



Shuttle IP Commanding

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Agenda



- Requirement
- Proposal
- Triangle Diversity Study Results
- Triangle Performance Study Results
- Recommendation



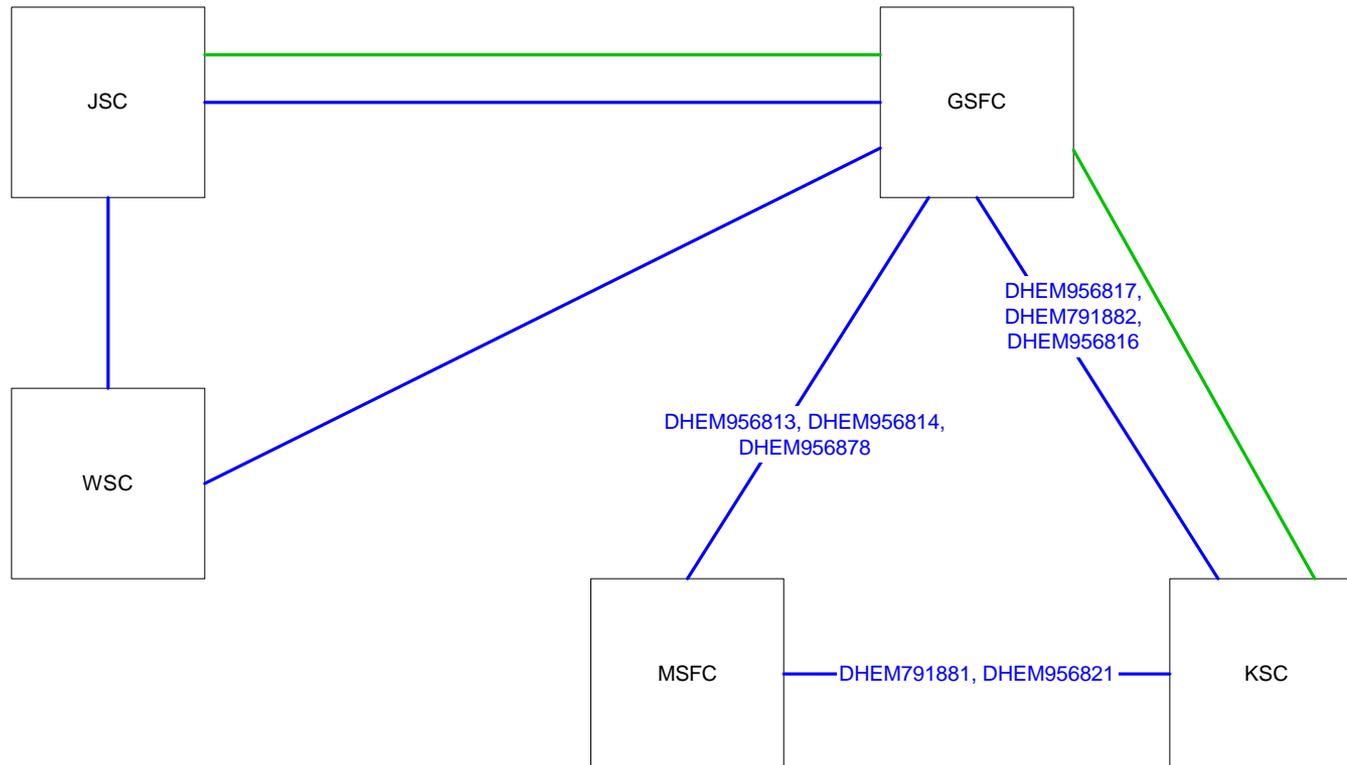
Requirement



- Present two independent diversely routed command streams to MIL

- Use IPTX GSFC-MSFC-KSC path for prime Shuttle commanding path
- Use one set of existing legacy clock and data circuits for backup Shuttle command path
 - Best source selected at MIL
 - Interface between CD&SC and MIL remains clock and data
- Features
 - KSC-MSFC-GSFC is diversely routed from legacy circuits
 - KSC-MSFC-GSFC Triangle meets real time mission requirements

Proposal



Triangle Diversity Study

- KSC Router Power
 - Redundant and diverse power provided to the routers
 - Only one CSU/DSU per T1 with no backup
 - Recommendation: Have AT&T provide a backup CSU/DSU at each location
- KT-CD&SC Conduit
 - All circuits run through single conduit
 - Conduit is in controlled area and poses minimum risk
- Triangle Leg Diversity
 - KSC to GSFC share POPs with KSC to MSFC
 - KSC to GSFC share POPs with GSFC to MSFC
 - MSFC to KSC share POPs with GSFC to MSFC



Cost Estimate to Reengineer Triangle



- Non recurring costs: \$TBS
- Monthly recurring costs (additional): \$TBS