TOW2015 e-transfer operations

MIT Haystack Observatory
May 4th – 7th, 2015

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Outline

- Overview
- Networks
- Hardware
- Software
- Operations
- Correlators
- Troubleshooting
- Q&A

Overview

Overview

Shipping a data

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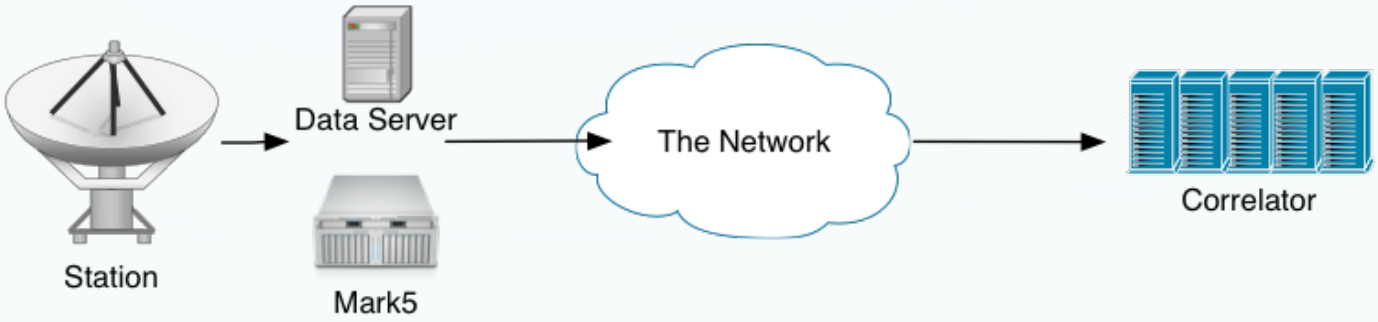
Shipping a data

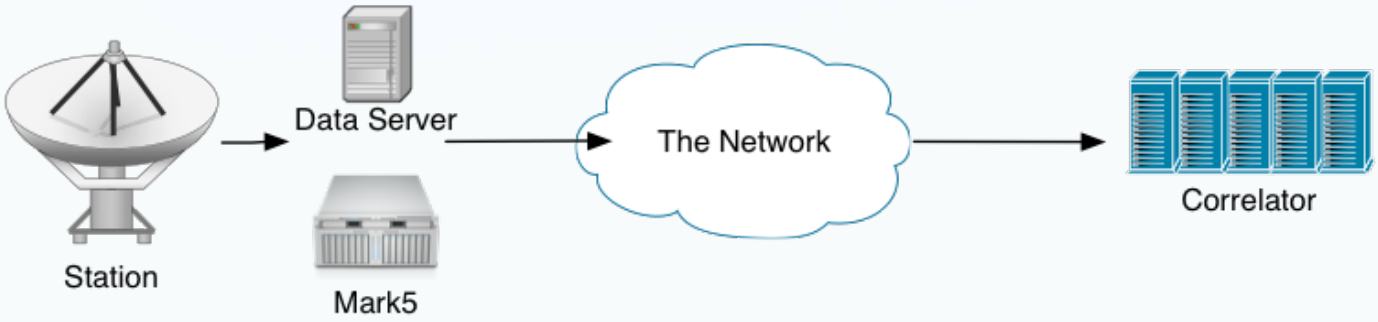
- Data recorded to Mark5 unit
- Modules are brought to shipping
- Shipments can take days/weeks to arrive
- Correlators process the modules

Overview



e-transferring a data

Overview



e-transferring a data

- Data recorded to Mark5 unit
- The Mark5 or Data server is prepared for transfers
- Transfer of data is initiated and sent to Correlator data servers
- Correlators process the files

