

SATELLITE AND SUBMARINE INTERNATIONAL CONNECTIVITY IN THE PACIFIC



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ITU / PITA Workshop

MS CONSULTING TAHITI

Presentation overview

1. The common Pacific Islands' challenge :
Move from the Kb/s per user to Mb/s
2. The current context for satellite connectivity and
Submarine cable
3. Benchmarks elements
4. The future : Satellite and submarine cables
5. Moving to the Gb/s Era !



1. The Common Pacific Islands Countries challenge

Move from Kb/s per user to Mb/s

Summary :

- Comparison between Pacific Islands countries
- Total International Internet capacity divided by the number of Internet users
- Sources :
 - capacity : operators / regulators
 - Internet users : operators / regulators

<http://www.internetlivestats.com/internet-users-by-country/>

<http://www.internetworldstats.com/stats6.htm>

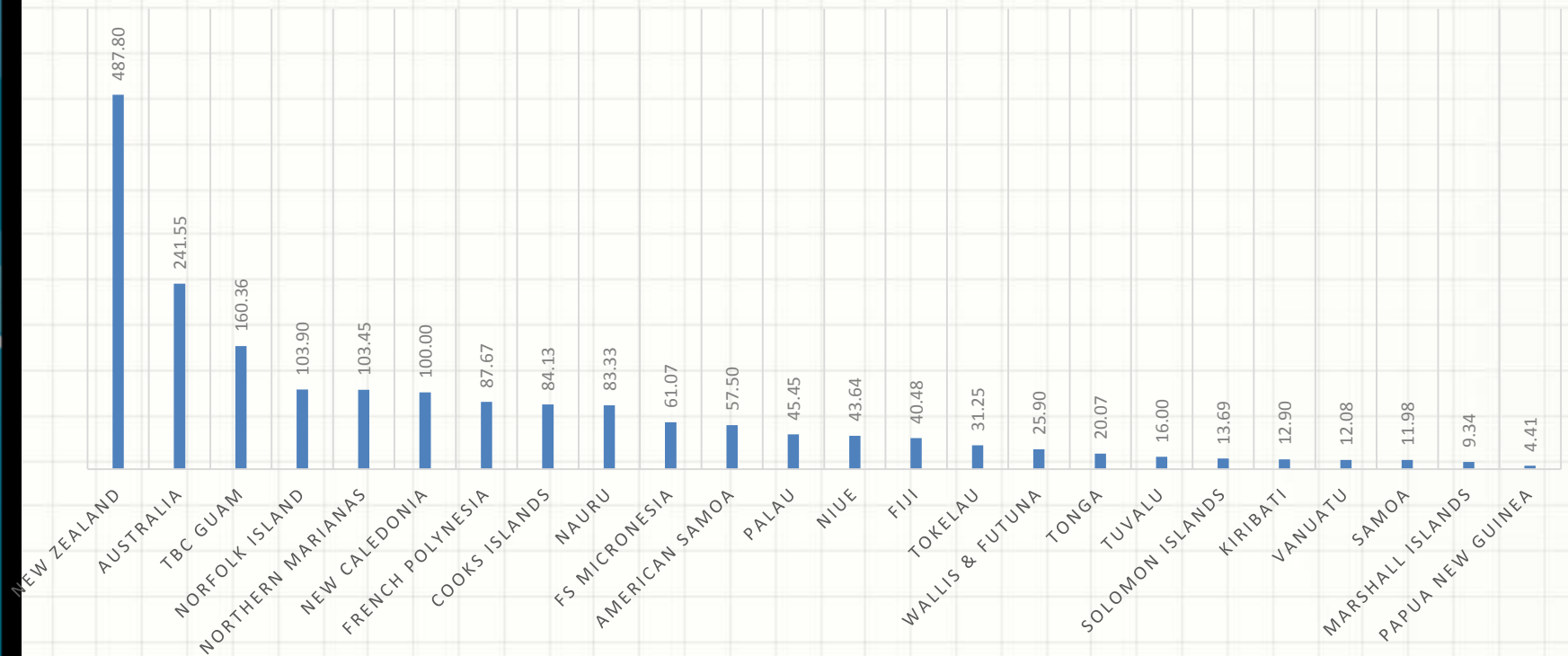
Country	Int'l BW per user (in kb/s)	Satellite / submarine
New Zealand	487,80	Cable
Australia	241,55	Cable
TBC Guam	160,36	Cable
Norfolk Island	103,90	Sat
Northern Marianas	103,45	Cable
New Caledonia	100,00	Cable
French Polynesia	87,67	Cable
Cooks Islands	84,13	sat
Nauru	83,33	Sat
FS Micronesia	61,07	cable / sat
American Samoa	57,50	Cable
Palau	45,45	Sat
Niue	43,64	sat
Fiji	40,48	Cable
Tokelau	31,25	sat
Wallis & Futuna	25,90	Sat
Tonga	20,07	Cable
Tuvalu	16,00	Sat
Solomon Islands	13,69	Sat
Kiribati	12,90	Sat
Vanuatu	12,08	Cable
Samoa	11,98	cable / sat
Marshall islands	9,34	cable / sat
Papua New Guinea	4,41	cable / sat



