Windows Compute Cluster Server 2003:
An Overview

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Early motivators
- Sophisticated users
- Common problems requiring automation and acceleration
- Affordable commodity machines
- Your pioneering work

Top Challenges
- Setup is painful
- Takes a long time to get clusters up and running
- Clusters are separate islands
- Lack of integration into IT infrastructure
- Job management
- Lack of integration into end-user apps
- Application availability
- Limited eco-system of common applications that can exploit parallel processing capabilities

CCS Key Features
- Node Deployment and Administration
  - Task-based configuration for head and compute nodes
  - UI and command line-based node management
  - Monitoring with Performance Monitor (Perfmon), Microsoft Operations Manager (MOM), Server Performance Advisor (SPA)
- Integration with existing Windows and management infrastructure
  - Integrates with Active Directory, Windows security technologies, management, and deployment tools
- Extensible job scheduler
  - 2nd party extensibility at job submission and/or job assignment
  - Submit jobs from command line, UI, or directly from applications
  - Simple job management, similar to print queue management
- Secure MPI
  - User credentials secured in job scheduler and compute node
  - Based on standardized MPI stack (LAN, MPICH2)
  - Microsoft provided stack reduces application MPI incompatibility issues
- Integrated Development Environment
  - OpenMP Support in Visual Studio, Standard Edition
  - Parallel Debugger in Visual Studio, Professional Edition

Leveraging Existing Windows Infrastructure

Windows Compute Cluster Server 2003
Faster time-to-insight through simplified cluster deployment, job submission and status monitoring
Better integration with existing Windows infrastructure allowing customers to leverage existing technology and skill-sets
Familiar development environment allows developers to write parallel applications from within the powerful Visual Studio IDE

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Simplified Setup
- Add Head Node to AD
- Install Compute Cluster Pack and its prerequisites
- Follow 4 step Todo Wizard
  - Assign networking interfaces
  - Configure Remote Installation Services
  - Add Compute Nodes
  - Manager cluster users

New Admin Console
- Not building a new systems management paradigm
- Leveraging MMC for simple management (MMC 3.0)
- MMC used for cluster administration
  - Has 5 branches
    - Start Page
    - To Do List
    - Node Management
    - Remote Desktop
    - Performance

New Job Submission and Monitoring UI
- Win32 App
- Centrally manage the entire job queue
- Print queue manager like experience
- Ability to save and submit jobs using templates
- Automatically create multiple tasks

Scaling Excel
- Excel Services on Windows Compute Cluster Server 2003
- Excel "12"

Excel & Windows CCS
- Customer requirements
  - Faster spreadsheet calculation
  - Free-up client machines from long-running calculations
  - Time/mission critical calculations that must run
  - Parallel iterations on models
- Example scenarios
  - Schedule overnight risk calculations
  - Farm out analytical library calculations
  - Scale-out Monte Carlo iterations, parametric sweeps

Resources
- Microsoft HPC web site (evaluation copies available)
  - http://www.microsoft.com/hpchpc/
- Microsoft Windows Compute Cluster Server 2003 community site
  - http://www.windowshpc.net/
- Windows Server x64 information
  - http://www.microsoft.com/server/x64/
- Windows Server System information
  - http://www.microsoft.com/wss/