



The Dezineforce HPC Simulation Appliance for ANSYS:

Managed, HPC based engineering simulation

Dezineforce are leaders in high performance computing (HPC) based engineering simulation and computational design optimisation solutions. Our packaged HPC managed simulation products enable Engineers and design teams to improve product design and productivity, risk free, without any HPC set-up and management overheads

Dezineforce makes HPC as easy as 1, 2, 3

[1. Dezineforce HPC Simulation Appliance](#)

A range of Engineer-ready, HPC based managed simulation appliances transforming engineer productivity and departmental cost efficiency

[2. Dezineforce HPC Simulation On-demand](#)

A web-based HPC simulation on-demand service, offering all the engineering benefits of high-performance computing, securely-hosted, scalable and offsite

[3. Dezineforce Optimisation](#)

Dezineforce's optimisation technology enables engineers and designers to efficiently explore design concepts and identify better engineering solutions

Why High Performance Computing (HPC)?

- **Higher throughput**, faster, more detailed simulations increase design reliability and compress product development time
- **Increased insight** into design space with higher fidelity models drive better design decisions avoiding expensive product failures and associated costs
- **Reduced wait times** provide more time to explore multiple design options

Why do I need managed simulations from shared HPC?

- You need performance beyond that of a single workstation
- You are increasing the number of Engineers or projects
- You need more efficient licence and compute resource scheduling to eliminate Engineer resource wait times

Multi-user, managed HPC increases Engineering throughput, delivering better design insight, improved product reliability and therefore improves business competitiveness and efficiency

Managed, reliable, appliance based high performance simulations

- High performance Intel based architecture, optimised to reliably run parallel simulations from multiple Engineers
- Advanced scheduler manages job queuing based on engineering priorities and available resources
- Scalable 32, 64, 128 core hardware appliance (128 core is datacentre based)
- Microsoft Windows HPC Server based, lowers risk and guarantees support and reliability
- Dezineforce Appliance Service Management allows Engineers to concentrate on their own job
- Dell-sourced hardware includes 3 Yr onsite maintenance



Dezineforce Unique Offering

Dezineforce expertise integrates HPC hardware, OS, scheduler, Engineer manager and engineering applications

Engineering simulation applications already installed and integrated

Appliance is delivered fully configured, self monitoring with verified performance

Dezineforce 'Simulation Manager' tools deliver more reliable simulations with scheduling, Engineer, resource and license management

Appliance 'Smart File Manager' provides reliable file access and management

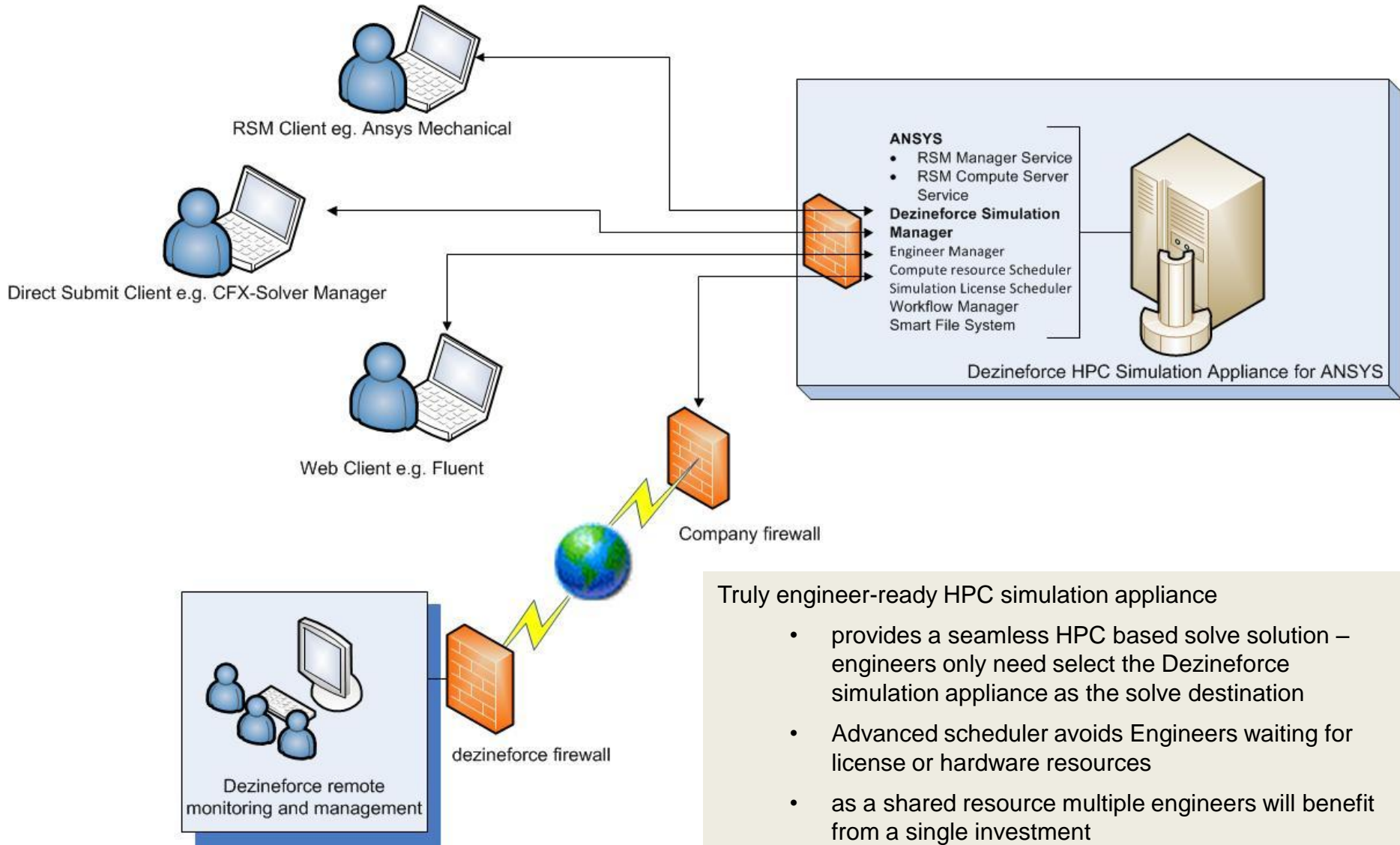
No need for any HPC specify – order – install – build – test – integrate cycles, Dezineforce eliminate these overheads