1. Common Pacific Islands Countries challenge

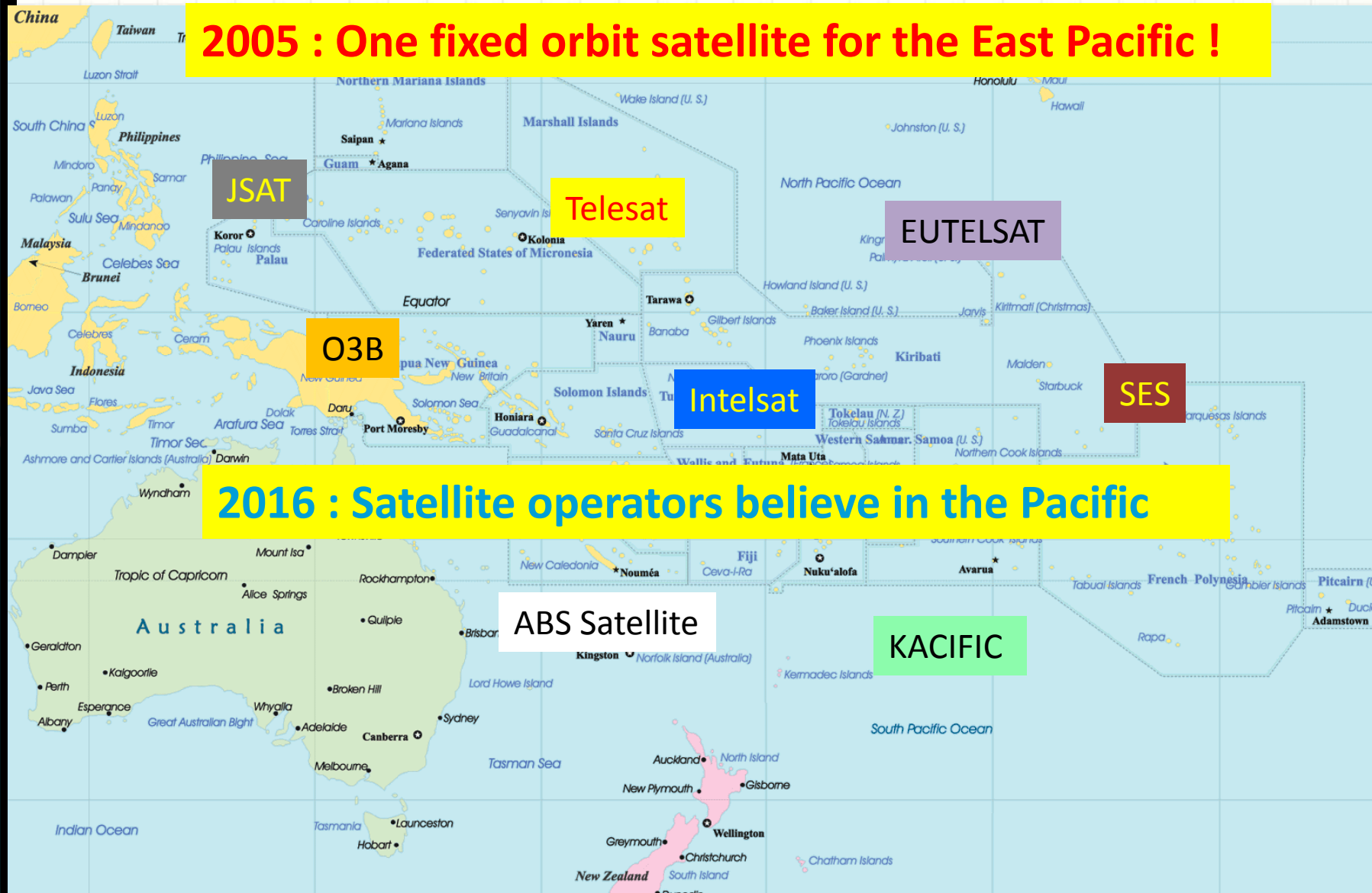
Move from Kb/s per user to Mb/s !