Networks

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General Requirements

- Reliable connection
- Recommended 100Mb/s or greater

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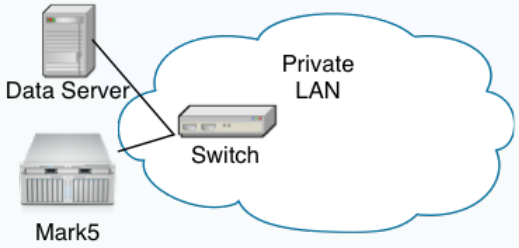
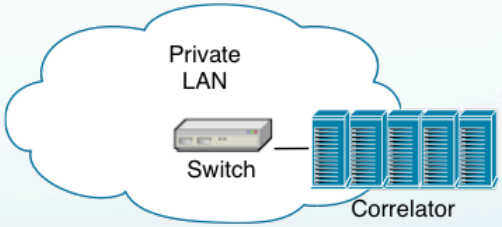
Network Speed	T2/OHIG Session 900GBytes	R1/R4/CRF Session 1500GBytes	RDV/R&D Session 2500GBytes
10Mb/s	720,000 seconds ~200hrs	1,200,000 seconds ~333hrs	2,000,000 seconds ~555hrs
100Mb/s	~20 hrs	~33hrs	~55.5hrs
1000Mb/s	~2hrs	~3.3hrs	~5.5hrs

