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Virtualisatie in de procesindustrie.

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Honeywell

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[→ honeywell.com](http://honeywell.com)

Did you know?

- For every dollar spent on a physical machine, approximately 6-8 dollars is spent maintaining it.
- This year more than 10million virtual machines will be deployed
- Virtualization is very often used for Mission Critical applications.
- Virtualization is still the number one IT priority globally.

Virtualization... Today's hot topic

More Virtual Machines are being deployed today than physical

Over 80% of our largest customers have plans to virtualize at L2

Over 75% of servers will be virtualized by 2014

DID YOU KNOW ?

Over 40% of today's machines are now virtualized

Over 50% of our largest customers are already virtualizing today at L3/L4

Virtualization Overview and Roadmap Agenda



Challenges for Existing Systems



Reduce computers



Maintain...



Other Customer Concerns

- Rate of change
- Management complexity
- Lack of skills
- Need to reduce overall lifecycle management costs

Computing Challenges Today

As computing has evolved, an inflexibility and tight coupling has crept into many different layers.



OS is tightly coupled to a physical piece of hardware.



Applications are tightly coupled to the OS



User experience is tightly coupled to both the OS and Application



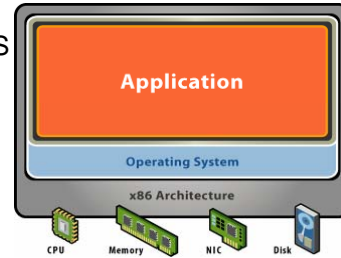
Space
Power
Cooling
Maintenance

Virtualization Overview and Roadmap Agenda

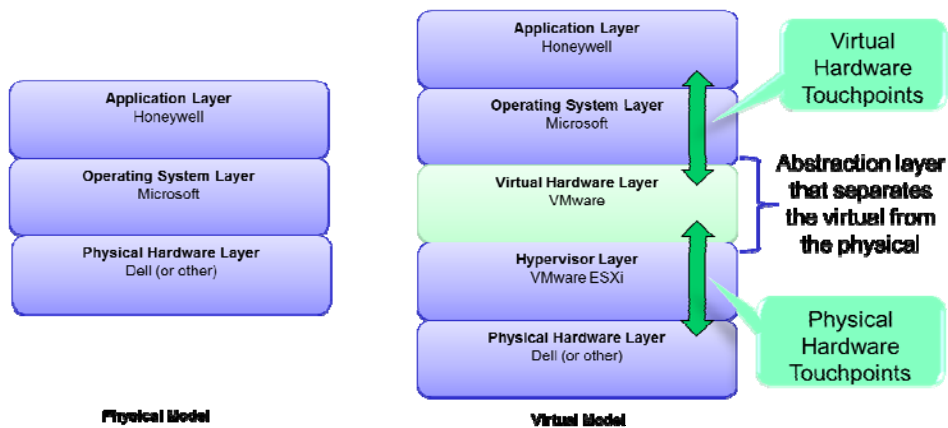


Experience Without Platform Virtualization

- Running multiple applications within an OS can cause conflicts
- Mitigated through having dedicated machines for each major app.
- Therefore Resources are underutilized
- Difficult to source hardware for older operating systems
- Operating systems are tightly coupled with underlying hardware.



Virtualization Touch Points



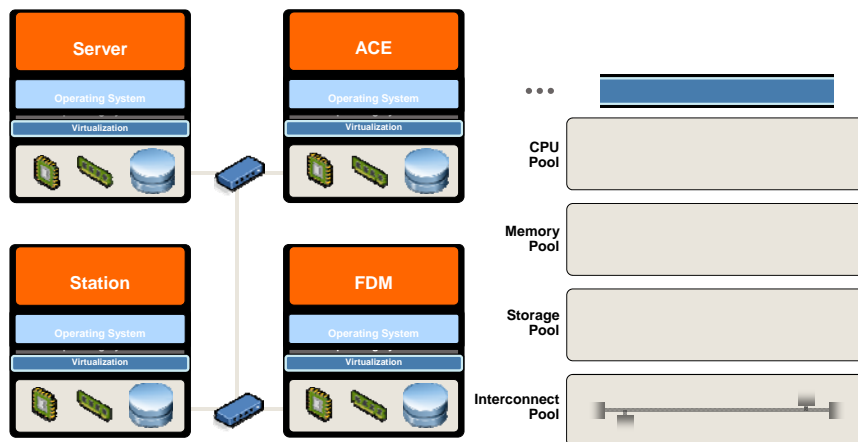
Common Types of Virtualization

- Platform Virtualization
 - Abstraction of the operating system from the hardware
- Application Virtualization
 - Abstraction of the application from the operating system
- Client Virtualization
 - Abstraction of user interface from computing resource

