



Intel®
Cluster
Ready



Intel® Cluster Ready Certification

Customer Benefits and Manufacturer Challenges

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- **Management wants to make sure that**
 - **productivity of new HPC system is as high as possible**
 - **return on substantial investment is also substantial**
 - **TCO is as low as possible**
- **HPC users want to ensure that**
 - **the HPC system is available as they need it**
 - **the HPC system is performant and results are accurate**
 - **the system is reasonably easy to use**
- **Cluster administrators like to insist on**
 - **comprehensive documentation and good monitoring tools**
 - **thoroughly tested hardware and software interoperability**
 - **flexible and meaningful troubleshooting tools**

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 - **productivity** of new HPC system is as high as possible
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 - the HPC system is **available** as they need it
 - the HPC system is **performant** and results are accurate
 - the system is reasonably **easy to use**
- Cluster administrators like to insist on
 - comprehensive documentation and good monitoring tools
 - thoroughly **tested hardware** and **software interoperability**
 - flexible and meaningful **troubleshooting** tools

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Challenges of a manufacturer

Productivity
high ROI
low TCO

Availability
Performance
Ease of Use

Hardware Reliability
Software Interoperability
Troubleshooting

As a cluster manufacturer/vendor, we need to achieve all of the above!

But: Any HPC cluster system shows considerable complexity!

Building a turn-key ready HPC cluster system involves 1000+ steps!

And: Most HPC systems differ from each other in detail!

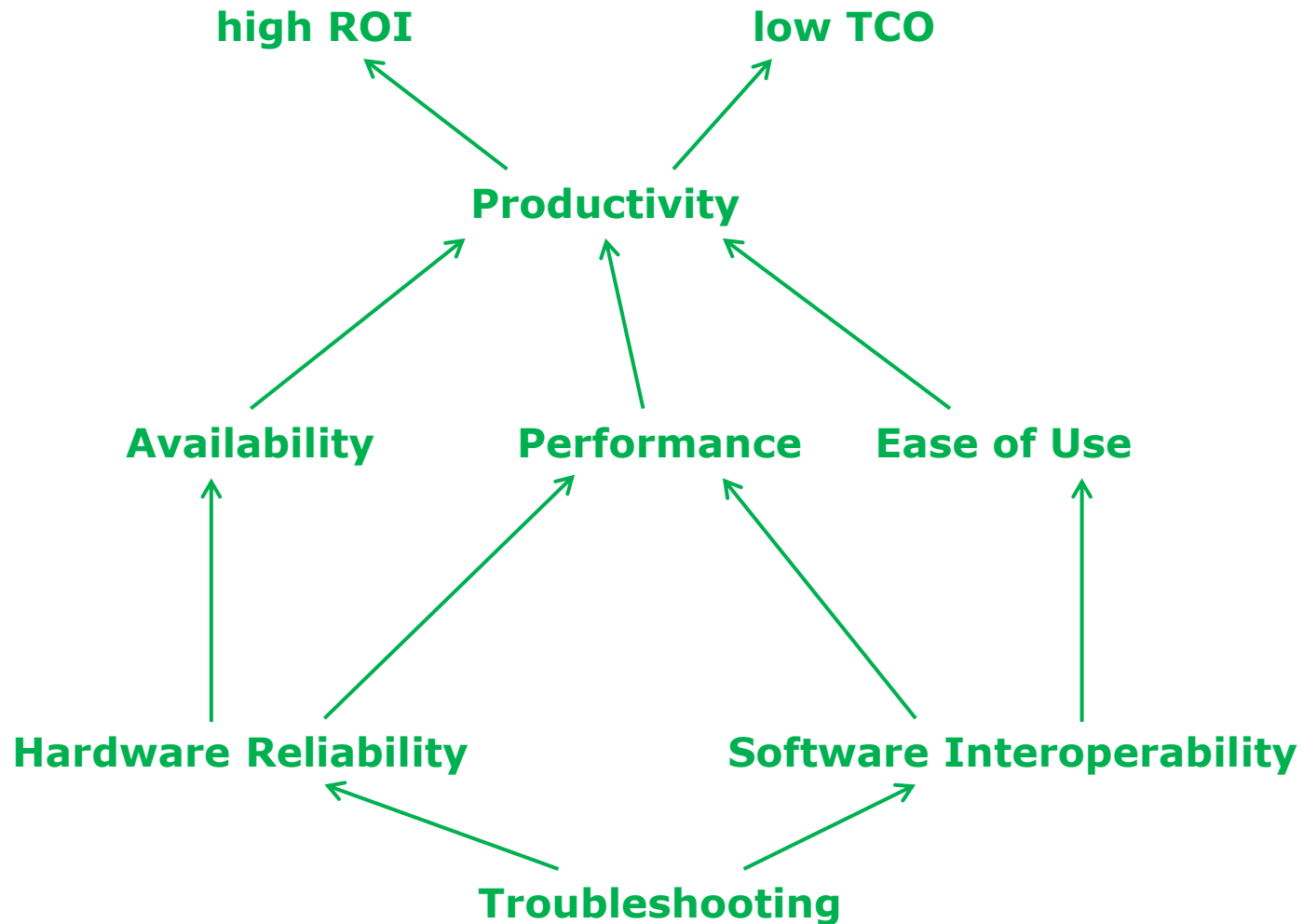
Quality management concentrates on common steps in the design, build, installation and configuration process. Quality process is hard to implement!