Networking

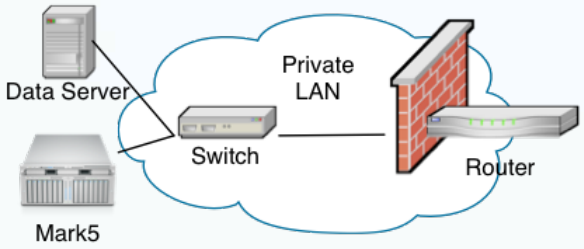
Networking

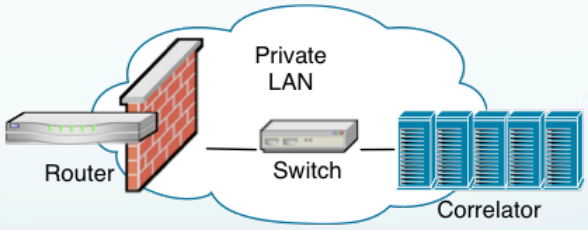




Local network

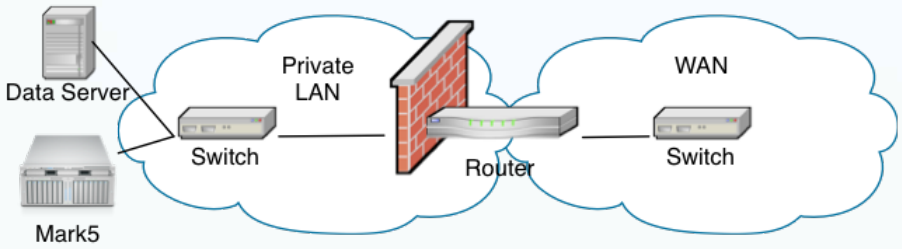
Networking

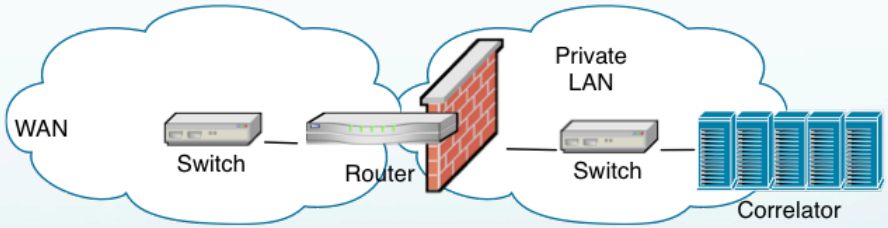




Local router and firewall

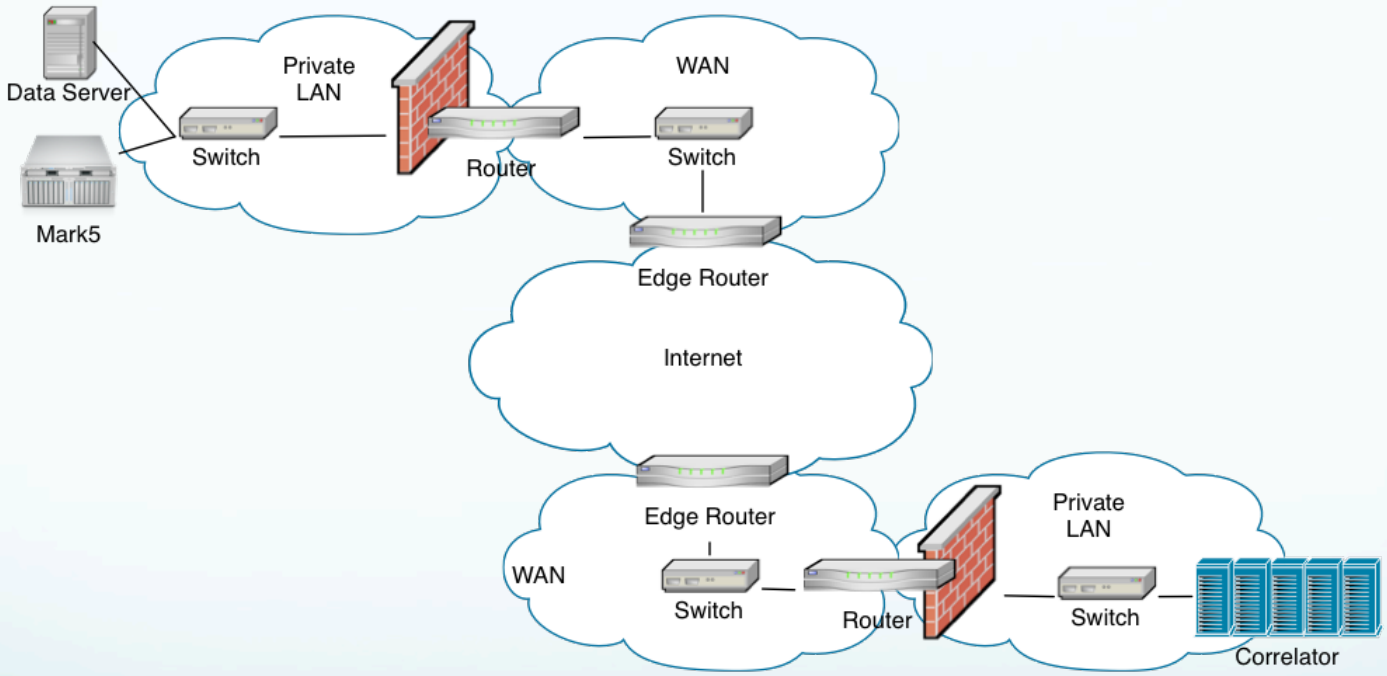
Networking





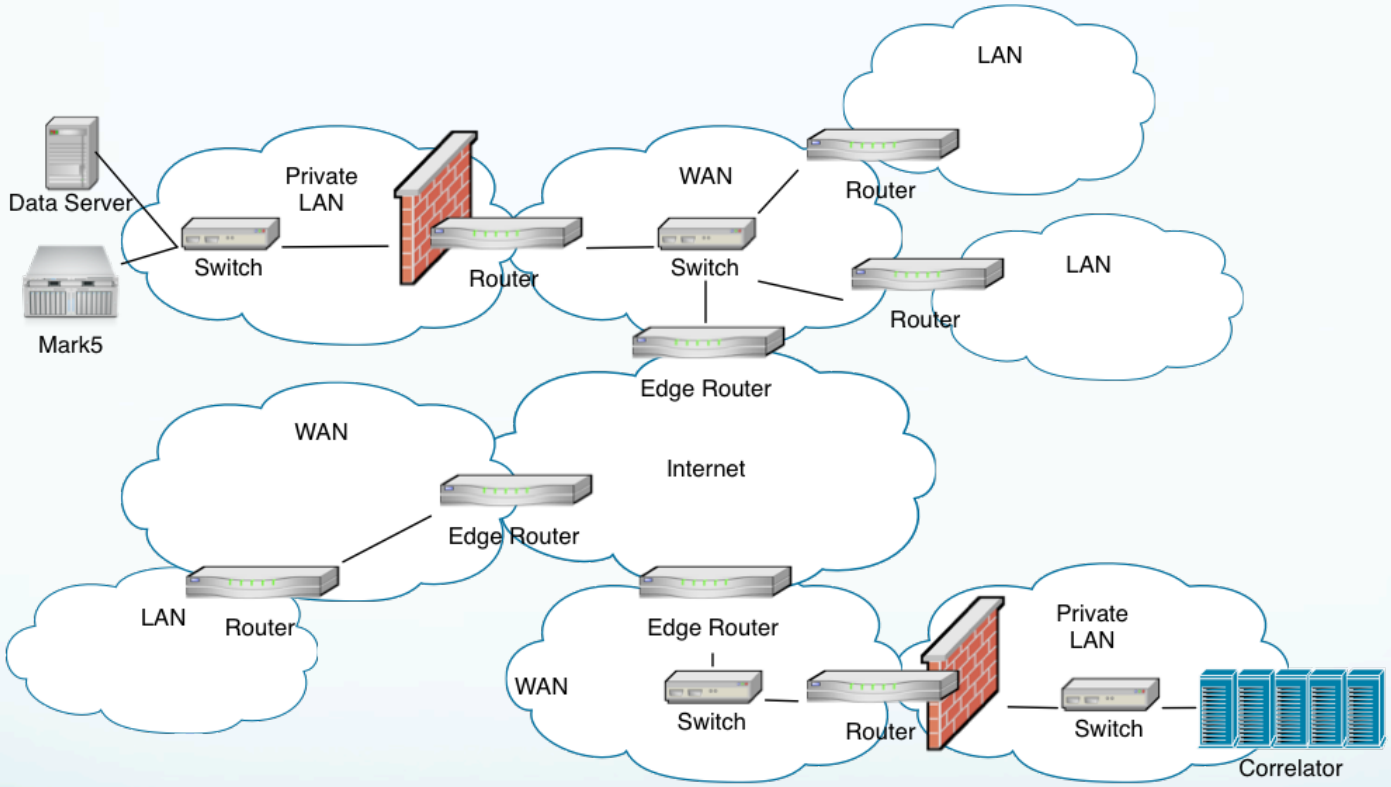
Uplink to edge network

Networking



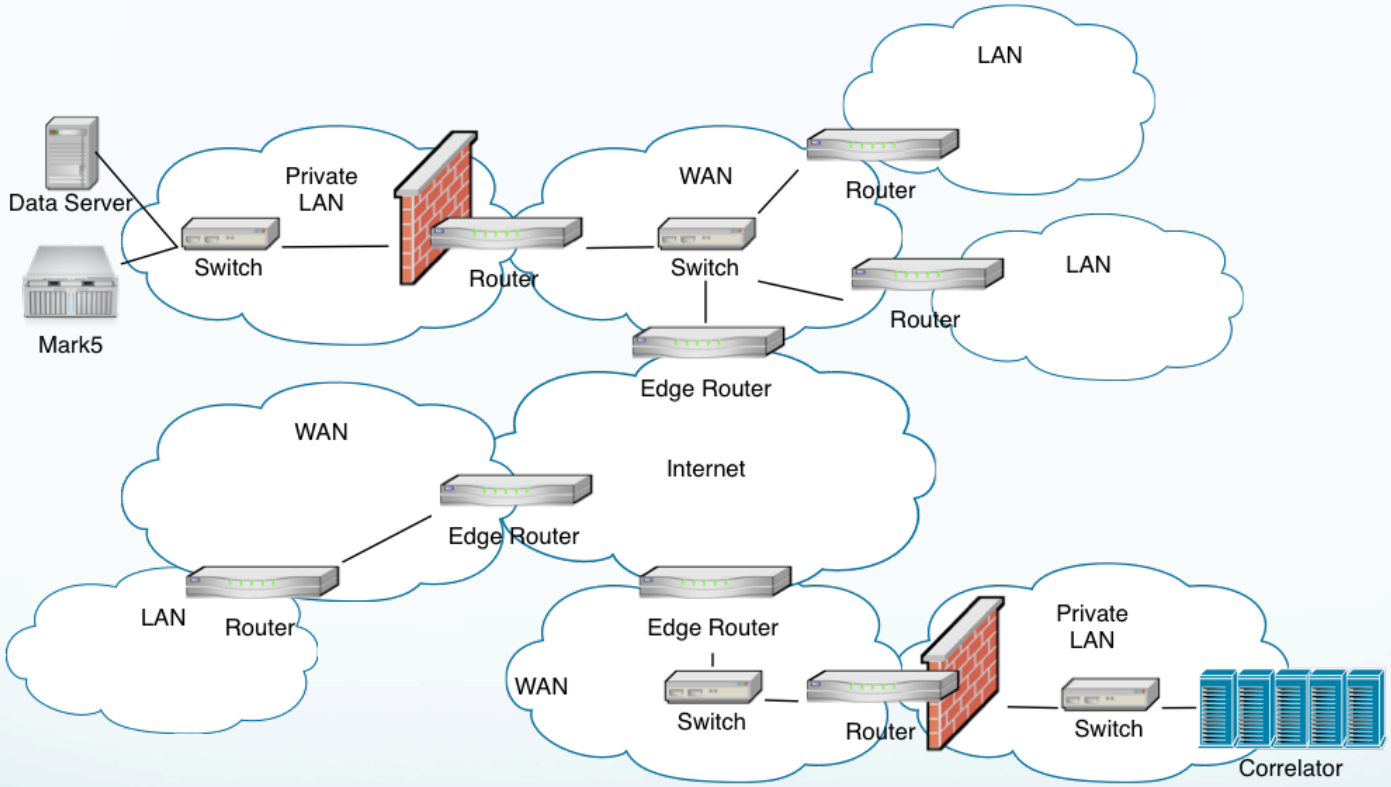
Edge network to Internet backbone

Networking



Everyone Else!

Networking



Things to consider

- Resource availability
- Network bottlenecks

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- Mark5/Mark6 Data Recorders
- Flexbuff
- RAID Storage Server

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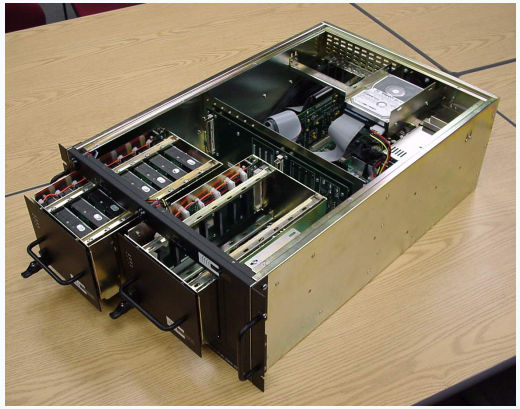