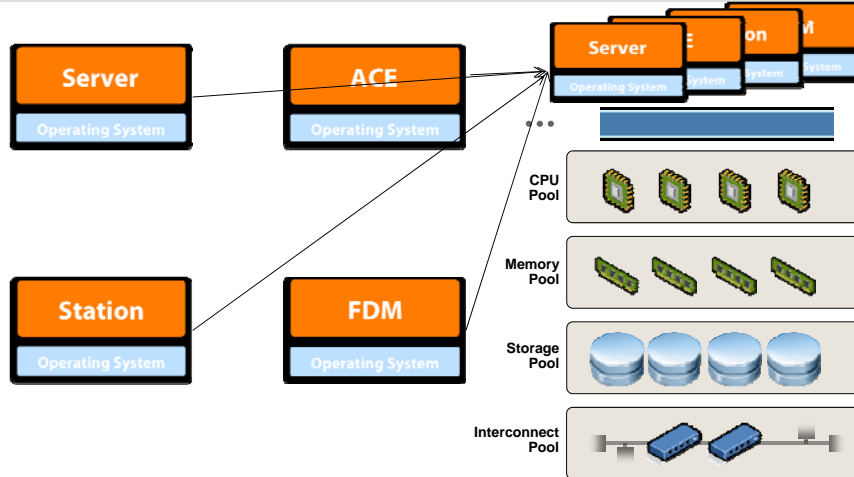


The Traditional way of deploying DCS IT Infrastructure

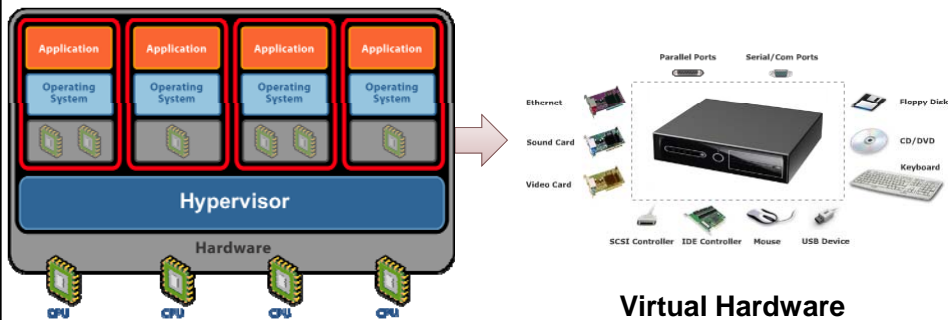
DCS IT on Virtual Infrastructure



The new way of deploying DCS IT



What is Virtual Hardware?



Virtual Hardware

- Virtual Hardware is the component of the Hypervisor that presents the emulated x86
- Has all of the same components that a regular PC does
- Virtual Hardware has a release train that is totally separate from the Hypervisor. This allows for the Virtual Hardware to remain stable regardless of changes to the Hypervisor or Physical Hardware.

Virtualization Overview and Roadmap Agenda



Reduce PC Hardware Requirements



- Run multiple operating systems and application stacks on one physical machine
- For each PC removed, there is a reduction in....



