

Status of the information systems & operations at TMD (Thai Meteorological Department)

[BOONCHAI TEPYOSE](#)

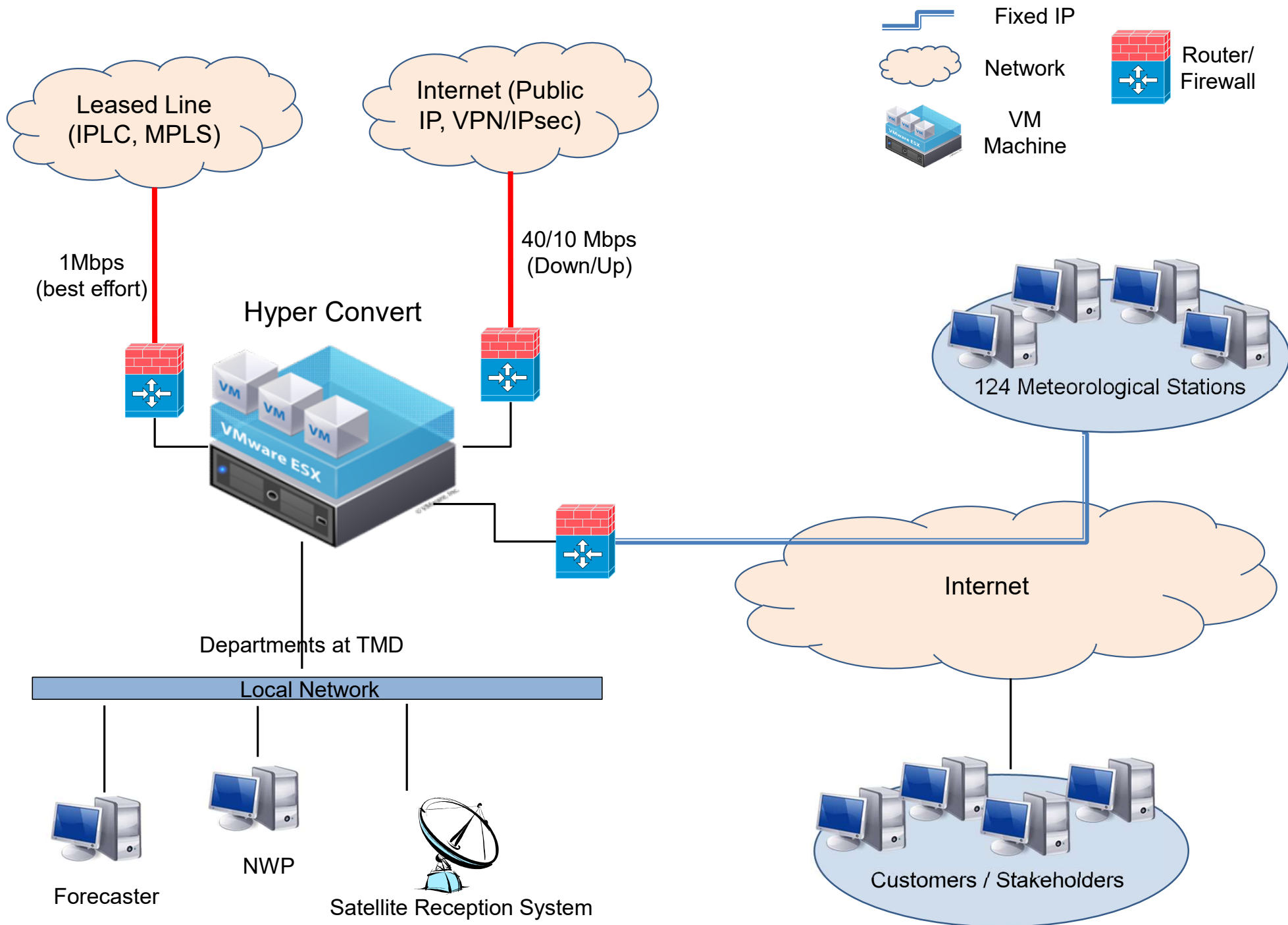
JMA WIS Workshop
17-19 January 2022, on-line (MS-Teams)