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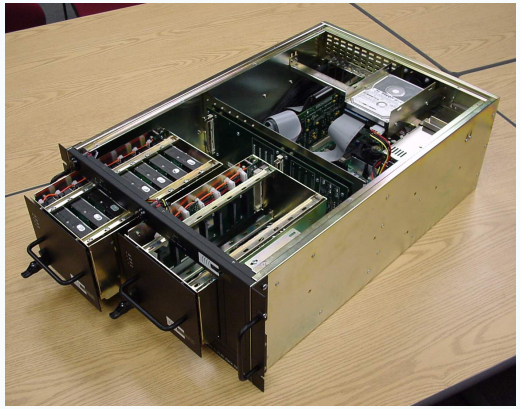

Considerations

- Turn around time
- Disk space/modules
- Network availability

Software

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Data Transferring Tools

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  - http://tsunami-udp.sourceforge.net/

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  - Linux utility

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- **Traceroute**
  - Linux utility
- **MRTG**
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Operations

1. **Data preparation**
2. **Verify Correlator destination**
   - http://lupus.gsfc.nasa.gov/sess/master15.html
3. **Verify disk space bandwidth availability**
   - http://www3.mpifr-bonn.mpg.de/cgi-bin/showtransfers.cgi
4. **Update e-transfer active transfers site**
   - ncftp start message to transfer website
5. **Begin data transfers**
6. **Complete data transfers**
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7. **WAIT!**
8. **Release data**

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Correlator

Bonn
1Gb/s up, 1Gb/s down
5 file servers, ~288 TB disk space

Haystack
10Gb/s shared network
3 file servers, ~171 TB disk space

USNO
1Gb/s up/down
1 file server, ~90 TB disk space

Troubleshooting

Network performance issues

– Packet loss

– Connectivity loss

Fusemk5

– Packet errors/loss

– Read performance

Data servers

– RAID disk failure

– Writing performance

Q&A

Thank You