



CO-OPS TWG Report

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Center for Operational Products and Services (CO-OPS)

NOAA National Ocean Service (NOS)



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NOAA/NOS/CO-OPS

“The Center for Operational Oceanographic Products and Services (CO-OPS) and its predecessors have gathered oceanographic data along our nation's coasts for over 200 years to protect life, property, and the environment. Serving both the public and other government agencies, CO-OPS is the authoritative source for accurate, reliable, and timely water-level and current measurements that support safe and efficient maritime commerce, sound coastal management, and recreation. The combined efforts, knowledge, and experience of CO-OPS's technicians, scientists, and engineers working to carry out a central mission has led to the development of a reliable center of expertise for coastal physical oceanography.”

Tidesandcurrents.noaa.gov





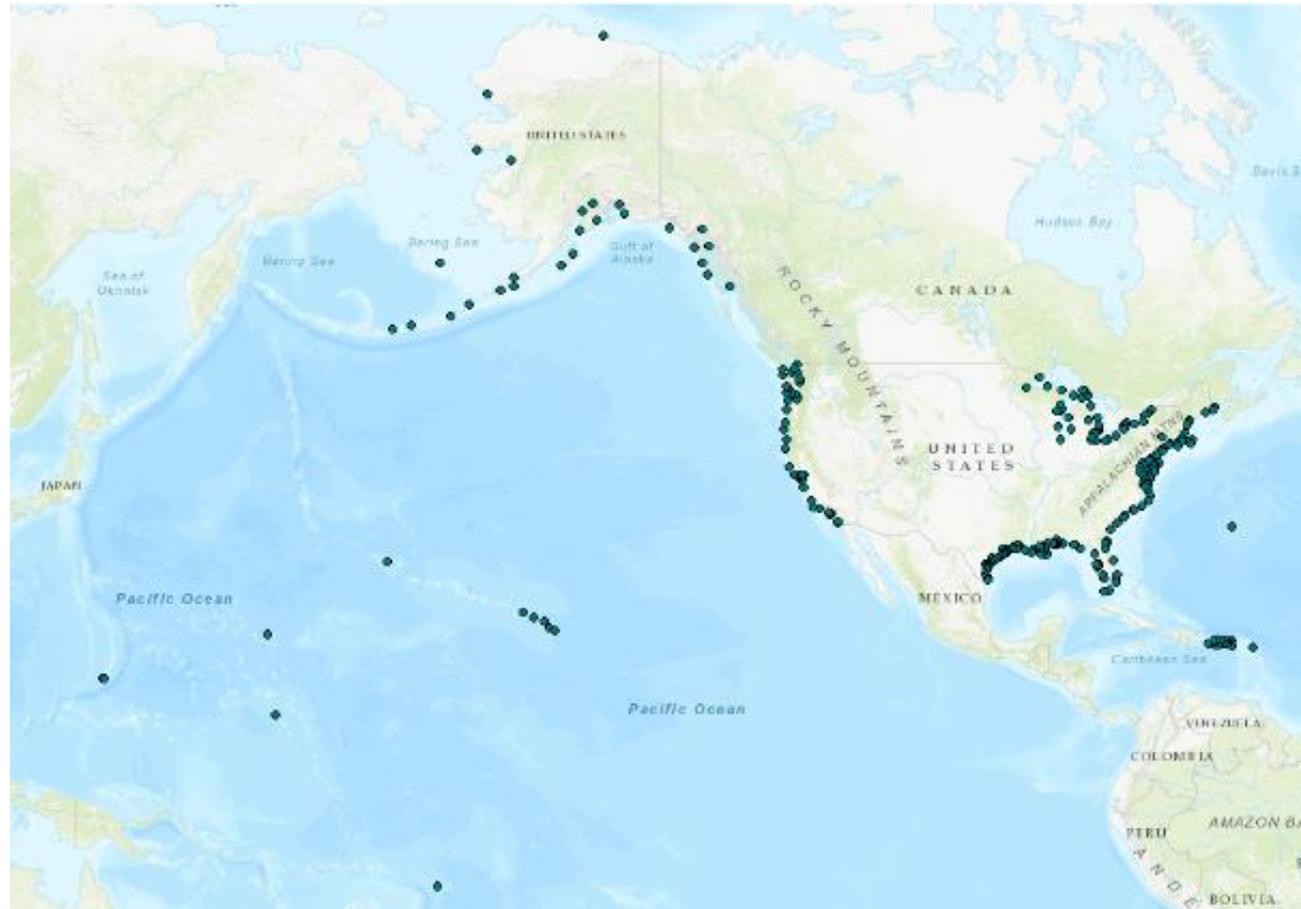
CO-OPS GOES Use

CO-OPS has approximately 450 permanent stations actively transmitting via GOES as part of the PORTS and NWLON Networks.

Support Office of Coast Survey (OCS): Vdatum and Seasonal water level gauges are deployed each year (approximately 70 for 2022) that transmit via GOES.

National Current Observation Program: Real-time current surveys supporting the National Current Observation Program

