

# ***The Future of Fabric Management***

**GridPP 7th Collaboration Meeting  
30th June 2003**

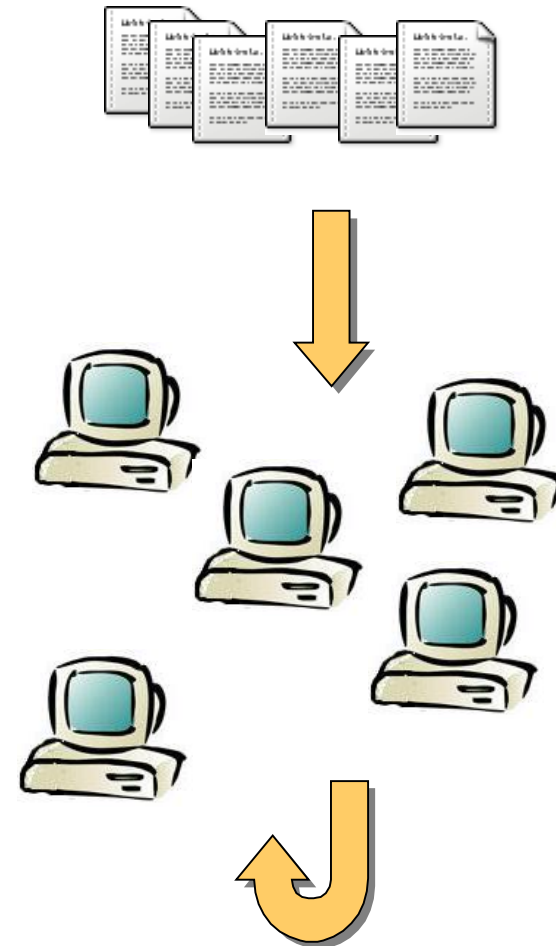


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# The Configuration Model

- Manage the whole fabric
  - Servers and well as end-nodes
  - Relationships
- A Declarative Specification
  - Not procedural
- Deployment/Installation
  - No manual intervention
- Autonomic Maintenance
  - Fabric reconfigures to track specification changes
  - Fabric reconfigures to absorb failures
- Monitoring





# **Configuration Specification**

- A high level representation
  - We need a node with parameters X, Y, Z ... ✗
  - We need a web server ✓
- Policy driven
  - Nodes X and Y are DHCP servers ✗
  - We need two DHCP servers on this subnet ✓
- A well-defined semantics
  - For correctness & reliability
- Support for devolved management
  - No one person (or even organisation) can manage the whole fabric
  - Composition & fine-grained authorisation



# ***Deployment & Maintenance***

- Groups of nodes must make some autonomous configuration decisions
  - Some information is only available locally
  - This is necessary for autonomic fault recovery
  - This is necessary for scalability
- The central server must provide the policy
  - “Agree among yourselves on two DHCP servers”
- Open Issues
  - How do we do validation ?
  - How do we sequence changes ?
  - How do we schedule changes ?

# Projects

- The LCFG Project
  - Informatics project
  - An ongoing testbed for configuration research
  - An 800 node production system
- GridWeaver
  - eScience funded project, joint with HP Labs
  - Very useful background cases studies and surveys
  - Specification representations using SmartFrog
  - Autonomic fault recovery with SmartFrog and LCFG
  - OGSA printing service demonstrator at GGF
- Dynamic Configuration for OGSA Services
  - JISC funded project (starting in October)
  - Reconfigure fabrics on demand to meet requirements of Grid jobs

# Projects

- Configuration languages
  - PPARC-funded studentship
  - Languages to support constraints and policy
- EDG WP4
  - PPARC funded
  - WP4 software development
- Lssconf
  - An informal research collaboration
  - Annual workshops attached to LISA, mailing list
- Supporting Grid Fabric Management with Quantitative and Qualitative Analyses
  - EPSRC fundamental challenges bid
  - Analysis of failures due to configuration errors

# ***The Future ?***

- We don't have a very good production fabric management framework
  - But, this is a very expensive engineering project
  - Do we want to attempt this before we understand the issues better?
- We need more fundamental research
  - Into languages
  - Into deployment technologies
- What can we do in the short-term to improve existing tools for end-users ?
- Can we develop a longer-term research plan?