Reduce Impact and Frequency of Change

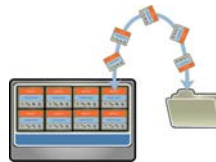


Reduce the Impact and Frequency of OS and hardware change

- Improved OS support for current generation hardware.
- Maintain existing hardware for as long as it meets VM performance requirements
- Impact when a hardware change is required is reduced
- Avoid having to test OS/Application stack against physical hardware

Simplify System Management

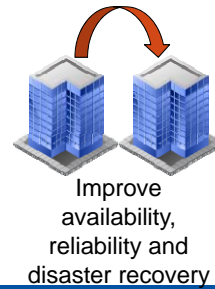
- Provisioning
 - Deploy new machines in minutes rather than hours
- Visibility
 - Centrally administer all virtual machines
- Flexibility
 - Improved hardware choice
- Troubleshooting
 - See the performance of all nodes and receive alerts



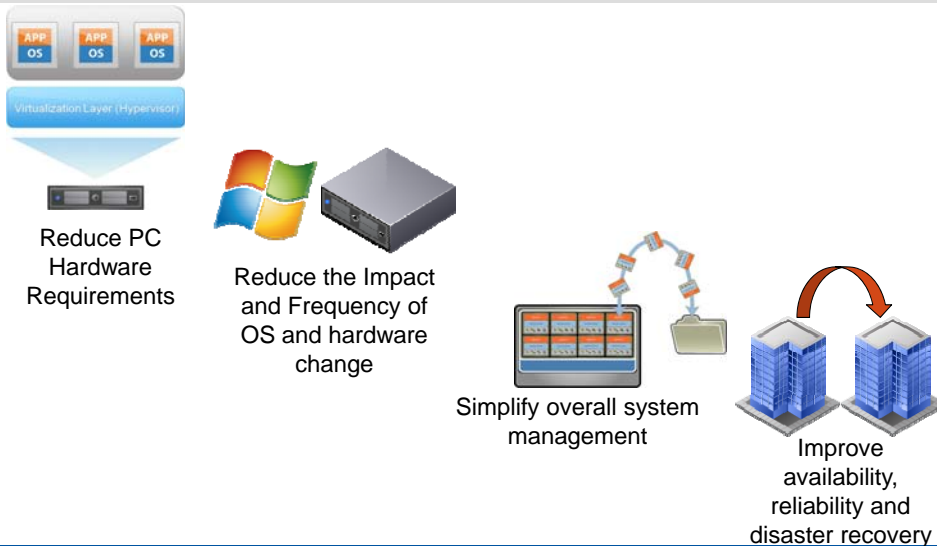
Simplify overall system management

Improve Availability and Reliability

- Improved Application Protection
 - Roll back to known good points using snapshots
 - Simplified disaster recovery
 - Improved application availability
 - Improved driver stability
- Improved Site Protection
 - Honeywell Backup Control Center solution which provides complete site level protection.



Key Platform Virtualization Benefits

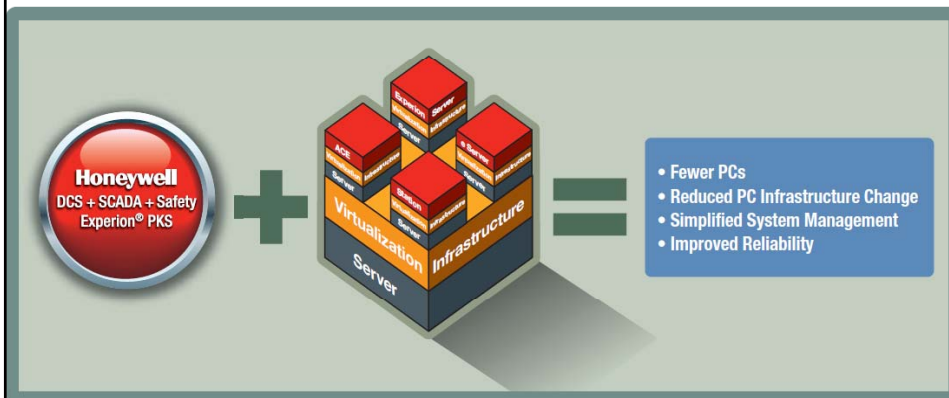


Customers with Lifecycle Challenges

- Hardware Refresh Optimization
- Facility and Utility Savings
- System Management Benefits
- High Availability Solutions for Computer Hardware
- Improved Hardware, OS and App Compatibility
- Simplified and lower risk upgrades and patching



Value of Virtualization



Reduce Lifecycle Management Costs by 30%!

Experience without Client Virtualization

- Client PCs are generally inside the control room
 - Generate heat and noise.
 - Having them inside creates security vulnerabilities (USB sticks etc)
- Mean time to repair is measured in hours
- 1:1 relationship between the client and desktop hardware.



