NTA Network

by

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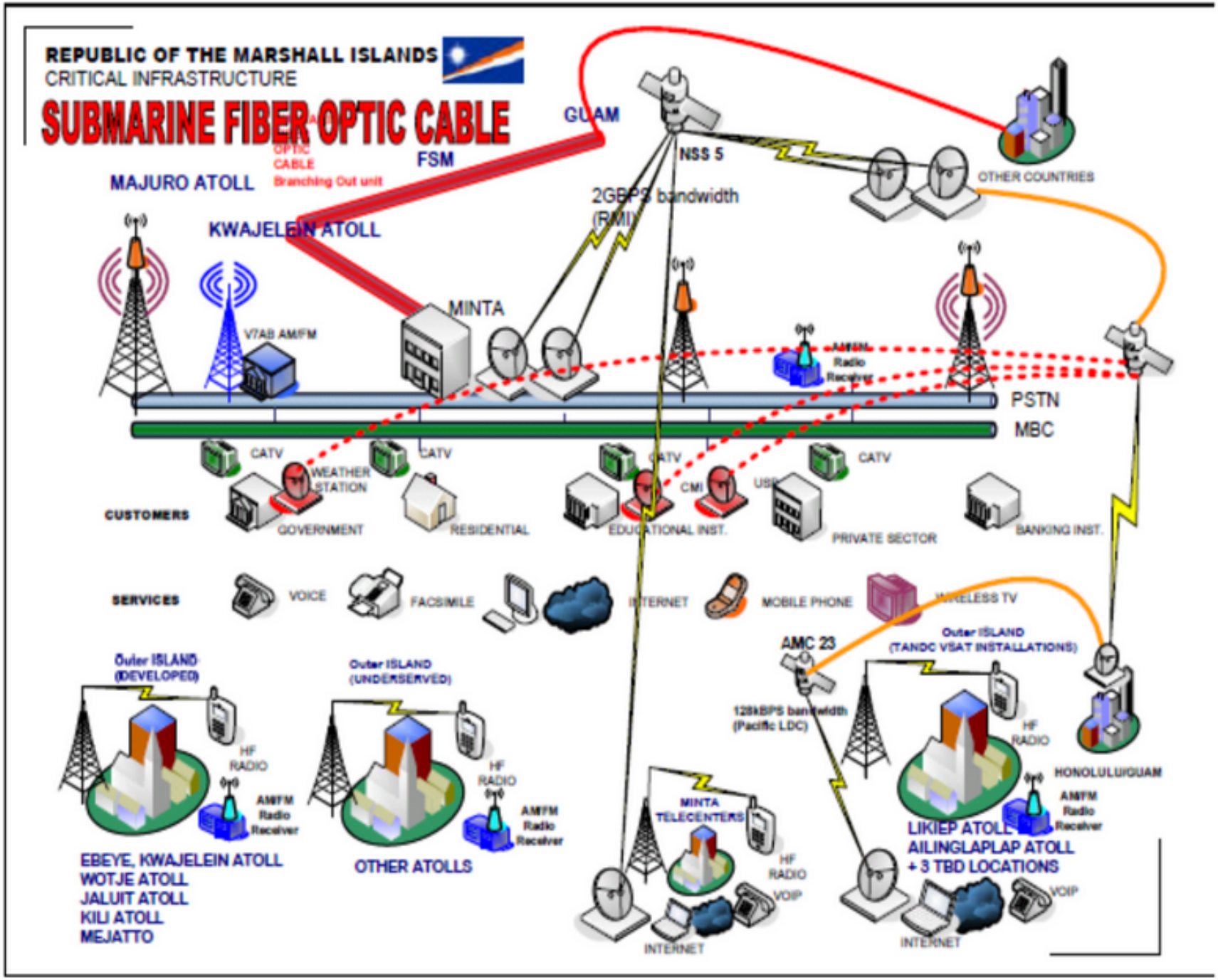
Nuclear test site atolls
BRAVO detonation site
Enewetak
Bikini
Rongelap
Rongerik
Ailinginae
Islands evacuated following BRAVO detonation
Bikar
Utrik
Taka
Ailuk
Mejit Island
Likiep
Jemo Island
Wotho
Ujelang
Kwajalein
Wotje
Ujae
Erikub
Maloelap
Lae
Lib Island
Namu
Aur
Jabwot
Ailinglapalap
Arno
Majuro
Mili
Jaluit
Knox
Namorik
Kili Island
Ebon
Pacific Ocean
Ratak Chain
Ralik Chain
The Marshall Islands

