

A black Cray CX1 supercomputer node is shown on a desk in a modern office setting. The node is a compact, rectangular unit with a front panel featuring the 'CRAY' logo and a small LCD display showing system status. The background is a blurred office environment with a desk, chair, and window.

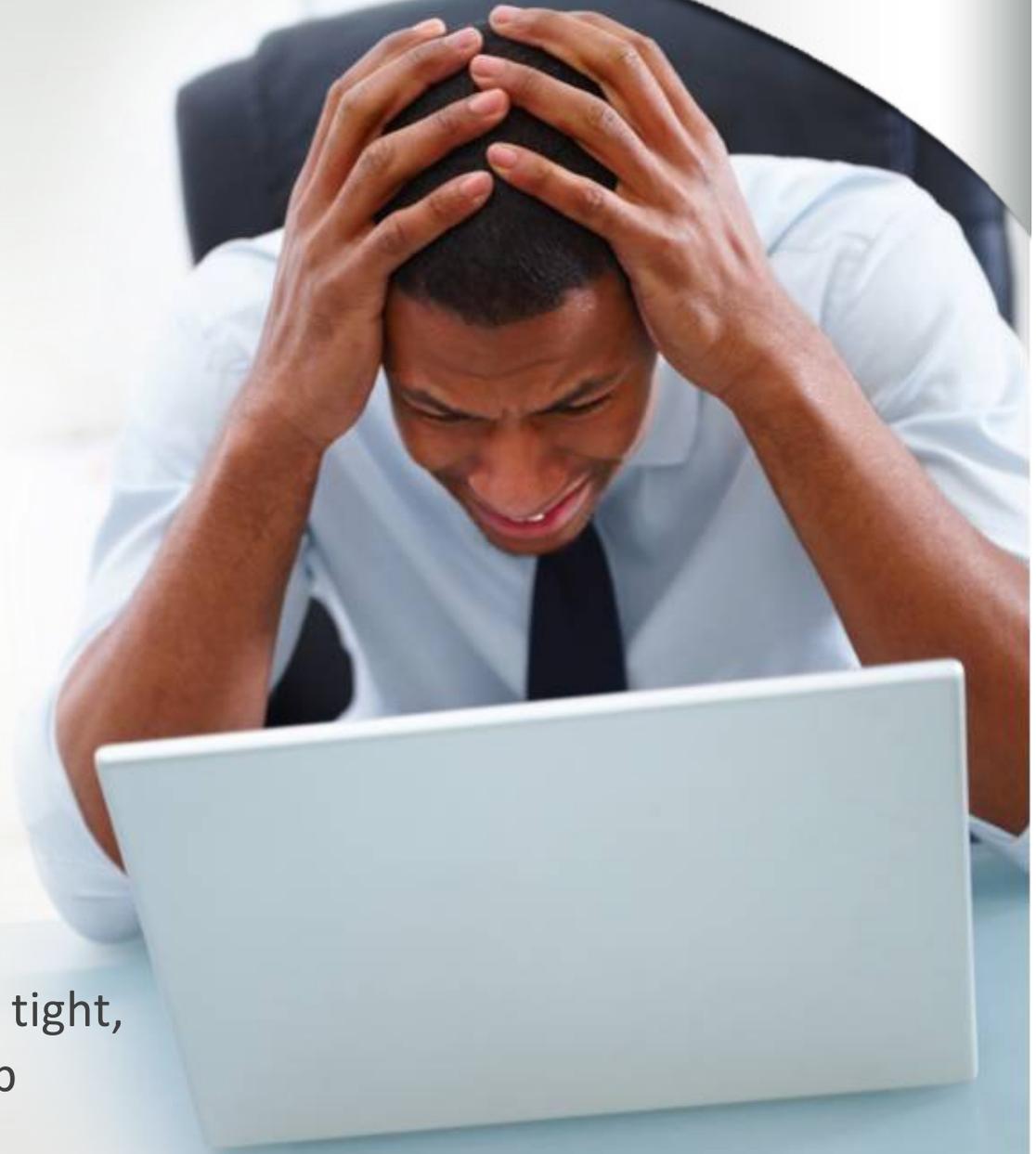
The Power in your hands - The Cray CX1

What do you do? When....