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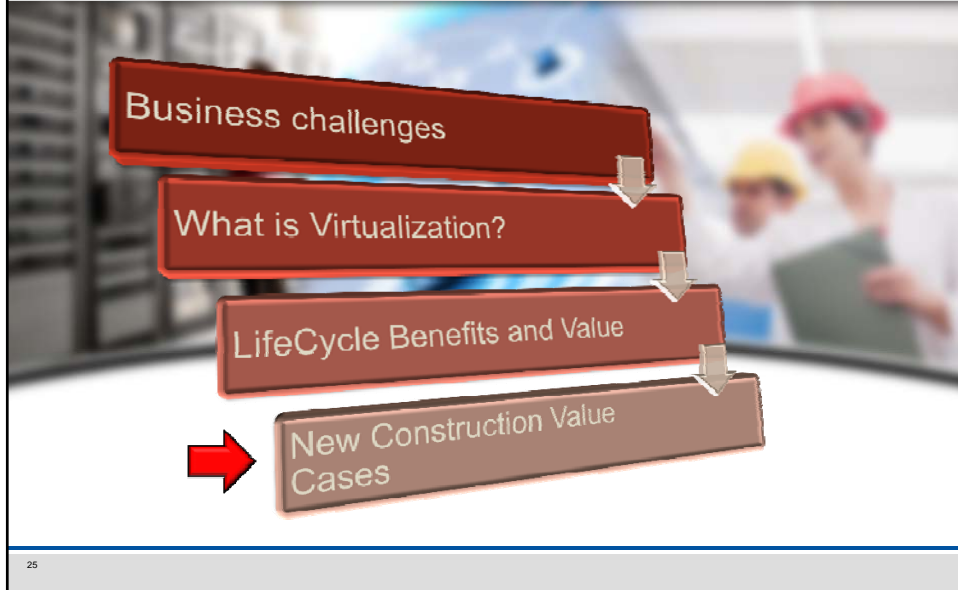
Client Virtualization

- Desktop (s) run on Server
- Operators use “dumb clients”
 - Low-cost
 - No hard drives, etc.
 - Single or multiple Monitor



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Virtualization Overview and Roadmap Agenda



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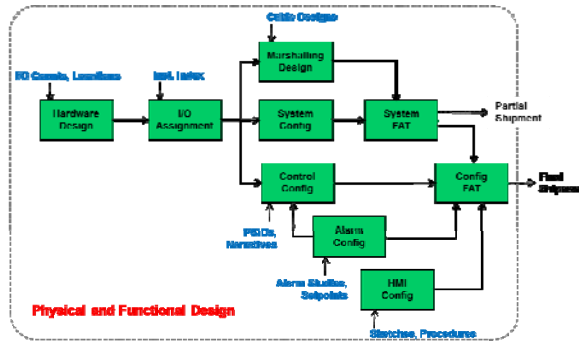
Customers Building New Plants

- **Extend Design Freeze Dates**
 - Engineering can commence without controllers.
 - Allows freeze dates to be extended
- **Virtual Factory Acceptance Tests**
 - Execute FAT without having to fly people in.
- **Delay Hardware Purchases**
 - Development can start without computer hardware
- **Project gets installed with latest hardware**
 - System can be deployed on final hardware later in the project.

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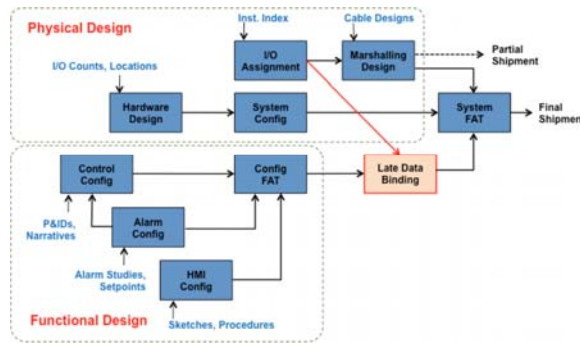
Extend Design Freeze Dates