Thus:

- **the design process has to be changed frequently**
- **the build process has to be adapted for each HPC cluster**
- **deployment and testing are time-consuming**

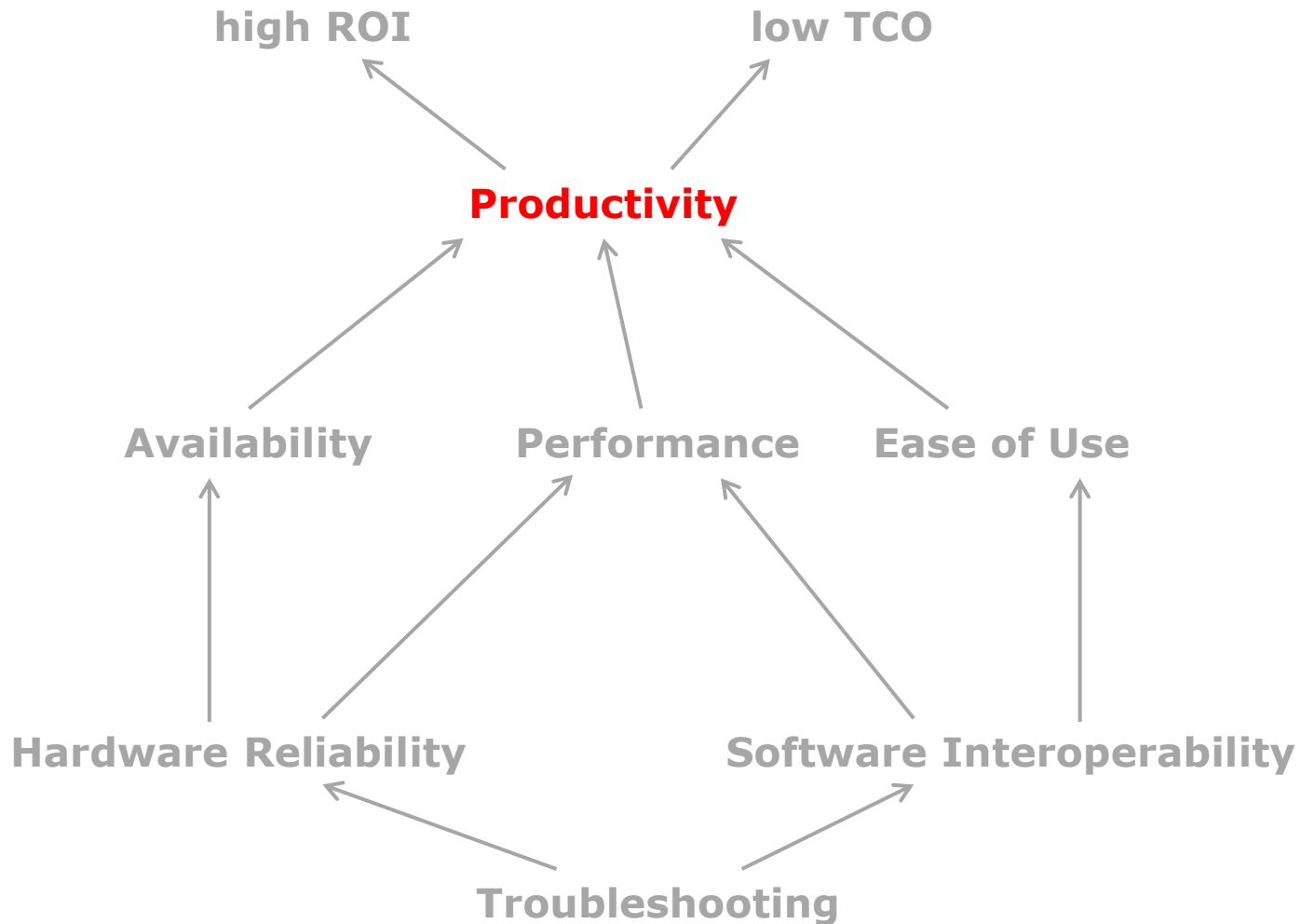
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Benefits for the customer



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Benefits for the customer





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All hardware is checked in the process



BIOS versions of all nodes identical?