- Deadlines get tighter
- You need to provide ever more accurate or detailed results
- The application you are using cannot complete the job with your local resources – now you have to send your problem to the cluster
- Your manager calls and wants the model rerun with new assumptions and wants results in two hours!

When the results matter and time is tight, you need the right tool to get the job done:

You need to put the power in your hands!



Putting the power in your hands

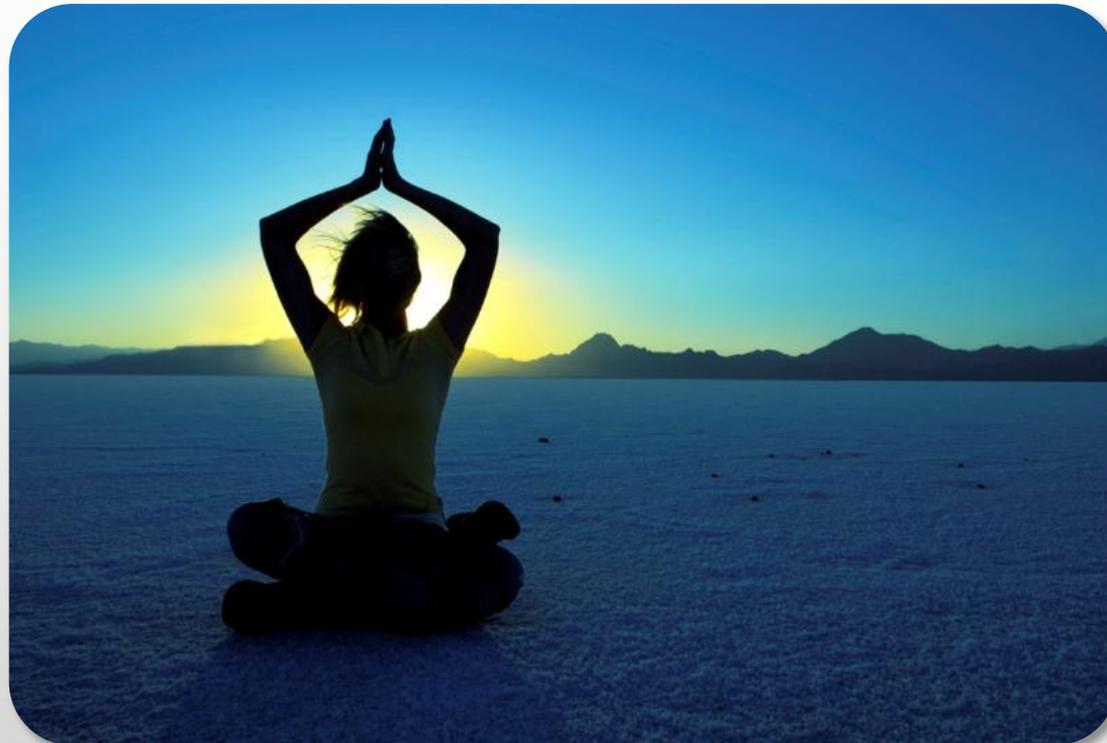
The Cray CX1 puts massive power and flexibility right where you need it
– in your workgroup

- Up to 64 cores of Intel 5500 compute power
- 2D and 3D visualization
- Up to 16TB of storage
- GPU acceleration
- Small footprint
- Uses normal office power
- Active noise suppression



You want Power? - A Teraflop in your office

- Only five years ago the CX1 would have been on the top 500 list of the worlds most powerful computers
- Applications now demand more power than other standard office systems can deliver – you no longer can do the whole job at your desk
- Today, The Cray CX1 puts that power in your hands to get the job done quickly and reliably – making you a master of productivity



So, how does the CX1 deliver this productivity?

- Easy to configure
- Easy to install
- Easy to use
- Easy to maintain
- Flexible options



Easy to configure



Home Products Customer Support Industry Solutions Technical Services About Cray

Products > CX1 > CX1 Home > Configure

CRAY CX1

7/8 slots Remaining

Blanking Blade 7 \$55.00

CX1 Enclosure

CXC108 1 \$9,803.00

Head Node

CN5500-XD - Master 1 \$5,267.00

Cluster Nodes

Options

Packaging Incl.