Engineer Benefit

- Eliminating all implementation obstacles the HPC solution delivers value immediately for multiple Engineers
- Multiple engineers can instantly schedule remote solves from existing engineering applications
- Delivers payback from inception, there are no management or maintenance requirements
- Engineers can schedule multiple jobs in parallel, jobs will run efficiently and quickly, prioritised by Engineering manager
- Engineers can still access and manage work files without interrupting job execution
- Engineers can focus on their core responsibilities. IT do not need to manage more infrastructure. Monitoring, management and upgrades are secure

HPC based simulations made easy – drives engineers to do what they do best

Transparent HPC based ANSYS simulations



Truly engineer-ready HPC simulation appliance

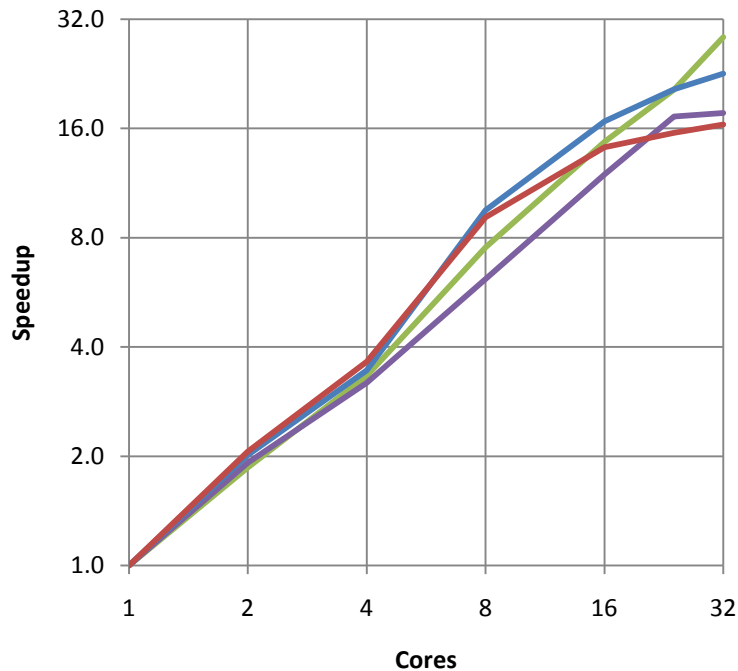
- provides a seamless HPC based solve solution – engineers only need select the Dezinforce simulation appliance as the solve destination
- Advanced scheduler avoids Engineers waiting for license or hardware resources
- as a shared resource multiple engineers will benefit from a single investment

The screenshot displays the ANSYS Workbench environment. On the left, the Project Schematic shows a workflow from Static Structural (ANSYS) to Results. The Outline pane on the right details the model structure, including Geometry, Coordinate Systems, Connections, Mesh, and Solution (A6). A 'Solve Process Settings' dialog box is open, showing 'Dezineforce Appliance' selected as the solve manager. The 'Computer Settings' section shows 'Solve Manager: DezineforceAppliance', 'Queue: Workflow Queue', and 'License: ANSYS Mechanical'. A callout box on the left points to the 'Dezineforce Appliance' entry in the dialog, with the text: 'Engineer simply selects Dezineforce HPC Appliance as solver destination'.

