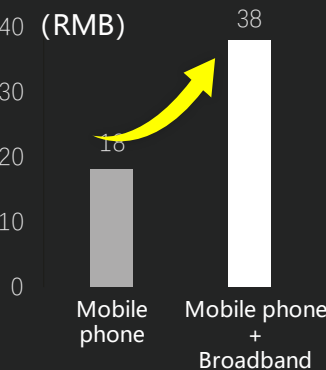


## Jiangxi Mobile: Cloud + dual-band intelligent gateway to help campus market expansion

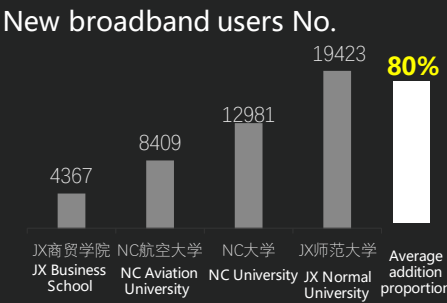


9 universities completed the deployment, providing the ultimate online experience, achieving ARPU and double scale

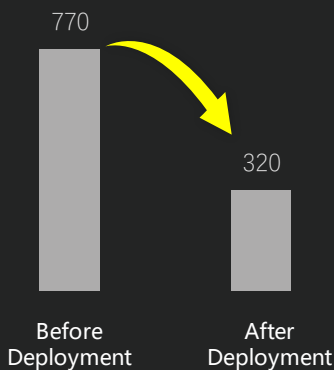
Price increase: ARPU increased by 111%



Raise the scale: New share accounted for 80%



Reduce complaints: 58% reduction





# Releasing potential with four scenarios of next generation full-fiber network

## Cloud VR:

Massive bandwidth + low latency



### Network requirements:

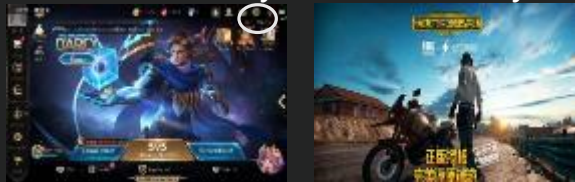
#### Massive Bandwidth:

Comfort experience 200Mbps, Ultimate experience 560Mbps.

**Low latency:** 10-20ms

## Cloud Game:

Low latency + stable latency



### Latency requirements:

**Excellent experience:** <50ms;

**No lag:** <100ms

**Cloud game:** 50~100ms (Generally),  
10~20ms (VR)

**Massive bandwidth,  
low latency,  
Safe and reliable**

Access network capability  
face the challenge

## Enterprise cloud:

Low latency + reliability + cloudification



### Network requirements:

**Latency:** High quality private line :  
<50ms

**Reliability:** Type C/D Protection

## Full fiber campus :

Massive bandwidth + intelligent O&M

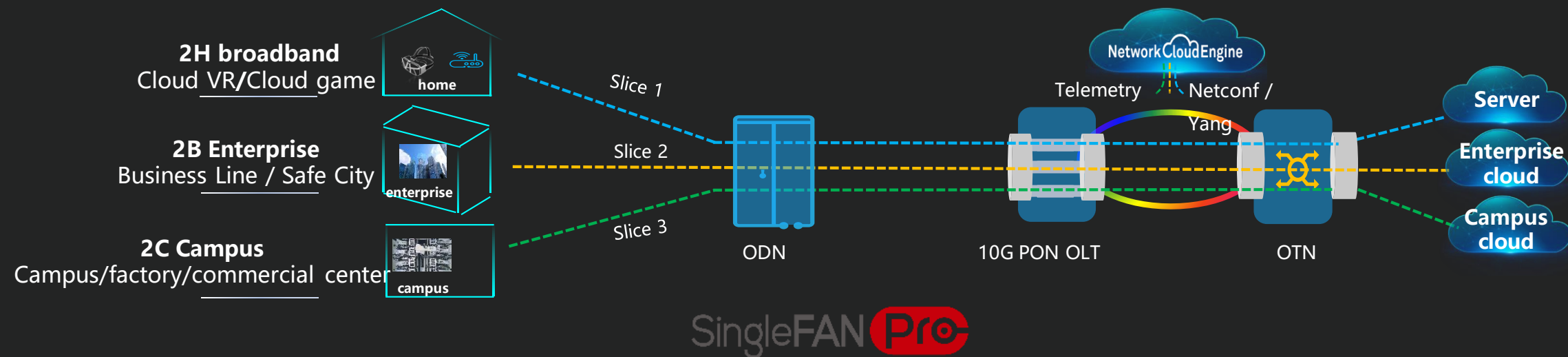


### Network requirements:

**Coverage:** Gigabit to school, 100 megabytes to class

**Intelligent O&M:** remote Wi-Fi optimization, fast fault diagnosis

# SingleFAN Pro building a ubiquitous full-fiber connection network



## New blue ocean

- 2H: Cloud VR+Game Broadband
- 2B: Enterprise cloud+Video backhaul;
- 2C: Full-fiber campus + industrial automation

## New capability

- 10G PON+Network Slice+Internal AI
- ODN Full pre-connection+AI image recognition
- Wi-Fi6+Omnidirectional antenna + self-developing algorithm

## New Experience

- AI+Big data to achieve intelligent O&M
- Wi-Fi Visualization and optimization
- Accurate identification of PON optical path faults



**Building a Fully Connected Intelligent World.**

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Thank you.



**HUAWEI**