Python and the ATLAS Computer Networks

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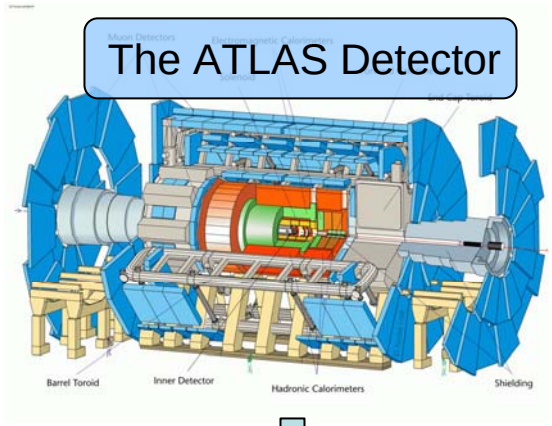
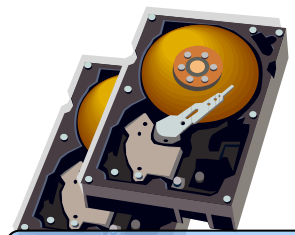


150 GBytes/sec

Processing Farm

Data Acquisition Network

0.3 GBytes/sec



Mass Storage

- Large local area network interconnecting ~3000 computers
- Based on Gigabit Ethernet
- Implemented using switches and routers
- Designed and managed using Python

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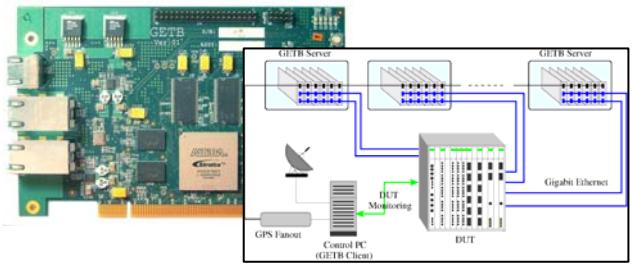
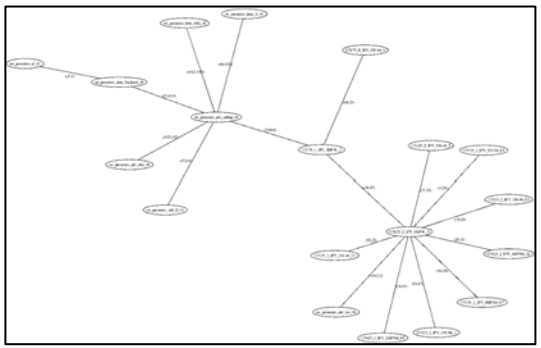
Testing the Network Equipment



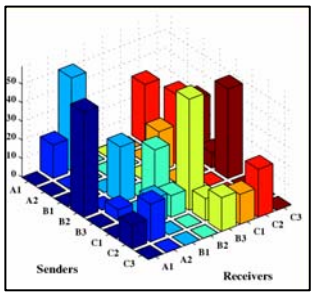
- Python used to control an **FPGA-based Network Tester**
- Tests executed and results analyzed using Python scripts
- Low-level access to the PCI hardware (C-based API)
- Distributed control framework (XML-RPC)
- Automatic generation of plots based on measured data

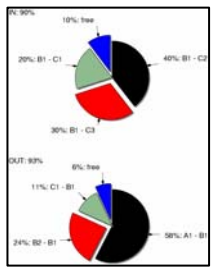
Network Configuration Management



- We've developed a Python module to **communicate with Ethernet switches** in an object-oriented fashion (sw_script)
- Devices can be entirely managed using Python scripts
- **Discovery of the physical topology** of the network
- Automatic generation of reports with the current state of the installed equipment – web-based and PDF formats

Real-Time Traffic Monitoring





- Python-based tools used for **network traffic monitoring**
- Real-time data gathered using **SNMP and sFlow**
- Measure link occupancy, find the most active users of the network
- Very useful for troubleshooting network congestion issues

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