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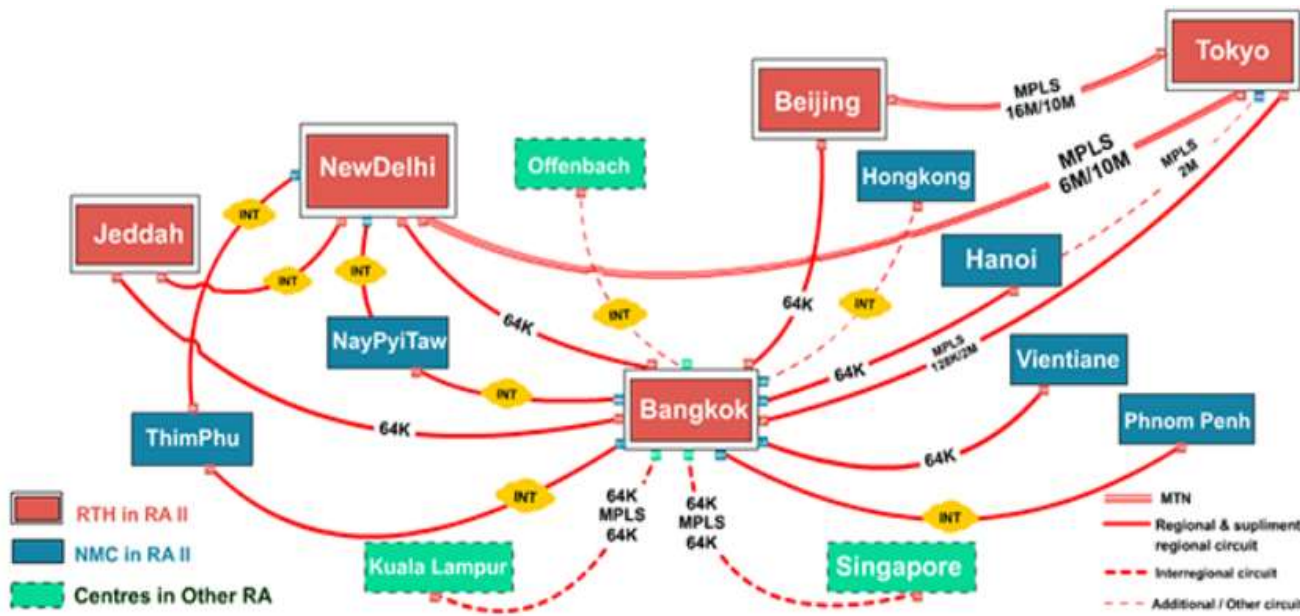
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 1. System/Network Configuration
 2. GTS Topology and Data Consumption
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 4. Utilize Internet Services
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 - b. Data reception from GTS/WIS
 - c. Data provision to GTS/WIS