INTERNATIONAL BANDWIDTH PER USER (IN KB/S)



2. The context for international connectivity

2005 : One fixed orbit satellite for the East Pacific !



2016 : Satellite operators believe in the Pacific



2. The context for satellite and submarine cable connectivity

Yes, several good news!

- Satellite **prices are driven** down by strong competition
- New Generation GEO **High Throughput Satellite (HTS)** can achieve over 500 Gb/s total capacity – come planned for the Pacific
- **New Flat panel antennas** technology will enable to **push costs / prices down**
- **full available satellite diversity** for the Pacific islands (ABS – Intelsat – SES – O3B – Eutelsat – Inmarsat – Skyperfect JSAT - Kacific)
- By 2023 MEO / LEO will bring **Tb/s additional capacity in Pacific skies**



2. The context for satellite and submarine cable connectivity

More good news!

- **Growing traffic volumes** on existing recent submarine cable systems drives the price down (Fiji, PF, NC, Tonga, Vanuatu)
- Several **new cable projects** will be improving international connectivity with additional regional hubs to Fiji
- By 2020 combined planned initiatives may **bridge the connectivity gap for the Pacific** both relying on satellite and submarine cable systems



2. The context for satellite and submarine cable connectivity

But still Bad news !

- **Small volumes keeps price high for satellite bandwidth** for small islands operators
- **Too many satellite technologies** to embrace for small operators
- Existing submarine cables have to be made redundant by **more satellite or 2nd cables**
- Still **limited international backhaul options** for Pacific islands (Fiji is the sole hub with Southern Cross Cable : Sydney or Hawaii / Us mainland)
- **High prices of capacity** on several countries with single cable causes low volumes
- For smaller islands the time for STM1s (155 Mb/s) is finished **now talking > 10Gb/s** and more



3. Benchmark elements

Prices for satellite connectivity



Fierce competition have pushed the satellite capacity prices down dramatically

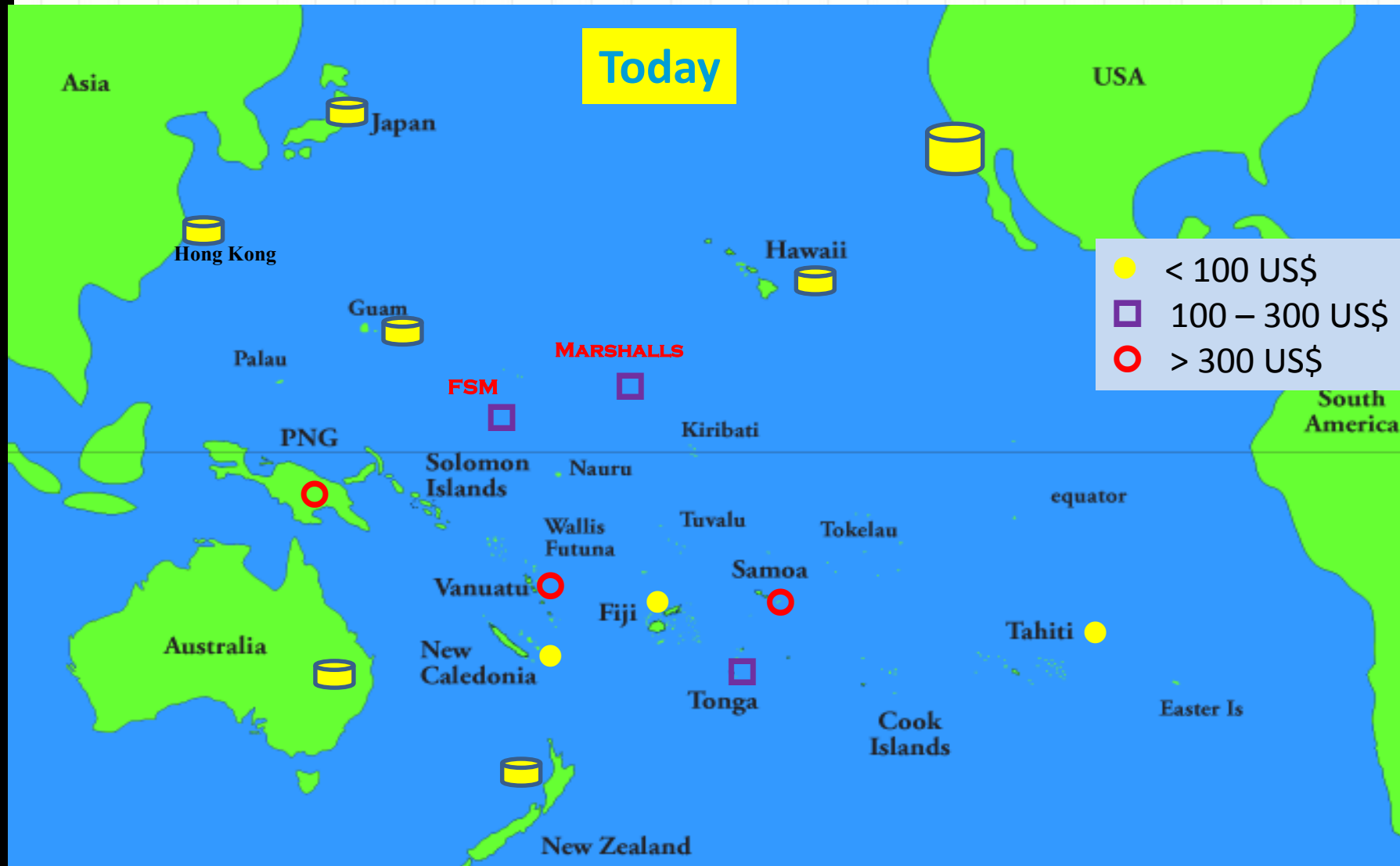
Satellite bandwidth prices ranges in the Pacific