Additional 30-40 sites that only use Iridium or cellular communications

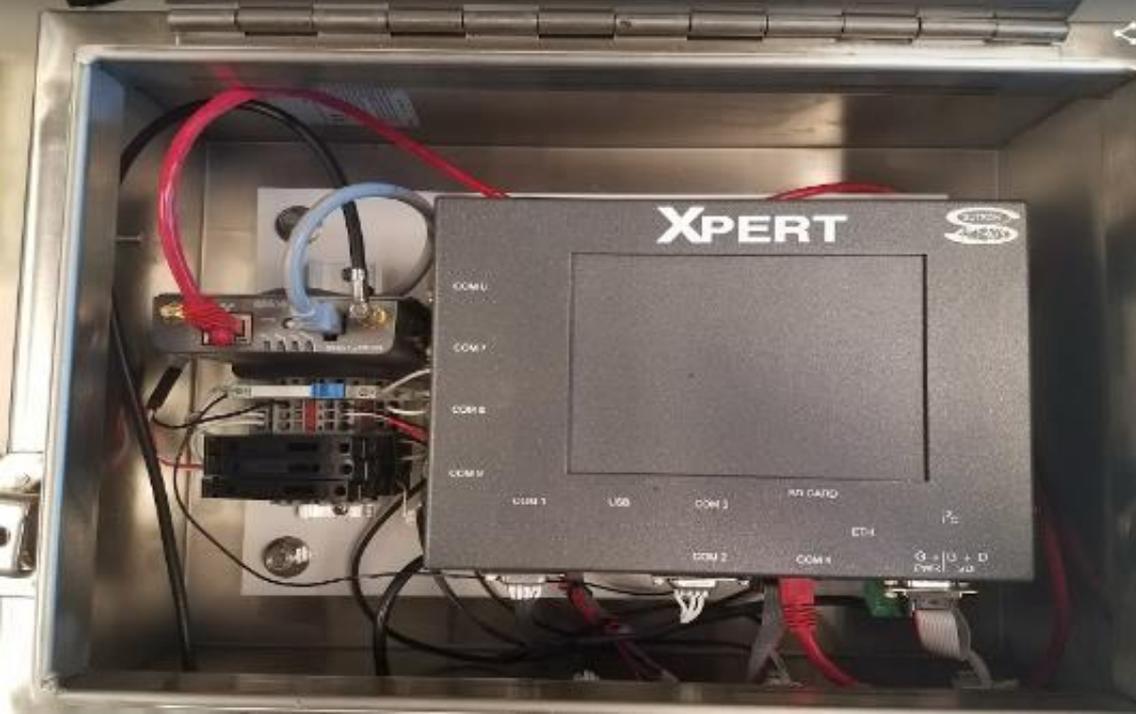






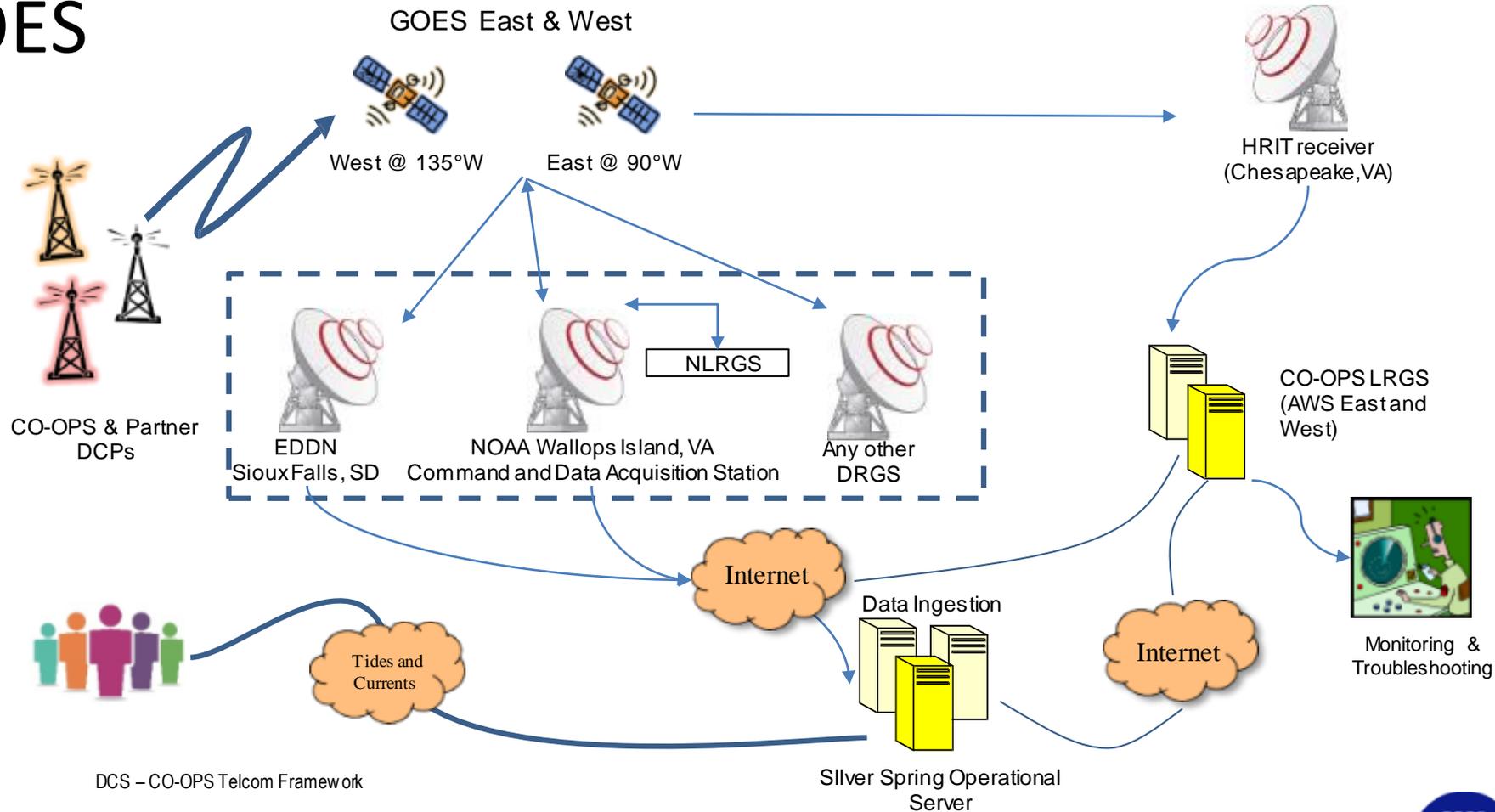