1. System/Network Configuration

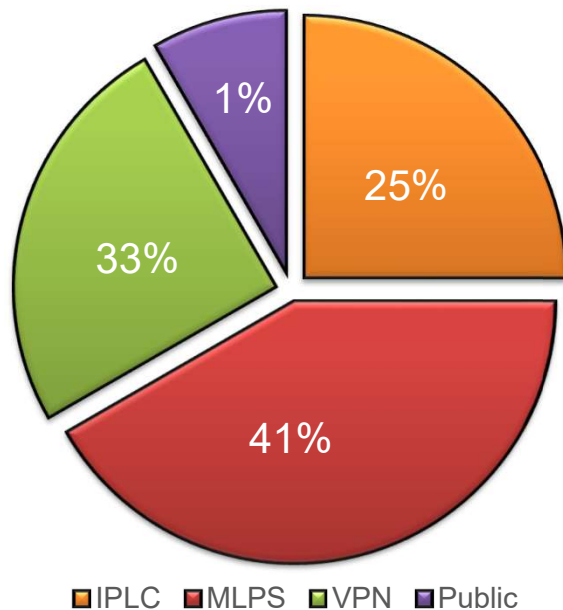


2. GTS Topology and Protocol

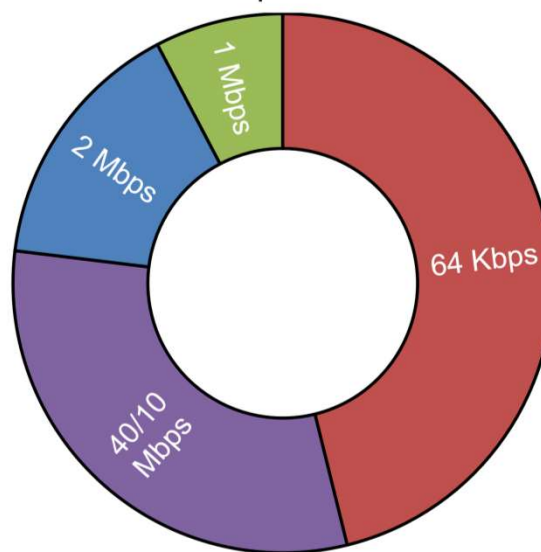


Country	Wan Topology	Protocol	Speed
Japan	Leased Line (MPLS)	Socket	2 Mbps
Beijing	Leased Line (MPLS)	FTP	2 Mbps
New Delhi	Leased Line (IPLC)	FTP	64 Kbps
Jeddah	Leased Line (MPLS)	FTP	1 Mbps
Malaysia	Leased Line (MPLS)	Socket	64 Kbps
Singapore	Leased Line (MPLS)	Socket	64 Kbps
Hongkong	Internet (Public IP)	FTP	40/10 Mbps
Naypyitaw	Internet (VPN/IPsec)	FTP	40/10 Mbps
Hanoi	Leased Line (IPLC)	FTP	64 Kbps
Laos	Leased Line (IPLC)	FTP	64 Kbps
Cambodia	Internet (VPN/IPsec)	FTP	40/10 Mbps
Thimphu	Internet (VPN/IPsec)	Socket	40/10 Mbps