Prices in US\$ per Mbps per month (*)	low	high
Small capacity <10 Mbps	1000	2000
Medium capacity <50 Mbps	600 <i>(over 900 in 2013)</i>	1300
High capacity > 100 Mbps	< 250 <i>(over 700 in 2013)</i>	800

(*) based on a 3 – 5 years contract for satellite point to point link GEO / MEO - C / Ku / Ka

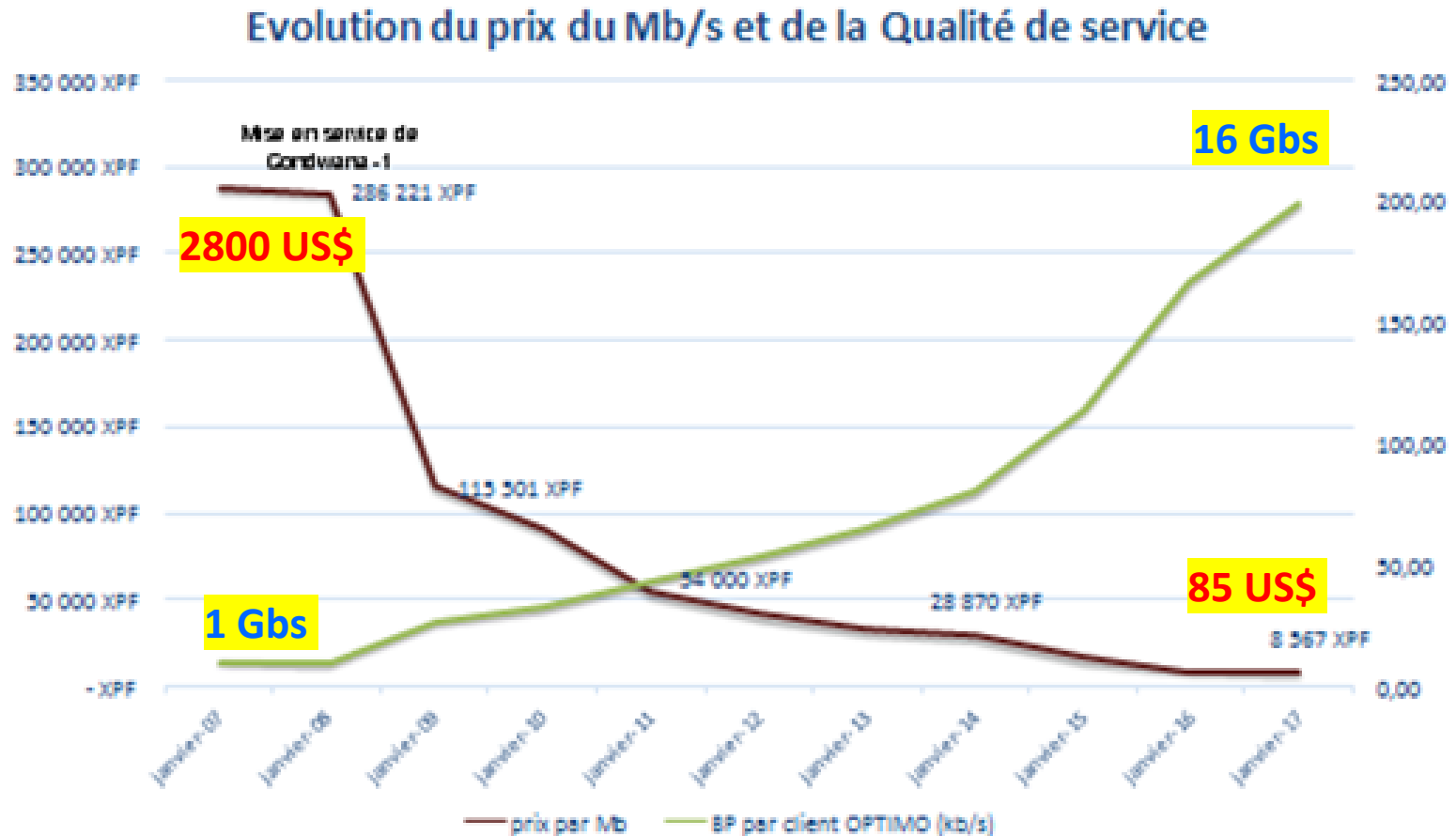


3. Benchmark elements : International IP capacity access wholesale price in countries connected via submarine cable (price per Mbps per month > 100 Mbps including International backhaul and IP transit)



3. Benchmark elements : New Caledonia's experience volumes impacts on prices

EVOLUTION DU PRIX DU TRAFIC INTERNATIONAL



3. Benchmark Elements

IP Transit capacity prices at main hubs

Capacity < 155 Mb/s

2016

Capacity > 10 Gb/s

Price US\$ / Mbps / mth

Hub	2014	2016
Hong Kong	40	10
Guam	80	20
Japan	30	12
Australia	65	15
New Zealand	100	25
Hawaii	30	12
US West Coast	15	8

