transtec and Windows CCS
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transtec AG - Locations

- Schweiz 1985
- Großbritannien 1991
- Frankreich 1993
- Niederlande 1996
- Österreich 1996
- Belgien 1999
The Competence Center

• Business unit founded in 2002

• Complex it-solutions based on transtec hardware

• about 15 engineers that cover nearly all topics of modern it-business
Services around complex it-solutions

Three core topics:

Virtualization
- XEN
- VMWare

Storage
- NAS-Systeme
- SAN-Storage
- Storagevirtualisation

Cluster
- HA-Cluster
- HPC-Cluster
transtec HPC Clustering

• Started with Clustering in 2000
• Clusters from four up to more than 200 nodes
• More that 300 installed systems all over europe
• Based on Linux and Microsoft Operating Systems
transtec HPC Clustering – Technology partners

- Intel
- ASUS
- AMD
- Supermicro
- Mellanox
- Myricom
- Microsoft
- Novell
transtec HPC Clustering

HPC goes mainstream
Windows Compute Cluster Server 2003 contains:

• Windows Server 2003 – Compute Cluster Edition
  • Support for high performance Hardware (x64 Bit architecture)
  • Support for high performance interconnects (Infiniband, Myrinet)

• Compute Cluster Pack
  • MPICH2
  • Job Scheduler
  • Cluster Resource Management Tools
installation and management
Compute Cluster Topology

IT Infrastructure

- AD
- DNS
- DHCP
- Windows Update
- Monitoring
  - MOM
  - others
- Systems Management
  - SMS
  - andere

Public Network

Private Network

Compute Cluster

- Compute
  - Node Manager
  - MPI
  - Management
- Compute
  - Node Manager
  - MPI
  - Management

Head

- Admin / User Cons
- RIS
- Job Scheduler
- MPI
- Management
- NAT

MPI Network
Management Features

Head Node Installation
- Operating
  - Windows 2003 Compute Cluster Edition
  - Windows 2003 SP1 Standard & Enterprise x64
  - Windows 2003 R2 x64
  - Compute Cluster Pack (with SP1)

Integration with existing infrastructure
- Uses Active Directory and Windows security
- Integration with MS Management Technologies (MOM, SMS… usw.)

Simplified administration and node-installation
- Different ways to install compute nodes (RIS, CD, CLI)
- GUI and CLI for Node management
- Monitoring with Perfmon, MOM or management tools of other suppliers
Compute Cluster Monitoring

Queue Monitoring
- Number of Jobs in the Queue (and their status)
- Number of Tasks in the Queue
- Number of Tasks in the Queue

Node-Monitoring
- Number of nodes
- Nodes with certain status
- Number of CPUs
- Number of used CPUs

OS-performancecounter (CPU, Memory, Disk, Network usw.)
Admin Console (Start page)
Admin Console (Node Management)
Common Job / Task Types

- Serial Application: One Job, One Task
- MPI Application: One Job, Multiple Tasks
- Parametric Sweep Application
- Task Flow
Compute Cluster Job Manager

- Centrally manage the entire job queue
- Print queue manager like experience
- Ability to save and submit jobs using templates
- Automatically create “Parametric Sweep”
Driver Model

HPC Application
  └── MPI
    └── WinSock DLL

GigE Switch
  └── Ethernet
    ├── IP
    └── GigE RDMA
      ├── WinSock Provider DLL
        └── TCP
          ├── IP
          └── NDIS

User Mode
  └── User Host Channel Adapter Driver
  ├── User API (verbs based)
    ├── Kernel API (verbs based)

User Mode
  └── OS component
    └── IHV-provided component

Kernal Mode
  └── Virtual Bus Driver
    ├── Miniport (Gig E)
    └── Miniport (IpoIB)

Networking Hardware
  └── Host Channel Adapter Driver
hardware for Windows CCS
Clusternodes
Clusternodes

- Flexible and upgradable systems
- 19“ form factor – 1U or 2U
- Dual Opteron or Dual Xeon
- Dual- or QuadCore CPUs
Networking

- All clusters equipped with Gigabit Ethernet
- High speed interconnect as an option
- Infiniband and Myrinet are certified for MS CCS
transtec services for MS CCS

- turnkey Windows HPC Solution includes:
  - Setup of WDS/RIS for automatic node installation
  - Installation, setup and test of MPI and job scheduler
  - Integration in an existing Active Directory environment
Thanks for your attention

- Website: http://www.transtec.de
- Solutions: http://www.transtec.de/D/D/solutions.html
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