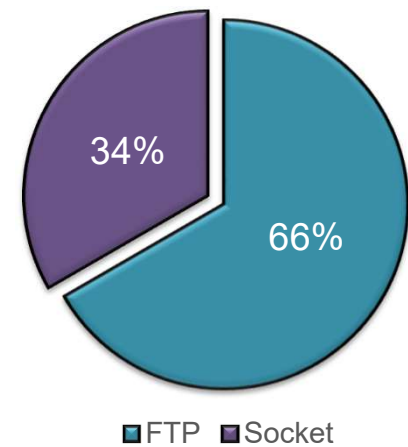
WAN Topology



Speed



Protocol



■ IPLC ■ MPLS ■ VPN ■ Public

■ FTP ■ Socket

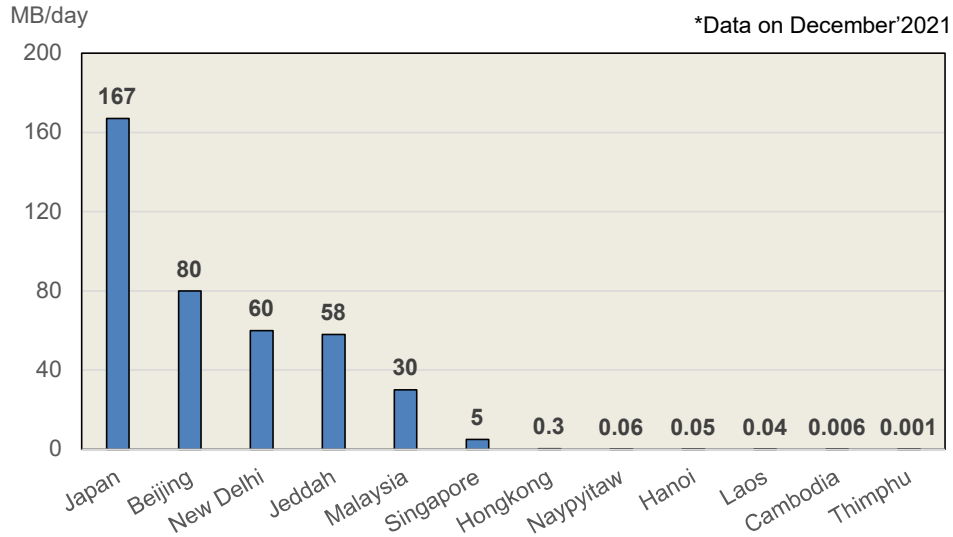
2.1 GTS Data Consumption

Country	Protocol	Receive (MB/day)	Sent (MB/day)
Japan	Socket	167	4
Beijing	FTP	80	20
New Delhi	FTP	60	9
Jeddah	FTP	58	8
Malaysia	Socket	30	148
Singapore	Socket	5	142
Hongkong	FTP	0.3	8
Naypyitaw	FTP	0.06	46
Hanoi	FTP	0.05	56
Laos	FTP	0.04	60
Cambodia	FTP	0.006	96
Thimphu	Socket	0.001	83
Total		400 MB	680 MB

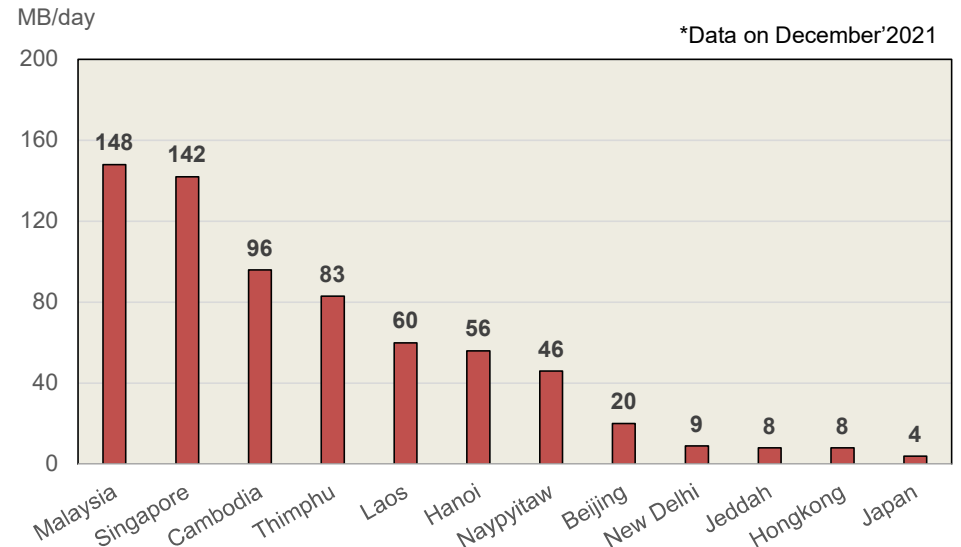
*Data on December'2021

2.1 GTS Data Consumption

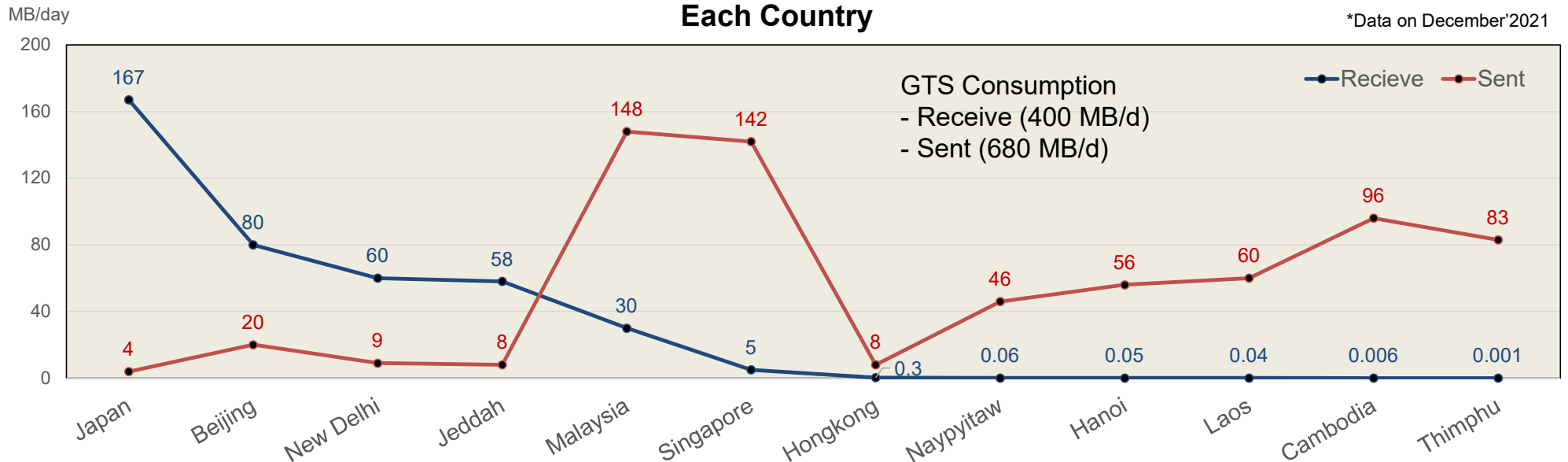
Receive (Largest to Smallest)