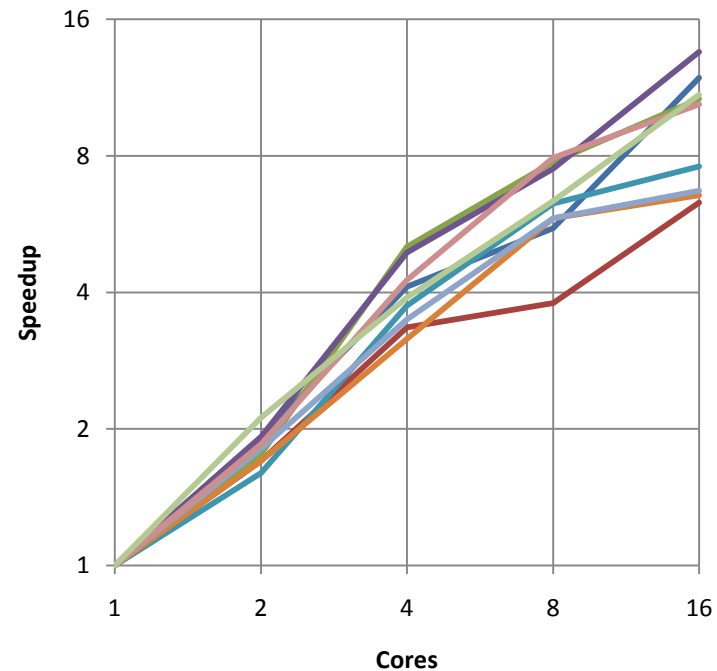
Engineer simply selects Dezineforce HPC Appliance as solver destination

Example performance comparisons

Fluid Dynamics



Structural Mechanics



- 32 core appliance performance improvements are typically:
 - 6-12x for Structural Mechanics e.g. ANSYS Mechanical
 - 10-30x for Fluid Dynamics e.g. ANSYS CFX, ANSYS FLUENT
 - Results compare Intel X5570 based performance from 1 core to 16/32 cores, performance comparison will generally improve further when compared with that of older generation chipsets
- Specified and benchmarked specifically for FE & CFD simulation work

As a true appliance the underlying operating system should not matter, however there are key benefits Windows HPC Server brings to the appliance and its use in an Engineering environment (these benefits apply with or without 'Dezinforce Appliance Service Management'):

- Windows is the platform usually adopted by IT and as a Windows based server this is a natural extension of corporate strategy and easier to administer
- Windows is fully supported and 'standardised' so on-going IT support resource requirements are minimised
- Windows is an open platform enabling easy and simple file and job sharing and collaboration
- There are no 'obscure' applications or patches that need to be installed in a Windows HPC environment improving supportability and reliability
- Windows is scalable, benchmarks demonstrate parity in performance compared with Linux based platforms

Dezineforce managed simulations with reliable and risk free HPC can significantly boost Engineer productivity:

- **Simulations in minutes not hours** reduces waiting time and enables further exploration of the design envelope
- **Advanced Scheduling** maximises compute and licence resource utilisation efficiency
- **Shared HPC appliance** based simulations free up workstations
- **Simulation Manager** drives reliable job execution and keeps Engineers informed
- **Engineer Manager** enables a focus on maintaining business priorities
- **Engineer Ready** packaging enables Engineers focus on product design
- **Smart File Access** minimises failed jobs

HPC based Engineering simulation done properly will significantly improve Engineer productivity and resource utilisation efficiency

Using a shared HPC resource with an advanced scheduler, upfront (CAPEX) budget can be used to increase overall Engineering productivity rather than an individual Engineers productivity

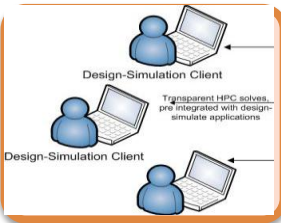
- **Multi-User** HPC benefits multiple engineers & engineering departments
- **Engineer Ready** eliminates the risk of HPC implementation costs and delays
- **Reduced Spend** by eliminating the need to invest in individual engineer HPC workstations & fewer solver licenses required
- **Flexible HPC** more compute cores and RAM memory are available as needed enabling the workstation to be dedicated to pre & post processing and visualisation

