

ITU/PITA Workshop

Enhancing access to Submarine Cable for Pacific

Suva, Fiji

July 31 – August 3

Where is Marshall Islands



Atolls, Islands & Isles



Marshall Islands



Geography Overview

Area: about 1000 miles wide

Land area: 70.0 m²

Above sea level: 2-3 meters

Atolls: 29 atolls

Island: 5 small islands

Isles: Over 200 isles

Capital: Majuro

Coordinates: Latitude – 7.08 deg N, Long – 171.37 deg E

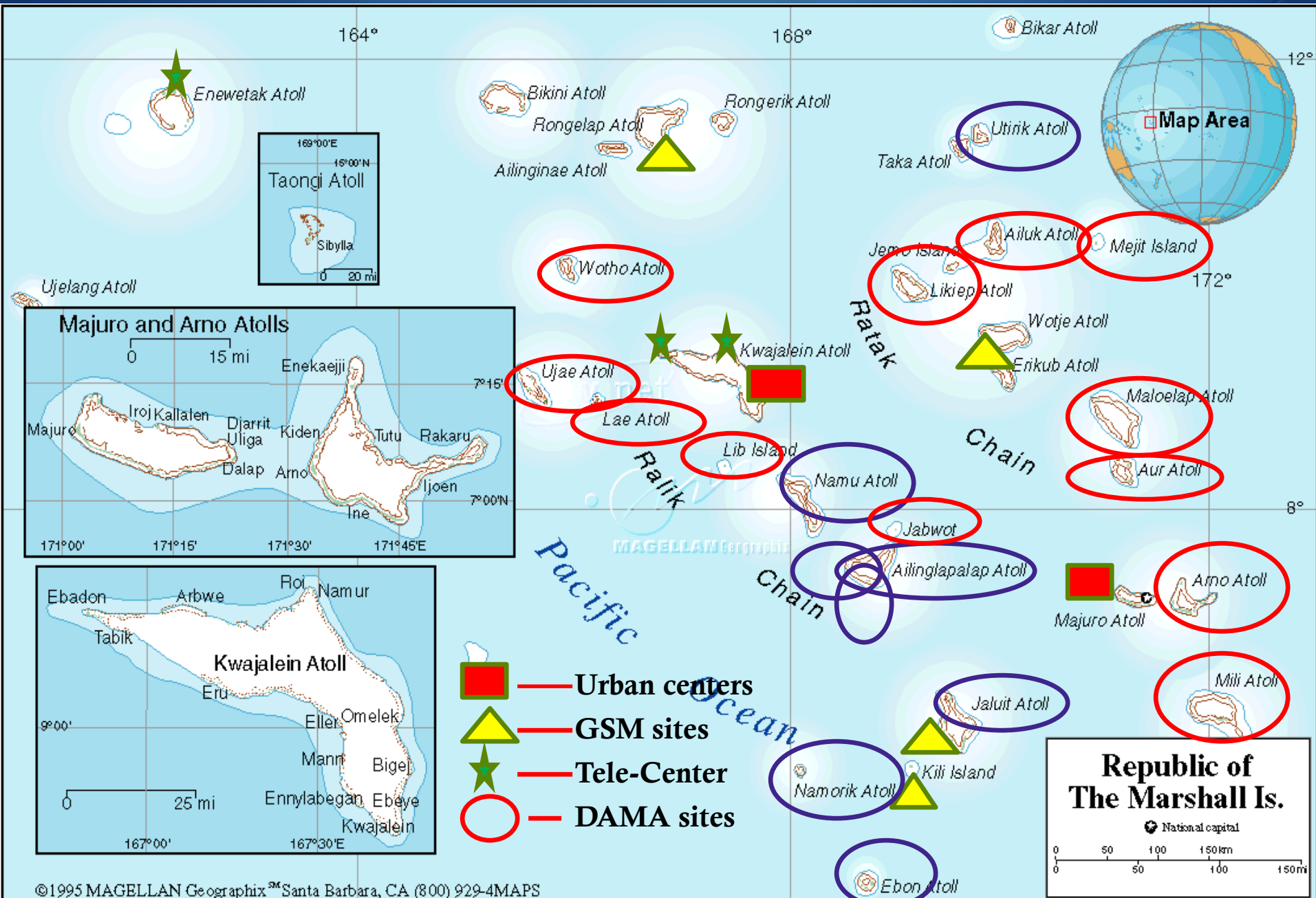
Demography

- ◆ 1999 census, Total population was 50,840
- ◆ **POP growth rate is 1.5%**
- ◆ **Recent estimates is 60,000**
- ◆ **70% of population lives in Urban centers - est**
 - ◆ **Majuro**
 - ◆ **Ebeye**
- ◆ **10% of population out migrated (US) - est**
- ◆ **20% lives in the remote outer islands - est**
- ◆ **0 – 14 years: 50% of the population**
- ◆ **15 – 64 years: 48% of the population**
- ◆ **65 year and over: 2% of the population**

Market Overview

- ◆ 30% of population is economically active (FY 2007 est)
- ◆ 50% of economically active are employed (FY 2007 est)
- ◆ Majority of the population live by subsistence living
- ◆ 99% of the remote outer island live by subsistence living
- ◆ GNDI per capita: US\$ 4,100 (FY2007)
- ◆ Gini – coefficient: 0.54
- ◆ Average income per person – urban centers: US\$ 4.38 per day
- ◆ Average cost of living per day – urban centers: US\$3.75 per day
- ◆ Average disposable income per person – urban center: US\$ 0.63
- ◆ Average Remote outer Island income per person: almost zero dollar per day

Telecommunications Services Footprint



Core Network Infrastructure

