The

VMS ———— LINUX

Controls Software Migration
• ~3 Years ago AD decided to migrate the accelerator controls from VAX-VMS to Linux

• The migration was planned to take place in three phases..
  – Phase I: console infrastructure
    • Completed early this year
  – Phase II: console applications
    • Will complete by end of December
  – Phase III: system services
    • Scheduled to be completed during next major shutdown
Major Players

• Phase I
  – AD Controls Dept, led by Carl Schumann

• Phase II
  – Division wide effort
  – P.K., C. Schumann, W. Kissel

• Phase III
  – AD Controls Dept, led by Carl Schumann
Strategy

• Chose to migrate applications a few at time rather than all at once

• Duplex Consoles
  – Run Linux or VMS version depending on each application’s migration status
  – Ability to run both versions side by side for testing
  – Ability to revert to the VMS version in case of problems with newly certified Linux versions
Strategy (cont.)

• Communication between applications that involves binary floating point data
  – Many paths: Startup arguments, network communication, shared files, etc.

• Decided to make VMS floating point format the “lingua franca”
  – Avoided having to modify VMS applications and existing binary files
  – Effectively decouples the migration of applications that “talk” to each other
  – Creates an ugly legacy issue for new applications
Phase II

• Accumulated “soft” information about each application
  – Updated keeper information
  – Determined department affiliations
  – Classified by sensitivity to operations
  – Identified obsolete applications (25%)

• Controls department ported applications
  – Fixed compiler errors (C++ compiler on Linux)
  – Identified and addressed known issues (i.e. floating point, VMS file specifications, etc)
Testing

- Required level of testing depends on the applications sensitivity
- Insensitive: Keeper tests and signs off.
- Moderate: Keeper and affiliated department liaisons sign off on testing
- Sensitive: Keeper and affiliated department liaisons sign off on testing AND testing must be scheduled through operations.
Certification

• Once all sign offs have been logged in the database the application is ready for certification

• Certification is done through a gatekeeper
  – Control rate
  – Give operations a “heads up” before a sensitive application is certified

• Once certified, the Linux version becomes the default launched by the duplex consoles
Testing

• An application is not considered to be migrated until it has been certified as working on Unix

• Level of testing will depend on ...
  – Program complexity
  – Operational sensitivity

• The keeper can handle simple applications

• But some will probably require ...
  – Beam time for testing and debugging
  – Formal “sign-offs” by all affiliated departments
• 87% complete on Oct. 27
  – 502 applications certified
  – 4 ready to be certified
  – 63 remain to be tested
  – 68 Linux only applications
Negligible Downtime

- MCR log book search found 4 migration related incidents
  - May 28: Use of uncertified version of T27
  - June 20: I68 problem
  - July 18: Tev orbit monitor problem. Testing not properly scheduled
  - July 21: Phase III work clogs file server
- No down time was logged for any of them
Future

- Will complete application migration by end of this year
- Start decommissioning 70 VAX’s 1/1/2007
  - Dismantle duplex console infrastructure
- Complete decommissioning before 2007 shutdown
- Complete phase III during shutdown
  - Control system becomes independent of VAX-VMS machines