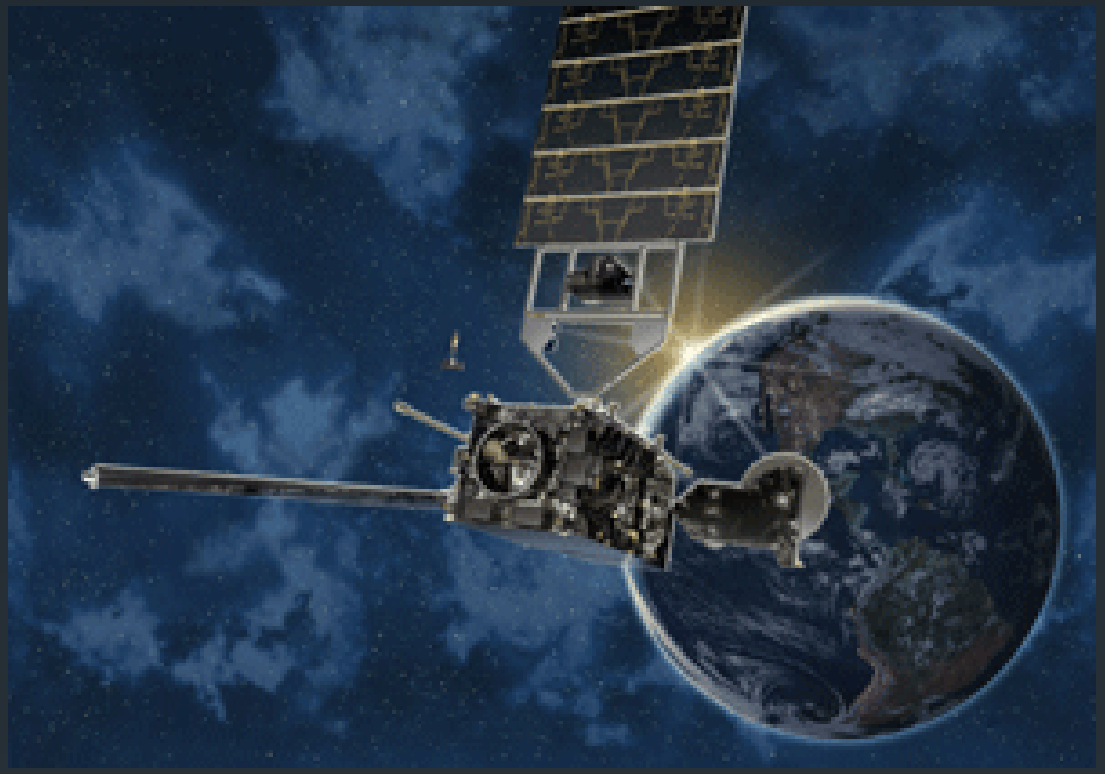

SDI (Satellite Data Ingestor)

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THE UNIVERSITY of WISCONSIN MADISON

SSEC

Overview

- SDI-104
  - Hardware configuration
  - Software configuration
  - Satellites signals
- Next generation SDI
  - Hardware Configuration
  - Software configuration
  - Satellites signals

SDI-104
Hardware Configuration

- PC/104-Plus
- LittleBoard 735
- 1 GHz CPU
- Disk: 160 Gbyte IDE
- Boot from compact flash
- Ethernet: Up to 1G/s
- Connectors for monitor and keyboard
- Mounted in 2U rack box

Hardware Configuration

Data rates tested up to 40 Mbits/s

- Connectors:
  - D15P
  - BNC
- Configuration:
  - Single ended (TTL)
  - RS422 (differential)
- Data types
  - NRZ-L, NRZ-M, NRZ-S
  - Jumper configurable

Software Configuration

- Knoppix 6.7.1 (Linux 3.0.41)
  - Up-to-date security
  - Compatible with old binaries
  - Can be configured as a standalone ingestor/server, or write data to an external disk (via NFS, for example)

Event Notification

- Notifications:
  - Image start
  - Image end (not for GVAR Imager)
- Three types of notifications:
  - Send an email
  - Write notification to a file (log messages)
  - Run a program or script

SDI-104 Status for Current Satellites

- GVAR: up-to-date for entire series
- POES AVHRR:
  - Up-to-date for all satellites
  - Unable to test direct reception, although a system is running at NWS Honolulu

SDI … the next generation

Introducing the SDI-GRB Appliance

SDI-GRB Hardware Configuration

- Dell PowerEdge R430 servers
- 12 core, 2.5 GHz Intel Xeon Processor
- 64 GB Ram
- 6 1-TB disks in RAID-6
- 10 Gb Ethernet and 1 GB Ethernet
  - No more clock and data
  - Everything over Ethernet
- No SSEC-designed hardware components

SDI-GRB Software Configuration

- CentOS 6.x
- Software and security updates via yum
  - Repository at UW SSEC
- McIDAS-X ADDE servers
- CSPP Geo ingest software
- RabbitMQ event notification

SDI-GRB Data Access

- ADDE
- SFTP
- Considering NFS

SDI-GRB Event Notification

- RabbitMQ Server
  - Start and End Events
  - No more email events
  - Remote workstations will be able to connect to the exchange server and receive desired events

SDI-GRB Appliance

GOES-R Rebroadcast

GRB

CADU
(Channel Access Data Unit)
Partial CCSDS packets

CSPP GEO

RT-CSPP

Based on NASA RT-STPS
Assembles and aggregates packets

GRB-R

GRB Reconstuctor
Writes NetCDF4 files and logs
Publish AMQP messages –>
RabbitMQ broker

NetCDF4

ABI (Advanced Baseline Imager)
GLM (Geostationary Lightning Mapper)
MAG (Magnetometer)
SEISS (Space Environment In-Situ Suite)
SUVI (Solar Ultraviolet Imager)
EXIS (Extreme Ultraviolet and X-ray Irradiance Sensors)

ADDE servers

SFTP servers

SDI

Archive

Processing

Users

SDI-GRB Supported Satellites

- GOES-R series
  - Ingest handled by CSPP Geo
  - Instruments
    - ABI (Advanced Baseline Imager)
      - Follow/tracking
    - GLM (Geostationary Lightning Mapper)
    - MAG (Magnetometer)
    - SEISS (Space Environment In-Situ Suite)
    - SUVI (Solar Ultraviolet Imager)
    - EXIS (Extreme Ultraviolet and X-ray Irradiance Sensors)
    - No Level-2 processing on the SDI-GRB
- GVAR (under consideration)

What is CSPP Geo?

- Community Satellite Processing Package for Geostationary Data
- NOAA-sponsored project at UW SSEC
- The software will be capable of processing GOES-R Rebroadcast (GRB) data
- Level 2 ABI products will be generated by algorithms developed by the GOES-R Algorithm Working Group
- Software is freely available; distributed as self-contained 64-bit Linux binary packages

CSPP Geo initial product suite

- Cloud mask
- Cloud phase
- Cloud type
- Cloud top height
- Cloud top temperature
- Cloud top pressure
- Cloud 11 µm emissivity
- Cloud visible optical depth
- Cloud effective radius
- Cloud liquid water path
- Cloud ice water path
- Probability of Marginal Visual Flight Rules (MVFR)
- Probability of Instrument Flight Rules (IFR)
- Probability of Low Instrument Flight Rules (LIFR)
- Low cloud geometric thickness

Questions?