Fiber Optic Submarine Cable: Micronesian cable system

- Majuro
- Ebeye

Satellite Network

- Majuro
- Ebeye
- Outer Islands

Terrestrial Fiber Cable Network

- Rita – Laura (Majuro): 31 miles long- 8 nodes in between
- Ebeye – Kwajalein: 5-6 miles long undersea cable

Access Network Infrastructure

PSTN

- Majuro: 3 nodes
- Ebeye: 1 node

Satellite Networks

- Outer Islands DAMA
- Outer Islands Satellite broadband

ISP

- Majuro: DSL, DSL 2+, VDSL, lease line, WiFi fiber to premises
- Ebeye: DSL, DSL 2+, VDSL, lease line, WiFi fiber to premises

Cellular/Mobile network

- 2G : Majuro & Ebeye
- 4G/LTE: Majuro & Ebeye

TV Network

- DVB-T wireless broadcast TV : Majuro

Subscriber Statistics

PSTN

- Majuro: 3,000
- Ebeye: 1200

Satellite Network

- Outer Islands DAMA: 35 sites
- Outer Islands Satellite broadband: 4 sites

ISP (Majuro, Ebeye & Outer Islands)

- All DSL: 4,000
- lease line: 30
- WiFi: 2000-3000 devices connection monthly
- Fiber to premises: 11
- Data consumption: peta or almost exa byte

Cellular/Mobile network

- 2G : Majuro, Ebeye & 4 Outer Islands – 30,000
- 4G/LTE: Majuro & Ebeye – just started- avg 700 subs

TV Network

- DVB-T wireless broadcast TV : Majuro 1,500 subscribers

Retail Internet broadband Prices - Wired - Unlimited Data-

- ◆ Home DSL – 1.0 Mbps @ 30 USD avg per month
- ◆ WiFi – 10 cents per minute
- ◆ Wired Lease line – 10 Mbps and more, rate is negotiable
- ◆ Fiber to premises – 10 Mbps and more, rate negotiable

Fiber capacity Wholesale price

- Current Customers
 - USP
 - GTA
 - US Military
- Pricing Mechanism
 - Pricing negotiable base on volume, term e.t.c