Review

Total USD \$15,455.00

Currency USD

Country United States of America

Please note that the country corresponds to the end-user's country. To customize a selected item, click on it in the menu above.

CX1 Enclosure Head Node Cluster Nodes Options Shipping Review

Continue



CRAY CX1 ENCLOSURE

DESKSIDE OR RACKMOUNT
8 SLOTS FOR NODE
UP TO 16 PROCESSORS
TOUCH SCREEN COLOR LCD

Please choose one of the following options

CXC108

Quantity: 1

Standard Features:

- Active Noise Cancellation Device
- 16 ports Gigabit Ethernet Switch and Cables

Components:

- CXC108 Chassis
- Rack-Mounting Kit
- 2 x CX1 Power Cord USA 2.5M
- 2 x Single Phase Hot Swap Power Supply

Starting Price: \$9,803.00

Customize

The on-line configurator is easy to use
Allows you to add blades and options
See the price as you build up the system

Easy to configure – The Chassis

Functional Form Factor
Deskside or Rack-mounted

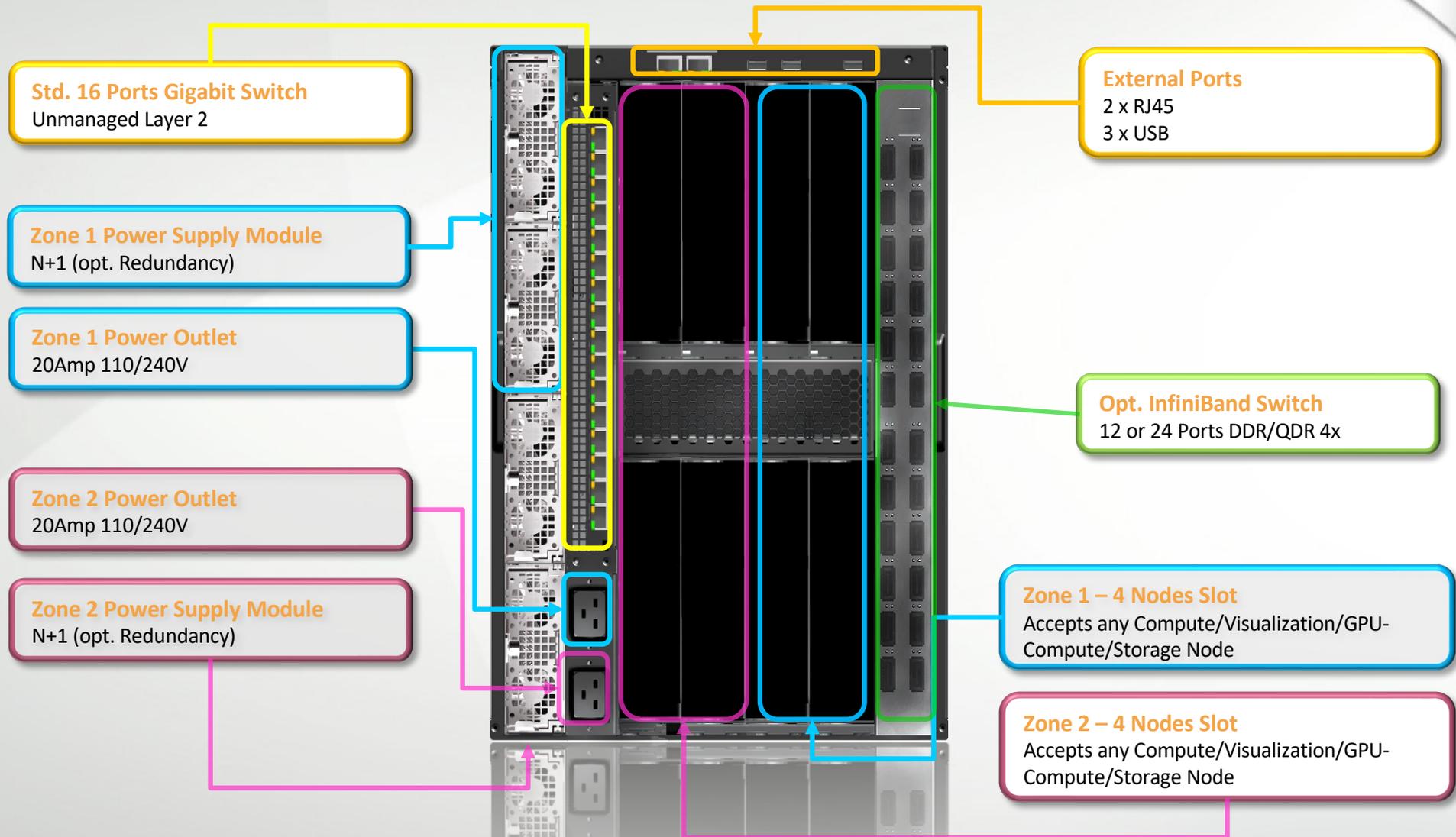
Office Power Compliant
Usage of regular office power
(20Amp/110V or 16A/240V)
Superior Power Efficiency (92%+)