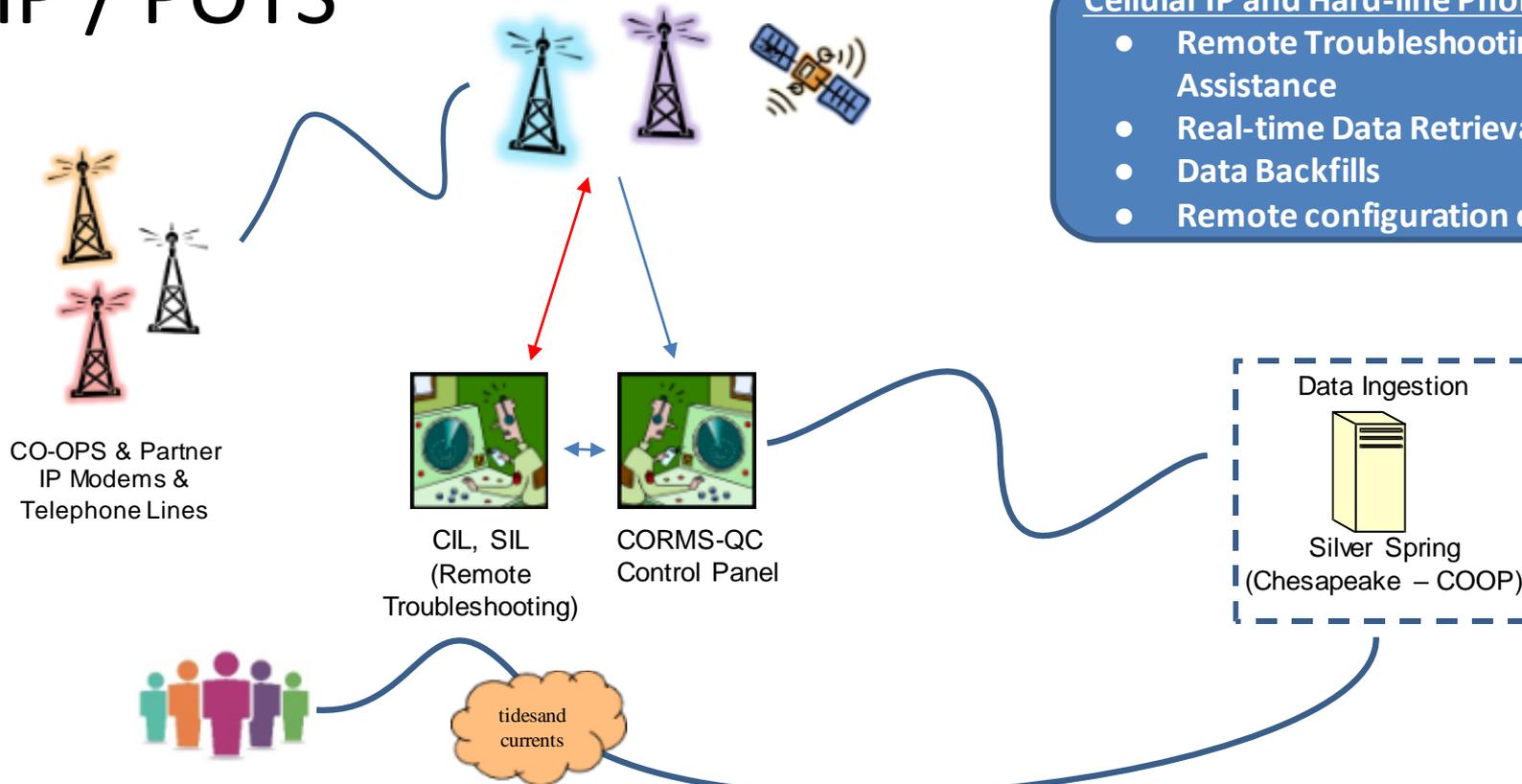
GOES





IP / POTS

Cellular / POTS Network

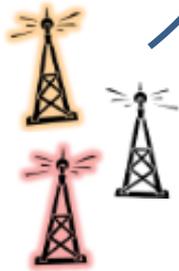
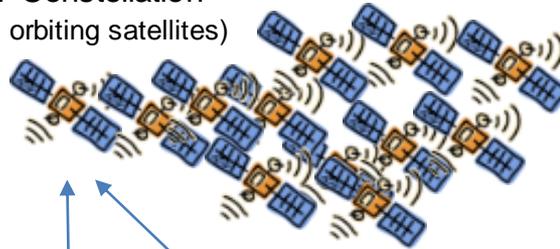


- Cellular IP and Hard-line Phone Uses**
- Remote Troubleshooting/Crew Assistance
 - Real-time Data Retrieval
 - Data Backfills
 - Remote configuration changes

