

Linux in the Accelerator Division

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Linux in the Accelerator Division

- AD is a medium sized Linux user (~500 nodes)
- Lots of servers, a few desktops
- Many open source services in use:
 - NFS
 - Apache
 - Tomcat
 - MySQL
 - PostgreSQL
 - Samba
 - Amanda
 - RabbitMQ

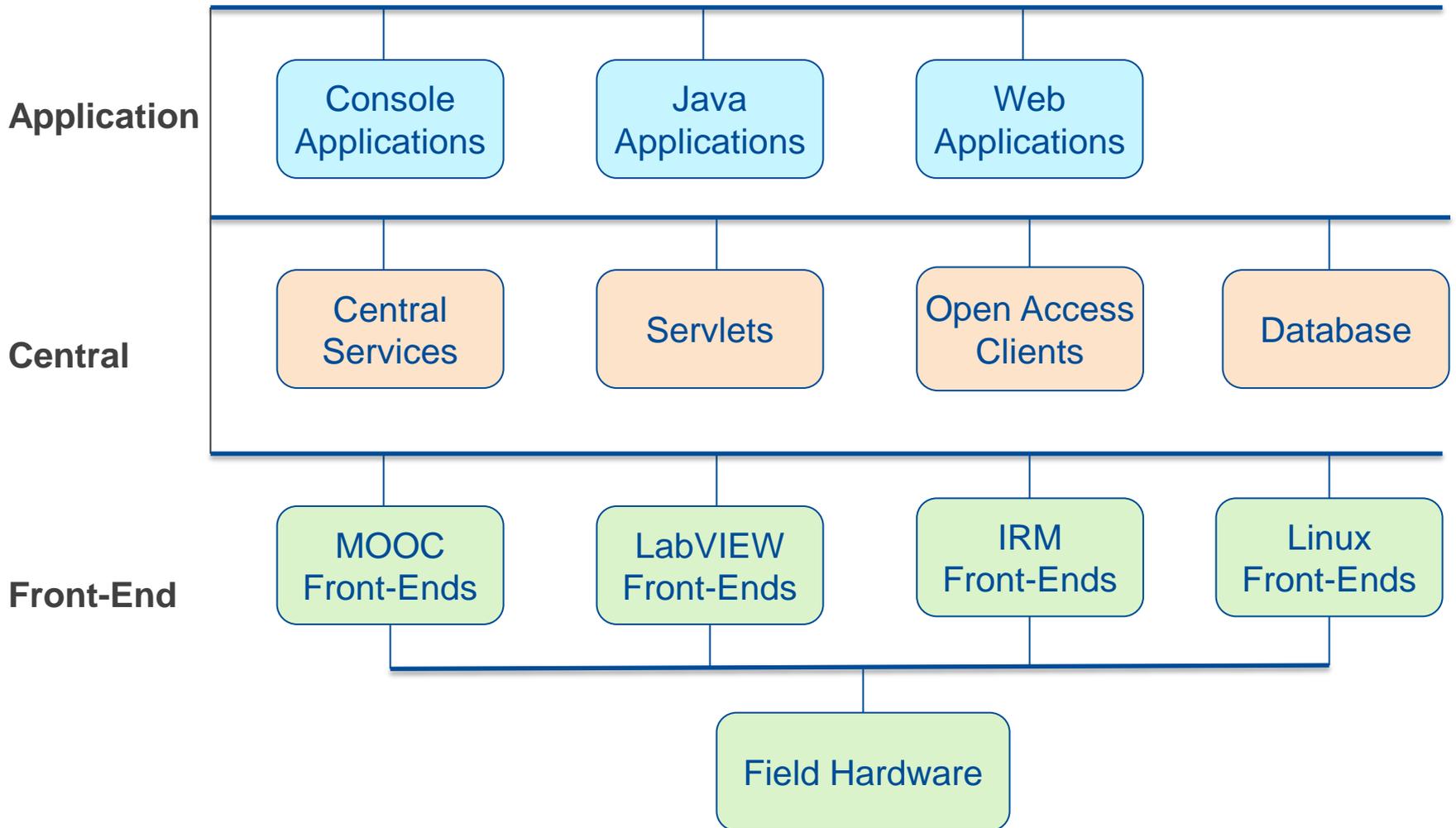
Linux in the Accelerator Division (cont)

- Compute cluster used by the Accelerator Physics Center
- Electronic log book
- Safety system displays
- Various embedded systems
- Miscellaneous other things...
- Accelerator Control System

Accelerator Controls

- Biggest user of Linux in AD (~250 nodes)
- Nervous system of the accelerators and beam lines
- Evolves with the needs of the accelerators
- Historically ran on proprietary DEC hardware and VMS
- Currently on commodity Intel hardware and Scientific Linux
- In the process of converting from 32-bit SLF5 to 64-bit SLF6
- Minor Application protected by firewall
 - No direct access to internet
 - Accessed through gateway nodes

Accelerator Control System Overview



Controls Front-Ends

- Interface field hardware to the control system
- Many front-ends (~600)
- Most use a commercial OS such as VxWorks or PSOS
- Newest generation is using Linux
- Small but increasing number of Linux front-ends
 - Run on a mix of specialized hardware and commodity servers
 - Some use Scientific Linux
 - Some use custom real-time Linux

Controls Central Layer

- 130 Linux nodes
- Databases
- Data loggers & archivers
- NFS File services
- Web and Tomcat services for web apps
- Samba for desktop access to controls data
- Data acquisition messaging services
- Software Front-Ends
- Alarms monitoring

Controls Applications

- 80 application servers (Linux)
- Many applications (~700)
- Large investment in creating and testing applications
- Frequently written by part time programmers (accelerator experts, operators)
- Console applications
 - C/C++, use X protocol
- Java applications
 - Run on Linux servers, display over X, or...
 - Run on user's desktop, use central services for data
- Web applications
 - Use central services for data

Final Thoughts

- Scientific Linux is a good fit for AD applications
- Some things we like about it:
 - Long term support and stability
 - Automatic security updates
 - Not too bleeding edge
 - Lots of open source software packaged for it
 - The community of users
- Questions?