miNTA

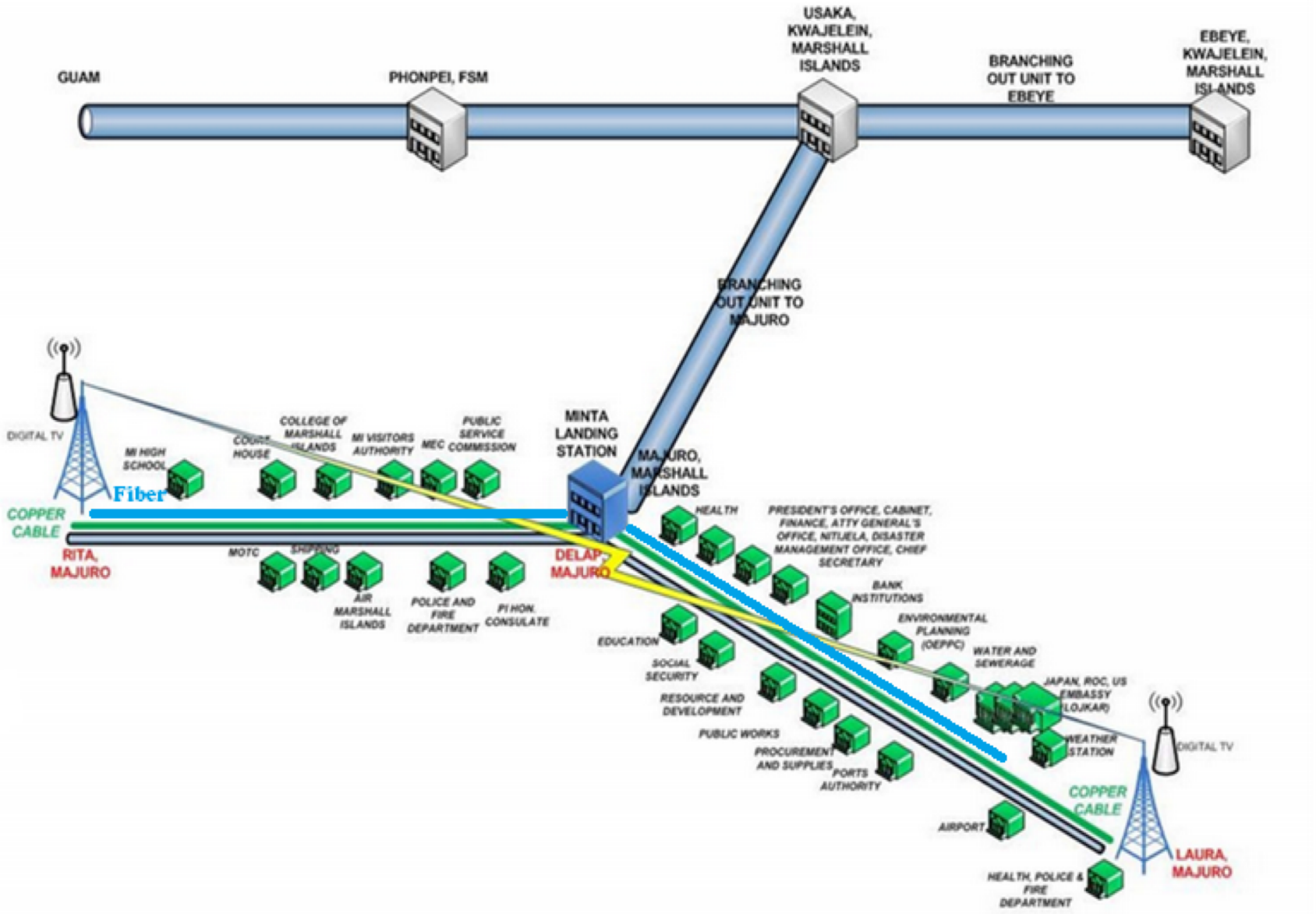
Marshall Islands National Telecommunications Authority:

- est. in 1987 in Majuro, but privatized in 1991
- Ebeye branch was est. in late 1988
- Marshall's ISP and manager of .mh ccTLD
- began with primarily telephony services (voice, fax, PBX, etc.); GSM services implemented in 1994; dial up internet (768 kbps D/512 kbps U) internet introduced in 1997 via satellite - age of dial-up
- In 2010, Majuro and Kwajalein Atoll were connected to the Internet via the HANTRU-1 undersea fiber cable originating in Guam


