NWS Linux Implementation

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Internet/Web

- Apache is used on all webfarms
- Most webfarm administrators use linux workstations and many open source tools to manage the webfarms
- MRTG is used to monitor system and network status
- NWS operates six linux based webfarms capable of handling 100 million hits per day

Internet/Web

- OpenSSL and ssh are widely used to manage the NWS webfarms and support secure communication between them
- Rsync is widely used to move data between servers and the webfarms
- Linux virtual server is used to handle failover of data servers and load balancing between web servers

AWIPS Linux Migration

- Objectives
  - Replace approximately 300 HP Communications Processors with Linux Servers (complete)
  - Add approximately 140 High Availability Linux Clusters to NWS field forecast offices (complete)
  - Drastically improve AWIPS system performance
  - Replace nearly 900 HP-UX graphics workstations with Linux workstations (nearly complete)
  - Replace approximately 900 HP X-Terminals
  - Replace 550 aging HP-UX High Availability Servers
  - Institute a 3 yr. Hardware replacement cycle -- Take advantage of Moore's Law

Motivation for Linux Evolution

- Workstation (WS) performance problems at individual sites during severe weather
- High resolution IFPS/GFE operations
- Data Server (DS) performance problems
- Projected increases in the volume and resolution of data and information the system must receive, process, display, and transmit
- Some hardware components are approaching End of Life (EOL) thresholds
- AWIPS Hardware Maintenance Costs (>5M/yr.)
- Intel platforms running Linux are cost effective

PHASE I LINUX PERFORMANCE METRIC IMPROVEMENT

	(Old Baseline) HP WS (100 Mbps)	Linux WS (10 Mbps LAN)	Linux WS (100 Mbps LAN)	(Phase II step 1) ** Linux WS, PP, & CP
T (secs) *	247 Sec.	174 Sec.	127 Sec.	62 Sec.
CPU	71.6 %.	13.2 %	16.1 %	13.1 %

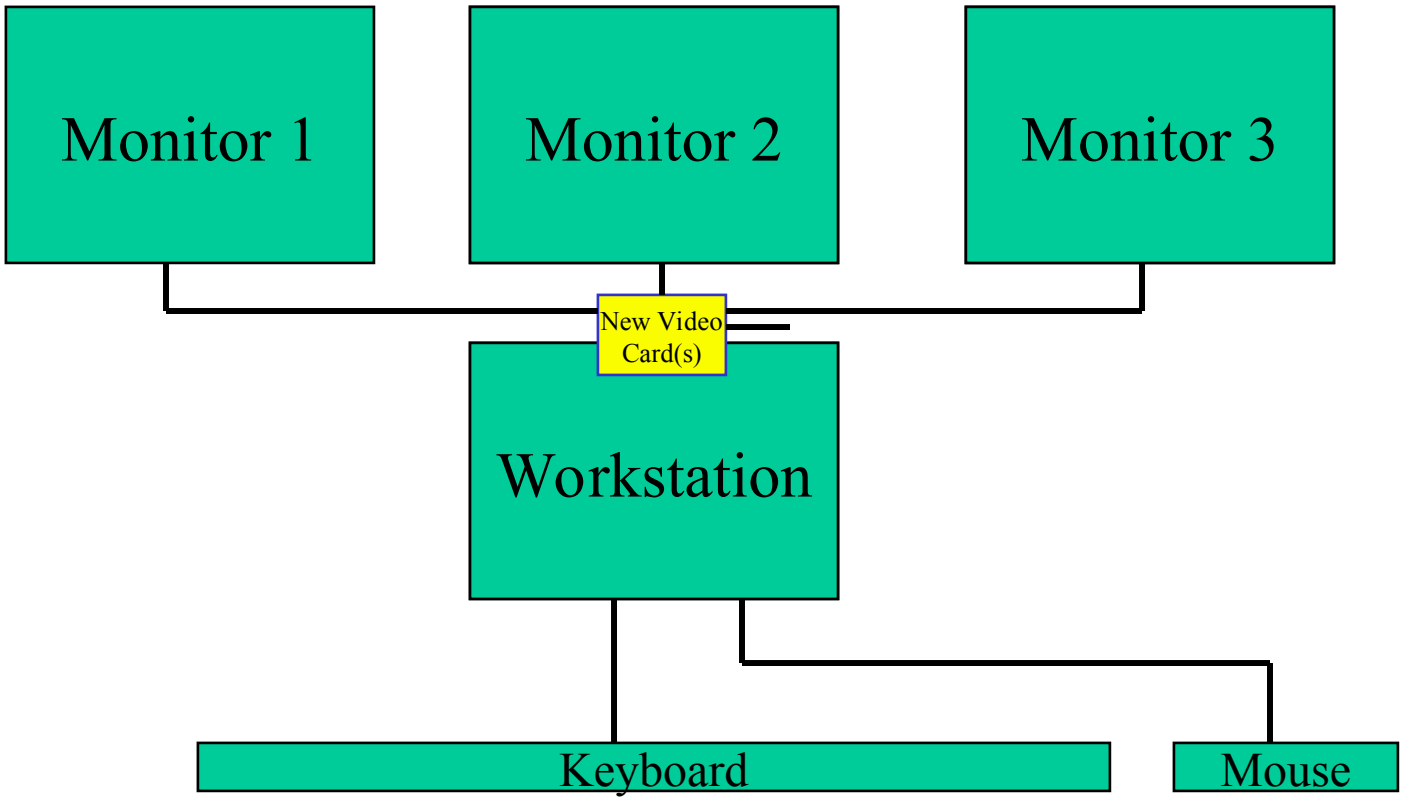
* "T" above is the total time required to run a series of scripted "Autotests" which perform meteorological actions such as loading various loops of model, satellite, radar, and observational data, in multiple panes simulating severe WX workstation ops.

** From Testing on the NHDA system conducted on 9/9/03 after Linux WS Mod Kit installation

Strategy for Linux Phase II

- Develop Target Architecture that builds on investments made in Phase I
- Look at projected demand for computing resources, and bandwidth required for AWIPS over the next 10 years
- Add system resources (MFLOPS, MBPS, etc) to architecture to meet projected demand
- Change AWIPS Maintenance Philosophy to support a 3 year refresh cycle partially funded by hardware maintenance savings reaching $5M/Yr in FY-08
- With a 3 year refresh cycle, Moore's Law will assure an exponential growth in site computer power to keep up with exponential growth in data volume

AWIPS Linux Workstation Architecture



AWIPS Linux Pre-Processor Architecture