- Traditional Project Workflows are very sequential

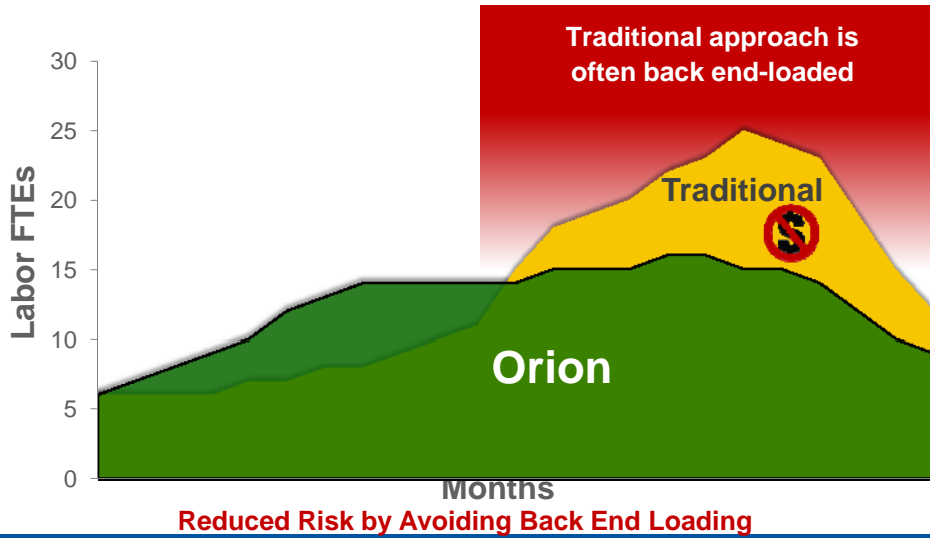


Extend Design Freeze Dates

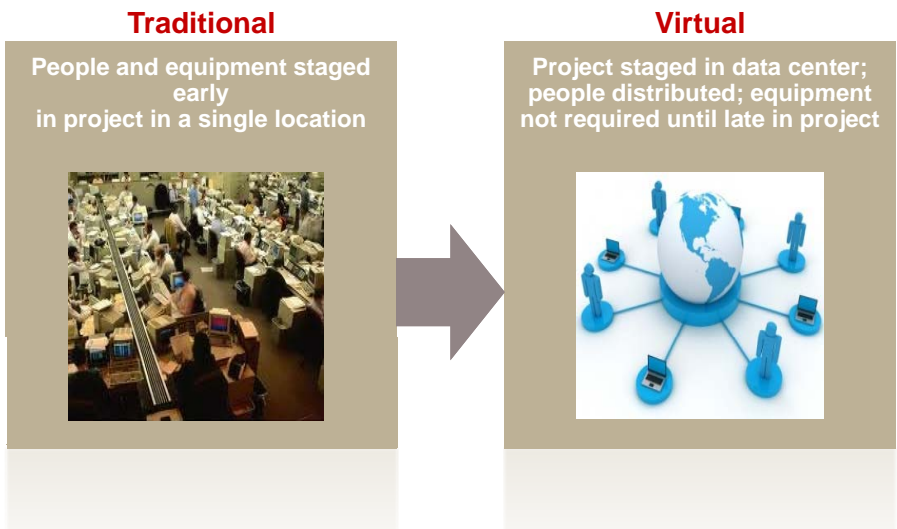
- Traditional Project Workflows are very sequential
- Project Workflows with Virtualization allows the physical and functional design to be separated
- Schedule can thereby be shortened through parallel engineering



Reduced Risk



Flexible Project Execution



Virtual FAT and Staging

- Start projects straight away with Honeywell's virtual staging resources
- Allows for geographically distributed teams to work on the one project
- Perform remote testing
- Deploy the virtual machines to the final hardware without modification.
- Reduce T&L by 50-70%



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Delay Hardware Purchases

- Honeywell's Virtual Staging Resources are used for the initial design work.
- This allows final purchase of the servers used to run the plant to be deferred
- Results in hardware that is more current when it is handed over
- Defers the first hardware refresh
- Avoids hardware refreshes during project execution equating to 100k plus in savings on a typical project



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New Installation Objectives

- **Build on Time and on Budget**
 - Manage to Budget
 - Manage to Schedule
 - Manage Risk
- **Design Efficient Sustainable Operations**
 - Efficient, Repeatable Production
- **Safety and Compliance**
 - Protect People, Assets and Process



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Honeywell has the Solution – Experion PKS Orion

Questions?



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