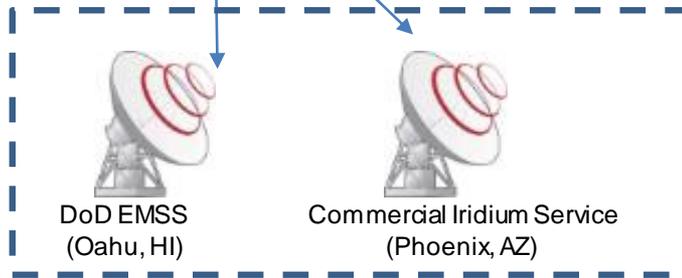


Iridium

Iridium Constellation
(66 polar orbiting satellites)



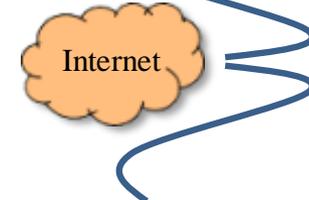
CO-OPS & Partner
DCPs with SBDs



Gateway SBD sub-systems

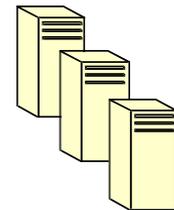
Remote Troubleshooting
(Very limited)

LRGS
(AWS East and
AWS West)



Delivery to up to five
IP / email addresses

Data Ingestion Servers



CO-OPS FTP Site (AWS
COOP Server)

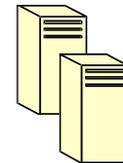


DCS - CO-OPS Telcom Framework





Chesapeake LRGs Data Ingestion Overview



LRGS
Chesapeake &
Seattle (COOP)

GOES Data Ingestion

- Source: NOAA/NESDIS/Wallops Island (currently NLRGS1)
- Method: DDS service via Internet

The LRGs software connects to the servers at Wallops and requests data. The Wallops servers require a username and password. SHA 256 authentication, compliant with NOAA IT password and authentication security requirements. Data is stored on the server for 180 days.

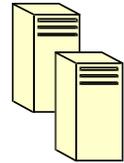
Iridium Data Ingestion

- Source: DOD Iridium downlink Hawaii
- Method: Pushed to the server via Internet

The DOD Iridium server pushes the data to the LRGs from a known address. CO-OPS firewalls are set to receive data from the DOD server and direct it to the LRGs. Data is stored on the server for 180 days.



Chesapeake HRIT Data Ingestion Overview



LRGS
Chesapeake &
Seattle (COOP)

GOES Data Ingestion

- Source: NOAA/NESDIS/Wallops Island
- Method: DDS service via Internet

The HRIT software connects to the servers at Wallops and requests data. The Wallops servers require a username and password. SHA 256 authentication, compliant with NOAA IT password and authentication security requirements. Data is stored on the server for future use.

Iridium Data Ingestion

- Source: DOD Iridium downlink Hawaii
- Method: Pushed to the server via Internet

The DOD Iridium server pushes the data to the LRGS from a known address. CO-OPS firewalls are set to receive data from the DOD server and direct it to the HRIT. Data is stored on the server for future use.

HRIT Combined DCS Data Ingestion

- Source: NOAA/NESDIS/Suitland or Wallops
- Method: Direct broadcast from the GOES East Satellite

A receiver interfaced to the HRIT server is programmed to accept data only from the GOES East satellite. The data consists of GOES and ENWIN messages along with NWS maps and other data. The data is decoded and stored in separate directories on the server for future use.





NOS GOES Formatting and PORTS tag



NOS 86393481 06/24/2021 15:18:00

Y1 8 3.554 0.007 0

C1 3 3.9 55 7.3

D1 4 22.3

E1 5 26.1

E2 5 24.7

F1 6 1026.6

G1 -7 33.36

L1 < 14.0

B1 2 2.166 0.002 0

L1 < 14.0

DAT 11.098

SNS 0.005

U1 3.564-15:21:00

U1 3.558-15:20:00

U1 3.557-15:19:00

U1 3.555-15:18:00

U1 3.549-15:17:00

U1 3.545-15:16:00

REPORT COMPLETE





IP Layout for Dual DCP Communications