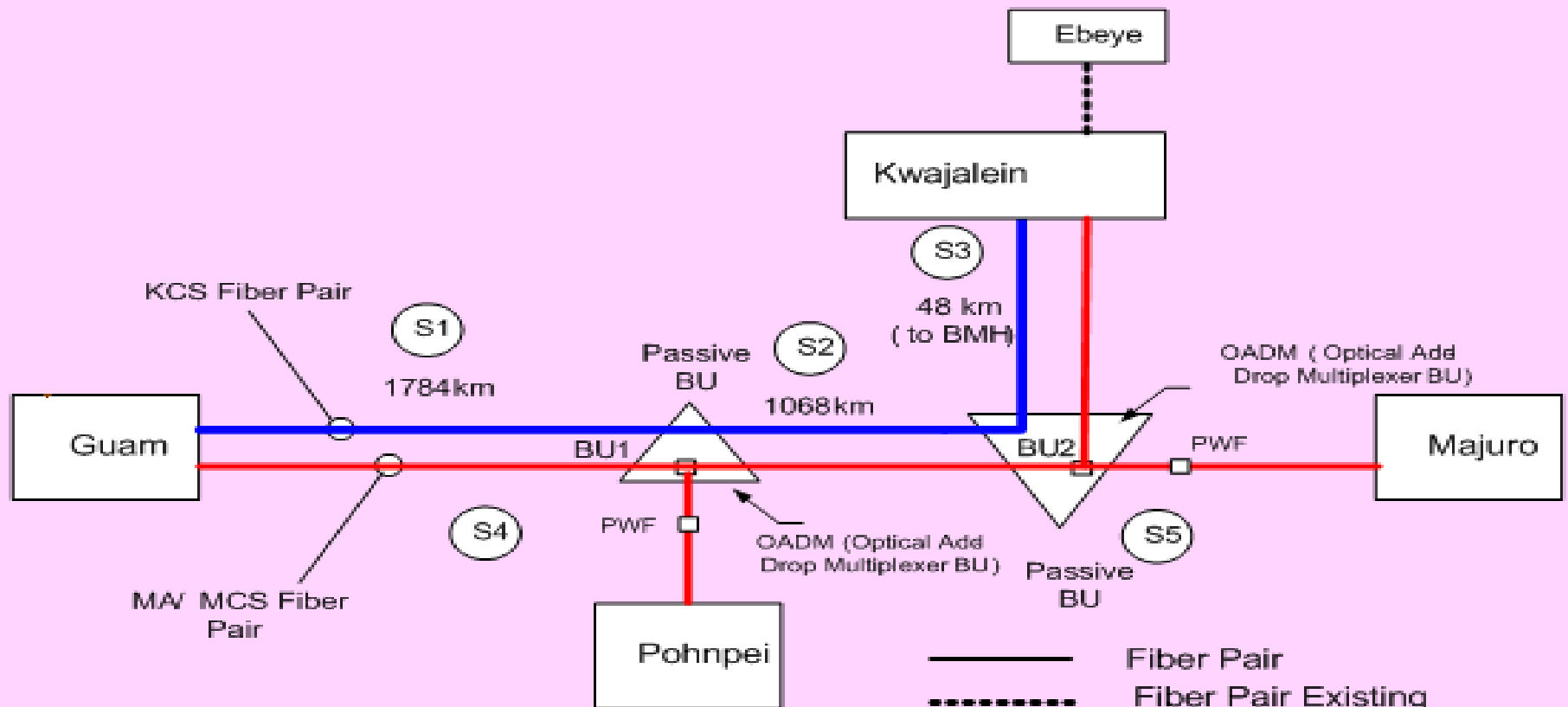
Retail wireless Internet broadband Prices 4G LTE - Capped Data-