Open Office Noise Level
NR45 Office Compliance



LCD Color Touch Screen
Management Tools

Easy to configure – The Chassis



8 Blade slots in total per chassis

Easy to configure – The blades



Compute Blade

Dual socket Intel 5500 blade (8 Cores)

On board Infiniband and Gigabit Ethernet

Up to 96 GB memory

Maximum of 8 per CX1 chassis



Visualization Blade

Dual socket Intel 5500 blade (8 Cores)

Plus NVIDIA graphics card

On board Infiniband and Gigabit Ethernet

Up to 96 GB memory

Maximum of 4 per CX1 chassis



Easy to configure – The blades



GPU Blade
Dual socket Intel 5500 blade (8 Cores)
Plus NVIDIA Tesla C1060
On board Infiniband and Gigabit Ethernet
Up to 96 GB memory
Maximum of 4 per CX1 chassis



Storage Blade
Dual socket Intel 5500 blade (8 Cores)
Plus 4TB of storage
On board Infiniband and Gigabit Ethernet
Up to 96 GB memory
Maximum of 4 per CX1 chassis



Easy to configure – build to order example 1

Compute Intensive Application Configuration

8 x



All compute – best for scale out parallel applications running MPI

- 16 processors giving 64 Intel 5500 cores with up to 768GB of memory



Easy to configure – build to order example 2 Memory Intensive Application Configuration

6 x



Mixed functionality for the workgroup – best for a team needing storage

- 14 processors giving 46 Intel 5500 cores with up to 672GB of memory
- plus 4TB of storage and a 16 port inbuilt Ethernet switch for team members to connect through

1 x



Easy to configure – build to order example 3 Visualization Application Configuration

4 x



Mixed functionality for the workgroup – 3D visualization with compute power

- 14 processors giving 46 Intel 5500 cores with up to 672GB of memory
- plus NVIDIA Quadro FX graphics for team members to connect through

2 x



Easy to configure – build to order example 4 GPU Acceleration Application Configuration

4 x



GPU for the workgroup – best for a team needing GPU Acceleration

- 8 processors giving 16 Intel 5500 cores with up to 384GB of memory
- plus NVIDIA Tesla GPU acceleration totaling 960 cores for team members to connect through



Easy to configure – build to order example 5

Configure the system to match your needs

2 x



Some of everything for the workgroup
– build the system your team needs

- 8 processors giving 16 Intel 5500 cores with up to 384GB of memory
 - Plus 4TB of storage
 - Plus NIDIA Quadro FX visualization
 - plus NVIDIA Tesla GPU acceleration
- All for your team to share



1 x



1 x



1 x



Easy To Install



The Cray CX1 system ships on a single pallet and can be assembled, loaded and run by a non-technician in about an hour – your choice:



OR



Easy To Install



- The Cray CX1 supports Windows HPC Server 2008
- Makes it easy to integrate HPC functionality into the corporate network
- Single login through Active Directory
- Makes accessing HPC services as easy as getting to email (Exchange), SharePoint or other services
- Windows HPC server provides an entire HPC environment (scheduling, cluster management etc) built on the Windows Server platform