6x – 30x performance improvement with advanced scheduling and shared HPC and license resources drives faster payback – the HPC simulation appliance is delivered as a complete, working solution with no SI or set up costs

A shared HPC appliance reduces overall HPC cost of ownership whilst increasing productivity

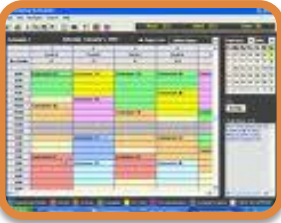
- **Managed & Engineer Ready** means no systems integration or ongoing IT management overhead
- **Reduced TCO** - workstation TCO is considered to be 25% initial purchase and 75% ongoing operations and support, moving the cost burden from large individual workstations to a shared resource reduces ongoing TCO
- **Recovered Engineer time** with more effective IT support available for shared, server based HPC
- **Immediate Productivity** with HPC being immediately and transparently available
- **More Reliable Simulations** with Simulation Management tools handling scheduling, throughput and control, less time is spent managing IT issues

Shared, multi-user HPC frees up budget for productivity
e.g. more engineers doing more with access to more tools



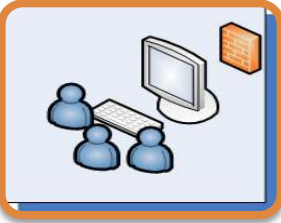
Designed for engineering design simulation users

- pre-installed engineering applications, **HPC simulation productivity in minutes**
- transparent solves using web or direct submit from ANSYS Workbench
- upgradeable platform and services should more compute power be required



Dezineforce Simulation Manager Tools

- manages Engineer productivity and job reliability with efficient and reliable scheduling, license, resource management and file management
- efficient job and scheduling , license & hardware resource management
- user administration and utilisation reporting
- smart file access avoids execution interference



Dezineforce Appliance Service Management

- worry free HPC operations and maintenance (Hardware, Software and Apps)
- appliance self monitoring of hardware, OS and application status with corrective actions taken proactively in conjunction with local admin as required
- all software patches & upgrades fully tested by Dezineforce before deployment increasing service reliability



Office friendly pre-packaged Dell/Windows HPC Server

- specified, built, configured and installed by Dezineforce
- Intel X5570 based, HPC appliance delivers outstanding performance
- upgradeable and scalable (32-64-128 core)
- 32 core appliance has 13A plug in a quiet, office friendly package
- Windows HPC server based, lowers risk and is fully supported



Dezineforce HPC Simulation Appliance Specifications

	32 Core Simulation Appliance	64 Core Simulation Appliance	128 Core Simulation Appliance
Head Node	All Appliances feature a 'Head Node' which hosts the shared, reliable storage, runs the Simulation Manager, Appliance Management Agent, and the Smart File Manager		
Compute Processors	32 x Intel Xeon X5570	64 x Intel Xeon X5570	128 x Intel Xeon X5570
Std Memory	96GB (24GB / node)	192GB (24GB / node)	384GB (24GB / node)
Compute Node Storage	1.0TB (2 * 146GB SAS - RAID 0 / node)	2.0TB (2 * 146GB SAS - RAID 0 / node)	4.0TB (2 * 146GB SAS - RAID 0 / node)
Head Node Shared Storage	2.0TB (6 * 500GB SAS - RAID 5)	2.0TB (6 * 500GB SAS - RAID 5)	12.0TB (15 * 1.0TB SAS - RAID 5/6)
Networking	GigE	GigE, Infiniband DDR	GigE, 10GigE, Infiniband DDR
Enclosure	Acoustic Cabinet	Acoustic Cabinet or Rackmount	Rackmount
Power Requirement	BS 1363 13A (UK 3 Pin)	IEC 60309 16A (Commando)	IEC 60309 32A (Commando)
Dimensions HxWxD	716mm x 780mm x 1210mm	716mm x 780mm x 1210mm or 13U	16U

Thank you, the Dezineforce offer

- 6x – 30x** performance improvement with advanced scheduling and shared HPC and license resources drives faster payback
 - eliminates the need for powerful individual engineer workstations
- eliminates the need for Engineers to wait for resources to come free
 - Dezineforce is so confident that our solution can help your Engineers we are offering a trial run on the 32-core appliance to prove the performance improvements for a single job

(subject to qualification)

- For more information contact us:
 - sales@dezineforce.com

Further information on our website
www.dezineforce.com