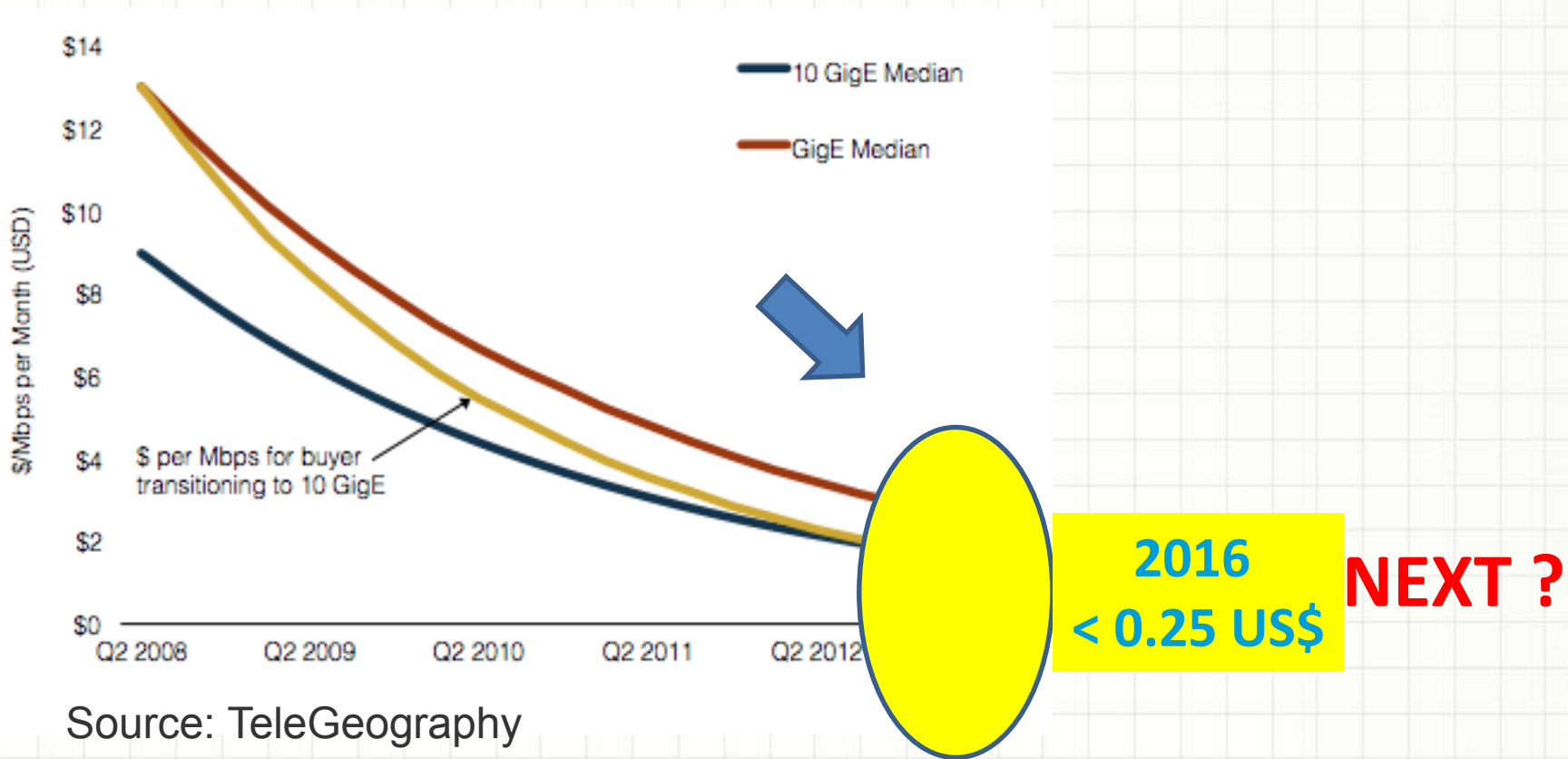
Price US\$ / Mbps / mth

Hub	2014	2016
Hong Kong	12	3
Guam	30	6
Japan	12	3
Australia	15	5
New Zealand	40	10
Hawaii	12	1.5