REPUBLIC OF THE MARSHALL ISLANDS
CRITICAL INFRASTRUCTURE
SUBMARINE FIBER OPTIC CABLE
GUAM
FSM
OPTIC CABLE
Branching Out unit
MAJURO ATOLL
KWAJELEIN ATOLL
NSS 5
2GBPS bandwidth (RMI)
OTHER COUNTRIES
MINTA
V7AB AM/FM
PSTN
MBC
CATV
WEATHER STATION
GOVERNMENT
RESIDENTIAL
EDUCATIONAL INST.
PRIVATE SECTOR
BANKING INST.
CUSTOMERS
SERVICES
VOICE
FACSIMILE
INTERNET
MOBILE PHONE
WIRELESS TV
AMC 23
128kBPS bandwidth (Pacific LDC)
Outer ISLAND (TANDC VSAT INSTALLATIONS)
Outer ISLAND (DEVELOPED)
Outer ISLAND (UNDERSERVED)
HF RADIO
AM/FM Radio Receiver
HONOLULU/GUAM
MINTA TELECENTERS
VOIP
EBEYE, KWAJELEIN ATOLL
WOTJE ATOLL
JALUIT ATOLL
KILI ATOLL
MEJATTO
OTHER ATOLLS
LIKIEP ATOLL
AILINGLAPLAP ATOLL
+ 3 TBD LOCATIONS

RMI Submarine Fiber Optic Cable connectivity diagram

RMI Submarine Fiber Optic Cable Connectivity Diagram



NTA Network

Network consists of:

- Core routers, switches (dual stack, ipv6 ready); NS's - currently in the process deploying DNSSEC; updating ICANN data
- ICANN L-Root instances; installed in mid 2017
- Cache engine installed to conserve international bandwidth
- GSM 2G/4G LTE
- DSLAMs, OLTs, Wireless Point to Multi-Point access
- Soft switch for POTs lines
- Satellite - Servicing the outer islands

I.T. Dept Roles

Service and Maintenance to:

- Core, Distribution, and Access Networks
- Datacenter Server management- All servers in datacenter are in a virtual environment. Mail, DNS, AAA, Billing, and virtual clients for remote desktop services.
- Support for the access network includes ADSL/VDSL/GPON, LTE, WiFi, and IP based telephony.

No such thing as a day off;

National Telecommunications Authority
NTA
Marshall Islands

NTA-Telephony Services

Traditional landline service is still the primary form of communication for many;

Servicing over 3,000+ landline for residents and businesses/government entities

Recently NTA has started migration from the legacy switch(Nortel DMS) to an IP-based softswitch