Sent (Largest to smallest)



Receive and Sent Each Country



3. Internet Tools

Satellite (Himawari-8 Analysis)

- JMA SATAID
 - <https://www.wis-jma.go.jp/cms/sataid/>

Classroom

- NOAA
 - <https://www.class.noaa.gov/>
- CMATC
 - <https://www.mooc.cmatc.cma.cn/>

Model & GRiB

- ECMWF forecast charts and data
 - <https://www.ecmwf.int/en/forecasts>
- ECMWF BUFR validator
 - <https://apps.ecmwf.int/codes/bufr/validator/>
- Earth Wind Map
 - <https://earth.nullschool.net/> (source: NCEP, GFS)
 - <https://windy.com> (source: ECMWF)

4. Utilize Internet Services

Providing information to public

- TMD website
 - <https://www.tmd.go.th>

- TAC/BUFR download such as Synoptic, Upper Wind/Temp
 - <http://www.gts.tmd.go.th>
 - <https://nsweb.tmd.go.th>
 - <https://wis.tmd.go.th>

- Mobile Application
 - Thai Weather on Play Store (Android) and App Store (iOS)
Data Provided by TMD
Such as Forecast 7D, Earthquake, Warning,
Radar, Satellite, Weather-Map etc.

5. Plans, Issues etc.

❑ Changes/progress in last three years

- ❑ Established ftp links with **Naypyitaw** via the **Internet (VPN/IPsec)** in Nov. 2019
- ❑ Established ftp links with **Cambodia** via the **Internet (VPN/IPsec)** in Nov. 2020
- ❑ Established ftp links with **New Delhi (Back up)** via the **Internet (VPN/IPsec)** in 2021
- ❑ Upgrade ftp links with **Beijing** from **IPLC to MPLS** and increase bandwidth to 2Mbps in 2021

Thank you very much for your support and our good collaboration. Including to JICA Team, TMD hope to work with you to optimize Link And Meteorological Information in the future.

ANNEX

- ❑ Annex-a International connections
- ❑ Annex-b Data Reception from GTS/WIS
- ❑ Annex-c Data Provision to GTS/WIS

Annex-a International connections

Centre	Protocol	Line	Data
Tokyo	Socket	MPLS	JMA Model (GRIB), SYNOP, SHIP, TEMP, METAR ...
JMA	-	Radio broadcast	Satellite image
ECMWF	HTTP	Internet	Global Model (GRIB)
SADIS (London WAFC)	HTTP	Internet	Aviation Model (GRIB, BUFR)
NOAA (Washington WAFC)	HTTP	Internet	Aviation Model (GRIB, BUFR)

Annex-b Data Reception from GTS/WIS

- SYNOP, SHIP, CLIMAT, TEMP, PILOT
- Aviation (METAR, TAF, SIGMET, AMDAR)
- Marine (BUOY, TRACOB, BATHY, TESAC)
- Wind Profiler
- Ground-based GNSS
- GEO satellites (AMV, CSR, ASR)
- LEO satellites (MW imager, MR sounder, HSS, GNSS-RO, Scatter meter, Precipitation radar)
- Forecast, Analysis
- Warning
- Tropical cyclone advisories
- Volcanic ash advisories
- Etc.

Annex-c Data Provision to GTS/WIS

- SYNOP (TAC and/or BUFR)
- SHIP (TAC and/or BUFR)
- CLIMAT (TAC and/or BUFR)
- TEMP, PILOT (TAC and/or BUFR)
- Etc.

Thank you
for your attention