US West Coast	2	0.25

3. Benchmark Elements

Worldwide IP transit pricing trends

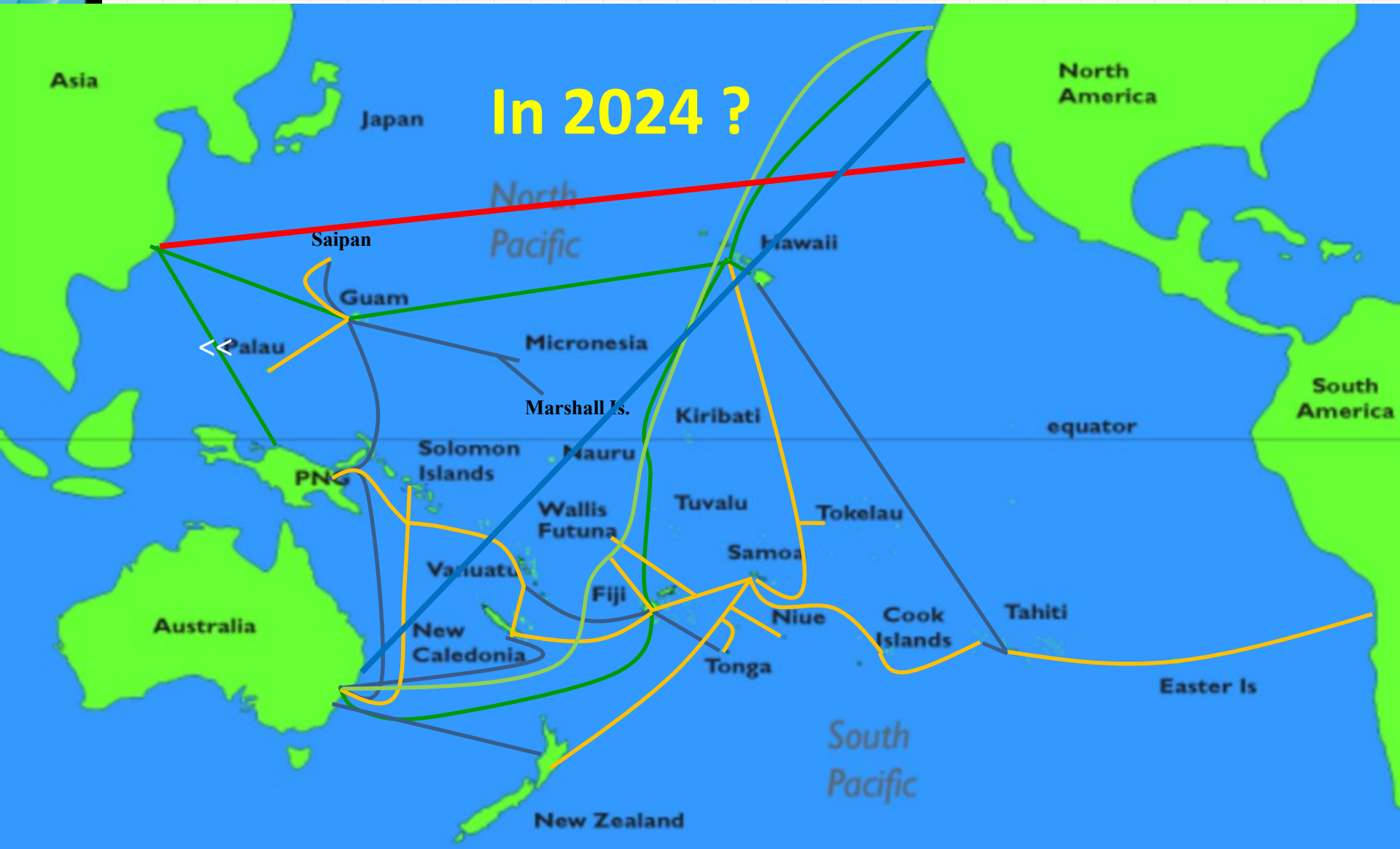
Median Monthly IP Transit Prices, Q2 2008-Q2 2013