Easy To Install



- The Cray CX1 supports Linux plus Platform Workgroup Manager
- Traditional HPC users can leverage a comprehensive tool set including:
 - Platform LSF for scheduling
 - The Platform MPI library for applications compatibility (formerly Scali and HP-MPI)
 - Platform ISF Adaptive Cluster – allowing for multi-boot capability with Windows and Linux



Easy to Use

Ease of use in HPC is about easy systems management as well as access to the applications you need to do the job

The Cray CX1 is easy to manage:

- Right from your desktop
- Or through a touch screen window in the front of the chassis
- Or Remotely through IPMI



Easy to Use

The Cray CX1's ability to support Windows HPC Server 2008 and Linux (with Intel Cluster Ready certification) delivers the broadest possible library of commercial operating systems

- Ease of use is about being able to run the applications you need, confident in their successful implementation
- Cray partners closely with leading ISV's in HPC to deliver the most comprehensive set of HPC applications



Easy to Use – In The Open Office

- Ease of use is about being able to use the system without special power or data center infrastructure
- The Cray CX1 plugs into normal 20A office power
- The Cray CX1 has active noise suppression which makes it appreciably quieter than competing systems



Table of sound levels L and corresponding sound pressure

Examples	Sound Pressure Level L_p dB SPL
Jet aircraft, 50 m away	140
Threshold of pain	130
Threshold of discomfort	120
Chainsaw, 1 m distance	110
Disco, 1 m from speaker	100
Diesel truck, 10 m away	90
Curbside of busy road, 5 m	80
Vacuum cleaner, distance 1 m	70
Conversational speech, 1 m	60
Cray CX1	~55
Average home	50
Quiet library	40
Quiet bedroom at night	30
Background in TV studio	20
Rustling leaf	10
Threshold of hearing	0

← Closest competitive noise level

} Range of Noise with auto fan speed calibration

Additional Cray CX1 Options

- Pedestal Mount or Rack Mount
- NVIDIA Visualization
- NVIDIA GPU Acceleration
- vSMP – running large memory workloads on the CX1
- The Cray CX1- LC – a Lower Cost option
- The Cray CX1-iWS – an integrated workstation option
- Custom painted chassis option
- Custom skin chassis option

Pedestal Or Rack Mount



or



Visualization Options

Quadro Solution	Application Areas	Processor (CUDA) Cores	Memory
Quadro FX 5800	4D Seismic Analysis 4D Medical Imaging	240	4GB
Quadro FX 4800	Digital Special Effects High end post processing Product Styling	192	1.5GB
Quadro FX 380	Basic HPC visualization	16	256MB