On Average: 16 USD per GByte per Month

Micronesian Cable System Repeated Cable System



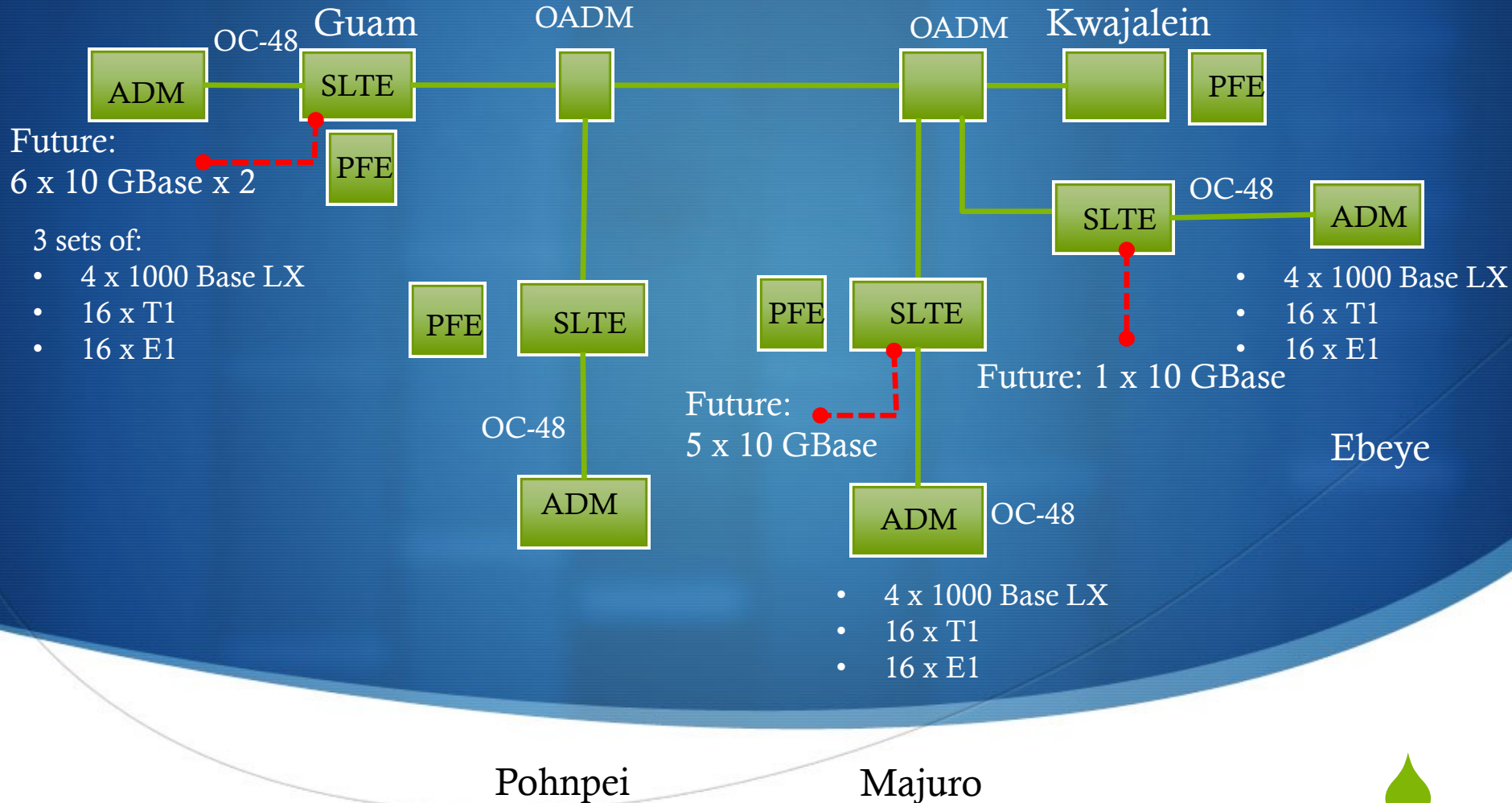
HANTRU1 & MCS – System Overview



KCS and
MA / MCS - Majuro, Pohnpei, and Ebeye

S1.1

Fiber system configuration



Cable System Design Overview

Design Capacity: 10 Gbps x 16 WTE/DWDM channels

Wavelength/Frequency used: C-band, ITU Grid

DWDM Channel Spacing: 33 GHz

Operating DWDM Channel Spacing: 133 GHz

Modulation scheme: DPSK

FEC: Reed Solomon

System Q Value - BOL: 9.1 dB,

System Q Value - EOL: 8.4 dB

BER performance with FEC : BER 1^{-13}

Fiber Type: SL 17

Majuro Submarine Cable Connectivity



Ebeye Submarine Cable Connectivity



Vinaka vaka levu

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We welcome you to Marshall Islands