Source: TeleGeography

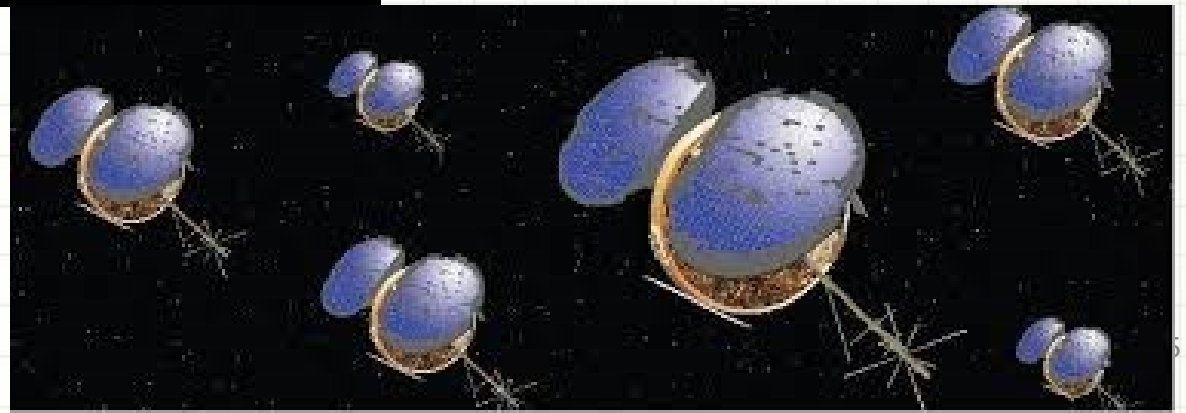
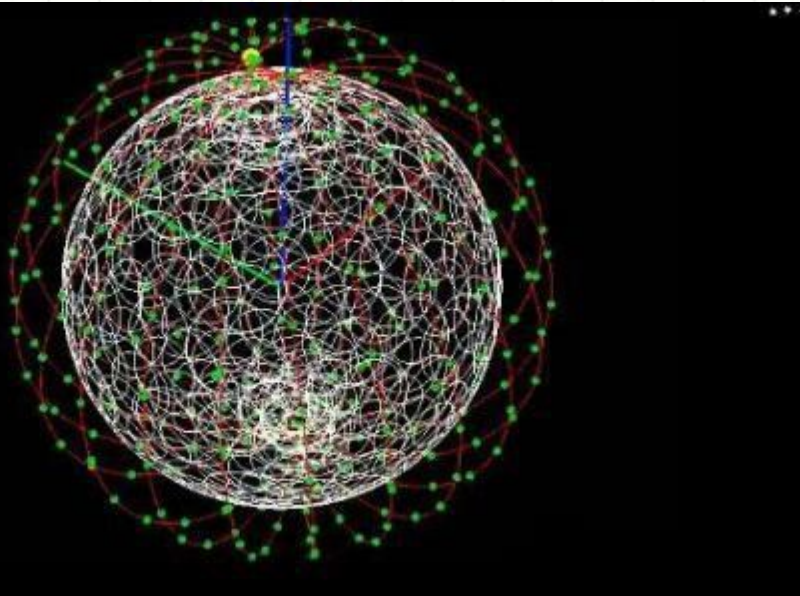