GPU Acceleration Option

Tesla C1060 GPU Board

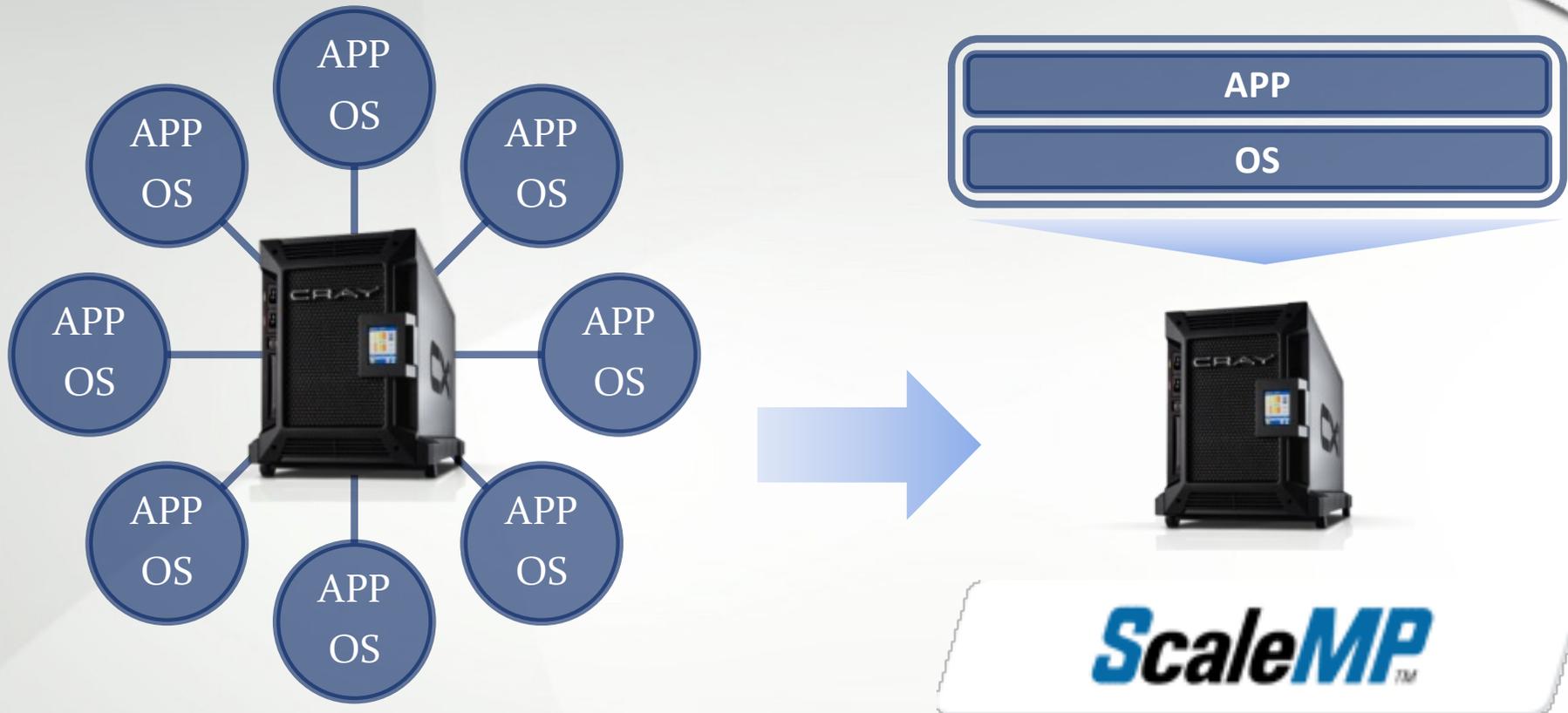


Tesla S1070 1U System



GPUs	1 Tesla GPU (Internal)	4 Tesla GPUs (External)
Single Precision Performance	933 Teraflops	4.14 Gigaflops
Double Precision Performance	78 Gigaflops	346 Gigaflops
Memory	4 GB	4 GB/GPU
Cray CX1 Capacity	Up to 4 per chassis (internal)	Up to 4 per chassis (external, rack mount only)

SMP Virtualization



Break the problem to fit the hardware

- One system to manage
- Single node eliminates cluster management
- Single Operating System
- Avoid cluster file systems
- Hide Infiniband complexities

SMP Virtualization

Cray CX1 Compute Blades

Processors speed/amount or memory amount doesn't have to be same across all boards

