



## High Rate Data Transport Alternatives

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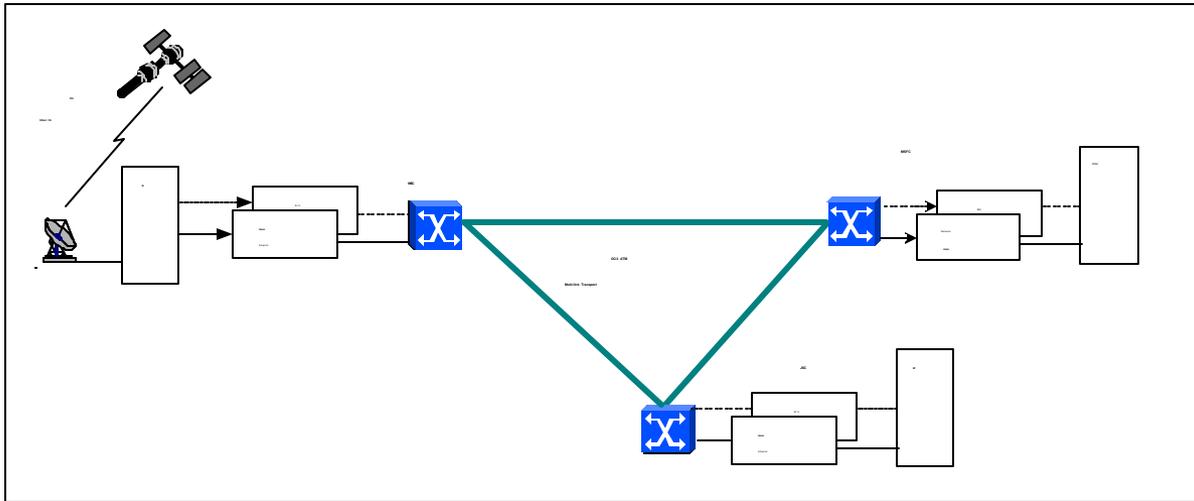
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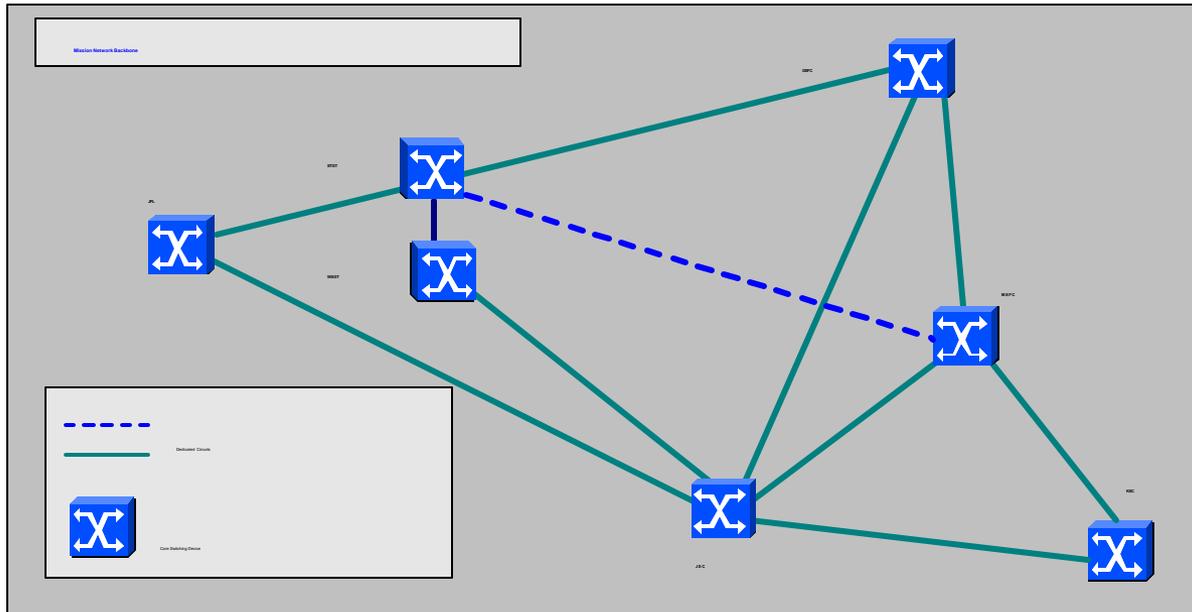
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- High rate data is data rate greater than 10 Mbps
- Interface between ground equipment and transport equipment is differential ECL serial clock and data
- Users
  - Shuttle
    - WSC to JSC
    - Maximum Data rate is 48.024 Mbps
    - Stat Mux adds overhead to generate 50 Mbps fixed rate stream to carrier modem
    - Broadcast via DOMSAT (GE2 X5)
    - X5 is Shared between analog video and high rate data
  - Space Station
    - WSC to JSC and to MSFC
    - Data rate is fixed at 50 Mbps
    - Broadcast via DOMSAT (GE2 XC20)
  - EOS (SN)
    - WSC to GSFC
    - Data rate is fixed at 44 Mbps
      - Downlink from Satellite is 150 Mbps and GSIF rate buffers to lower rate
    - Transported using Lighthouse interface device that converts differential ECL to HSSI
    - HSSI interfaces to carrier DS3 modem
  - EOS (GN)
    - AGS or SGS to GSFC
    - Data rate is fixed at 52 Mbps\
      - Downlink from Satellite is 150 Mbps and GSIF rate buffers to lower rate
      - At AGS, data transported to Gilmore Creek (20 miles) using specialized high speed optical modems
    - Broadcast via DOMSAT from Gilmore Creek and Telenor Satellite from SGS

- Satellite
  - Fixed clock rate must be presented to carrier modem
  - Expensive for single point
  - Cost effective for multiple destinations
- Terrestrial (History)
  - Differential ECL clock and data is a unique interface
  - Metrodata offers a device to interface differential ECL to ATM
    - Evaluation by Getronics underway
    - Limited to ~52 Mbps (HSSI rates)
    - Input data rate must be programmed
      - Data rate cannot change on the fly
  - Lockheed Martin developed a WANIU for the Air Force that met some of the NASA requirements
    - Extensive modifications required to meet NASA requirements
    - Development team no longer available
  - GSFC Code 520 developed a unit to interface differential ECL clock and data to ATM
    - Could not meet Shuttle requirement to change data rate on the fly







- High rate satellite services are under contract for ~ 2 years
- MNM is scheduled to be in place in ~ 2 years
- Recommendation
  - Option 2 after MNM is implemented.
  - High rate interface will be incorporated in specifications for the NISN Integrated Access Device
    - Data rates up to 150 Mbps
    - Differential ECL Serial clock and data
- Reexamine recommendation if MNM delayed/cancelled