NTA Internet Services

ADSL/VDSL/GPON

DAMA(Demand Assigned Multiple Access) Voice, Data, GSM

WiFi

LTE

PtMP for last mile deployment

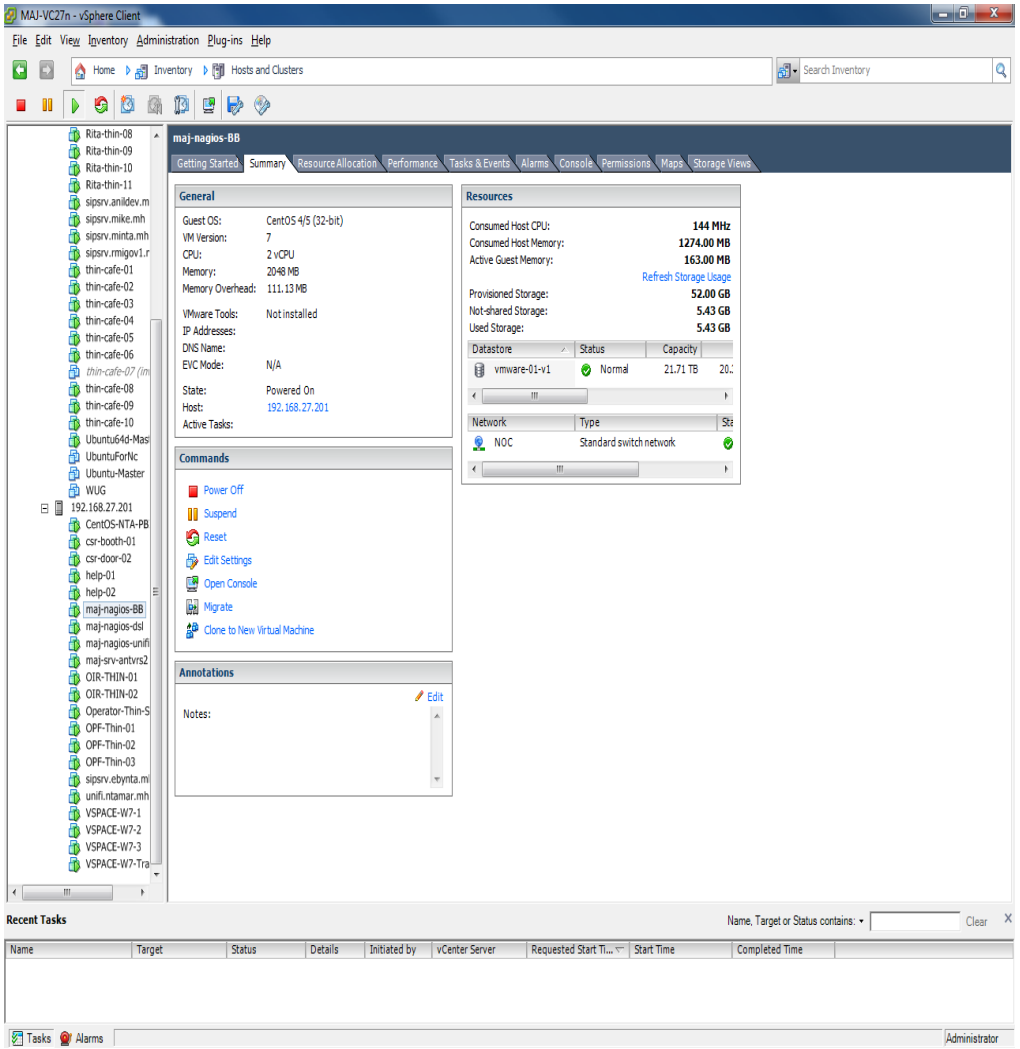
Traffic Trends

Current total International bandwidth at 4Gbps;

- Bandwidth consumption for the whole country at peak is roughly half
  - Residential and Business - ADSL/VDSL/GPON and last mile solutions are used to extend our services the customer.
  - Our traffic analysis shows the top 5 going to Netflix, Youtube, Microsoft, Facebook, Akamai


BOMI
DAR
RRE COMPOUND
ULIGA INN
AWA ZERO
RIWUT CORNER
JITTAKEN
NTA
ICC
DELAP PARK
MIR
MAKO BUILDING
BEST FOOD

NTA Data Center:



Servers for:

- Mail, DNS, Radius, LDAP, and virtual clients for various applications
- VoIP Services
- Desktop As a Managed Service
- Monitoring Tools:
  - WUG
  - Cacti
  - Zabbix
  - Nagios

GSM 2G/4G

- GSM service available on the islands of Majuro, Ebeye, Jaluit, Wotje, and Kili by way of 2G voice
- Data service by way of LTE is only available on the islands of Majuro and Ebeye

DAMA Map

Project Commission Dates

1. Woja – Ailinglaplap - August 2011
2. Jeh – Ailinglaplap – August 2011
3. Beran – Ailinglaplap – August 2011
4. Bouj – Ailinglaplap – August 2011
5. Namu - August 2011
6. Utrik - September 2011
7. Likiep – September 2011
8. Namdrik - September 2011
9. Ebon - September 2011
10. Jaluit - November 2011
11. Lib Island - Dec. 2013
12. Ujae - Oct. 2012
13. Ailuk - Nov. 2012
14. Tarawa - Maloelap - Dec. 2013
15. Aerok – Maloelap - Dec. 2013
16. Mejit - June. 2012
17. Aur- Aur – Oct. 2012
18. Tobal - Aur – Oct.2012
19. Lae - Oct. 2012

Pending:
Wotho, Arno, Mili, Jabat, Santo, Mejjato

On-going Projects

- Replace all legacy analog telephony switches to IP based solutions
- Rollout of FTTx to residents and businesses
- Extending LTE service to other islands
- Migrating all copper connected customers on to fiber

Challenges

- Copper cable is old and needs to be changed
- most of the trouble tickets are due to very poor cable conditions
- Provide more bandwidth for Outer Islands
- With the way technology is moving, more and more we see the demand for bandwidth

Conclusion

Thank you!!

Questions??