4. The future : More submarine cables are being built to connect the Pacific islands !



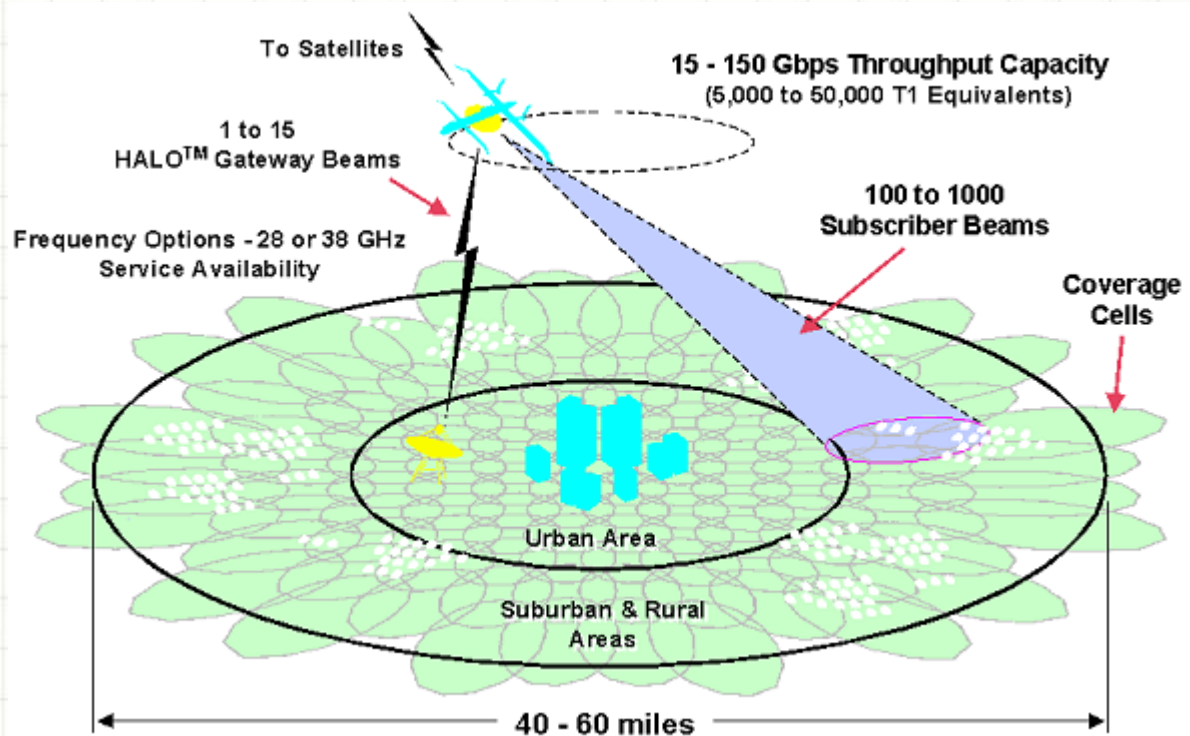
4. The Future for satellite connectivity

New Satellite systems will bring additional capacity and extended coverage of the Pacific in the future – Means cheaper prices ?

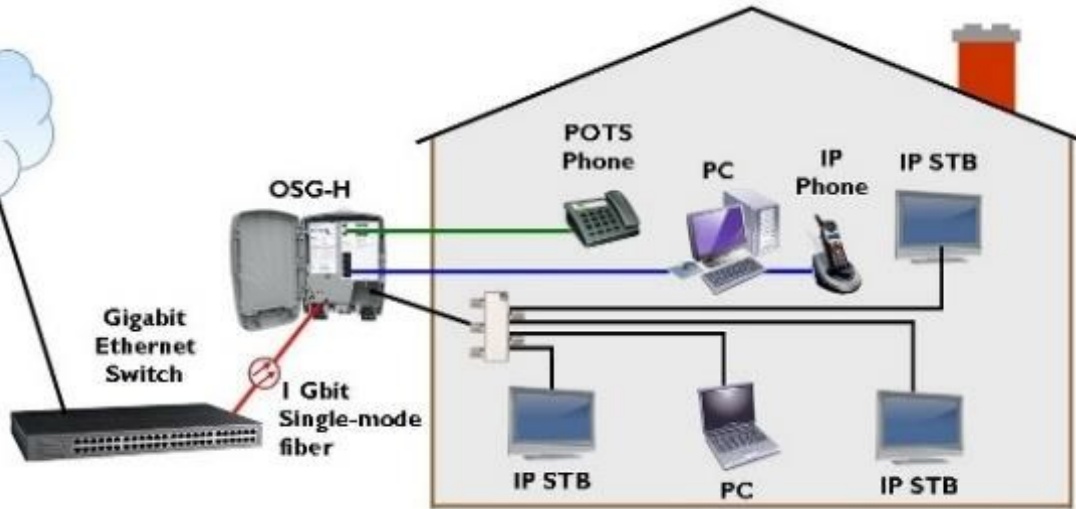




4. The future – would High Altitude platforms (HAPS) be a reality in the region ?

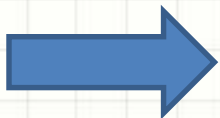


5. Moving Towards Gb/s speeds ?



5. Moving towards Gb/s speeds ?

- Networks Technology is ready to accommodate Gb/s speeds (Fiber to the Home – mobile 5 G)
- Heavy investments will be required
- Multi- Gb/s is already achievable with existing submarine cables connecting Pacific Islands
- More islands connected via submarine cables and new high throughput satellites



Moving to the Gb/s will be a reality by 2020 in the Pacific Island region

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