CPUs identical?

RAM amount/speed/vendor/rev. identical?

HDDs identical / similar bandwidth?

Ethernet adapter working / identical?

InfiniBand HCAs identical?

checking for possible bottle necks

discovering misconfigurations

documenting possibilities for tuning

Hardware Reliability

Software Interoperability

Troubleshooting





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Software setup is checked in the process



OS versions on all nodes

Libraries and their dependencies

comprehensive check for all defined components

check of user authentication on all nodes

check of permissions on all nodes

identical software configuration/profile?

measuring overall performance (HPCC)

network performance (IMB)

point-to-point / all-to-all checks

Hardware Reliability

Software Interoperability

Troubleshooting



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Manufacturer challenges: discoveries

- BIOS version differs on four nodes
- Faulty RAM modules discovered in two nodes
- Hard drive firmware error in one node
- Two faulty Cat.6 Ethernet cables
- One QDR InfiniBand cable to replace

**Forces us to to optimize quality checks
and to create a perfect configuration!**



Hardware Reliability

Software Interoperability

Troubleshooting



Hardware checks ensure correct basic functionality of each node

Hardware checks prove that documented hardware profile is correct

Intel® Cluster Checker makes sure that any certified application will run

Performance testing shows real life performance of HPC solution

Hardware Reliability

Software Interoperability

Troubleshooting





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Customer benefits / Manufacturer challenges



A small (non-representative) selection of certified ISVs:

Livermore Software Technology Corporation



After rollout of the HPC cluster solution, the Intel® Cluster Checker is left on the master node and serves as a tool for Troubleshooting.

Together with the **transtec 360** service concepts this serves as an optimal base to guarantee the foundation for availability, performance and ease-of-use, and therefore, for productivity.



HPC in Industry

Services to accelerate productivity



- transtec360...stands for clearly defined services that are provided by competent and friendly employees.
- transtec360...offers customised services to meet your individual requirements.
- transtec360...provides IT know-how and helps you to find your optimum configuration.
- transtec360...supports you in planning, installing and successfully completing your IT project.
- transtec360...secures the availability of your hardware and ensures that an incident does not develop into a problem.
- transtec360...supports your IT environment and maintains the performance of your IT systems over their entire life cycle.

HPC in Industry

Services to accelerate productivity



transtec360 SERVICE PORTFOLIO OVERVIEW

IT-Design & Training



PLAN

- || System Analysis
- || Benchmarking
- || IT-Consulting
- || Training
- || Workshop
- || IT-Project-management
- || Expert Leasing

Installation Services



BUILD

- || Integration & Implementation
- || Migration & Updates

Hardware Services



RUN

- || Warranty
- || Pickup & Return
- || Express Exchange
- || On-Site Repair

Managed Services



- || Servicedesk
- || Single Point of Contact
- || Remote Service
- || On-Site Management
- || Network & Security Management

Repair Center Services



- || Repairs of IT-Equipment
- || Chip-Level Repairs

HPC in Industry

Services to accelerate productivity



transtec Customer Service Center helps you fast, direct and unbureaucratic.

- || Hotline Availability: Mon-Fri, from **8:00** to **18:00 CET** on business days, **24x7 stand-by** optional
- || **Direct contact** to the technical Support or Customer Service (no holding-loop, no Call Center, no automated messages)
- || **English, German and French** speaking agents
- || Providing customer-specific Service Delivery Managers (SDM) as a single point of contact for specific customer installations
- || Fast solutions of standard incidents by our own transtec **Knowledge Database**

Continous measurement of customer satisfaction:

> 95% of customers surveyed rated the quality of transtec Customer Service Center with TOP or GOOD

HPC in Industry

Services to accelerate productivity



transtec Customer Service Center: SLA KPIs (Q1/2012) / 6112 delivered IT-Systems

KPI / target	Quote
Complaints (customer complaints) (target <= 0,01 pcs.)	0,00098% (6#)
DOA-Systems (target <= 0,8%)	0,58 %
Reachability Support Hotline (target >= 95%)	99,3 %
Keeping SLAs (Onsite Service) (target >= 99,5%)	100 %
Tickets / month	~1200-1300

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Benefits for the customer