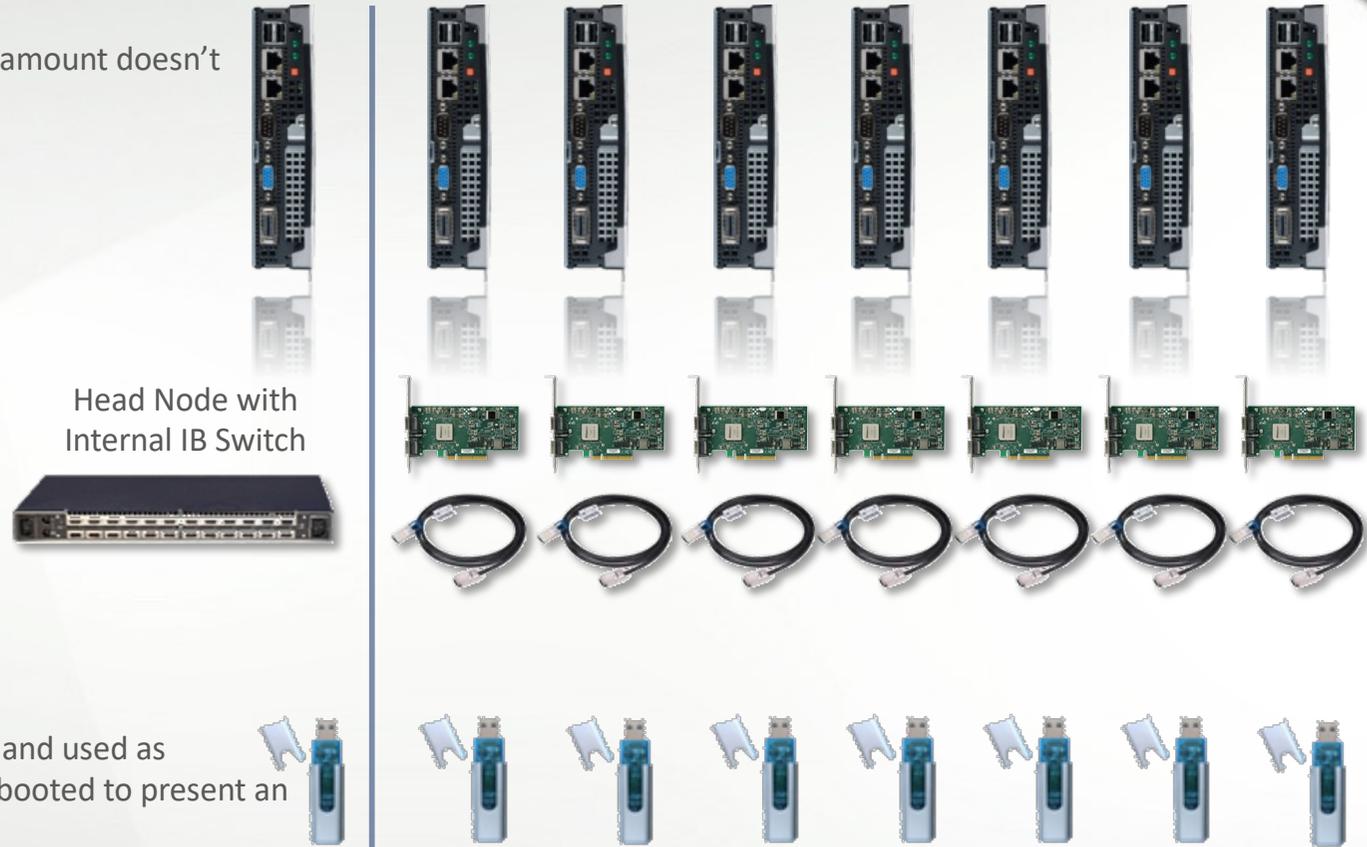


InfiniBand Interconnect



vSMP Foundation™ Devices

The flash-devices plug into the boards and used as bootable device. vSMP Foundation is booted to present an aggregate coherent view to the OS



A single high-end Intel based SMP system with up to 768GB of shared memory – Easy to manage and use!

Cray CX1-LC

- The CX1-LC is a “Light Configuration” system with a modified chassis to reduce cost for smaller configurations.
 - Supports up to 4 compute blades.
 - Can support up to 6 blade slots (depending on configuration)
- Can be upgraded to “standard CX1” (i.e. 8 blade slots)
- Includes blade options which offer additional cost savings.
 - Removed interconnect features which are not required on smaller configurations
- The Cray CX1-LC delivers an entry level price of around \$12,000 with well configured systems at around \$20,000



Cray CX1-iWS Integrated Workstation Solution

A CIFS storage blade

- Shared by workstation and cluster
- 4TB Unformatted
- RAID 10

Shared Storage –
attached to one cluster
compute blade
(Cluster & Workstation)



Compute Blades
(Cluster)

Workstation Blade
(Visualization)

A Windows HPC Server 2008

Cluster

- 3 nodes with 6 Intel Xeon 5500 Processors (up to 2.93GHz)
- Up to 24GB memory per node

An integrated 16 port Gigabit
Ethernet switch

A Windows 7 (64 bit) workstation

- Two Intel Xeon 5500 Processors 2.26GHz
- 24GB memory
- NVIDIA graphics with GPU acceleration
- Up to two high end monitor outputs

Available Exclusively from Dell



Cray CX1 Custom Chassis Options

Cray CX1 Chassis options include the ability to customize the colors and even create a full custom image if desired

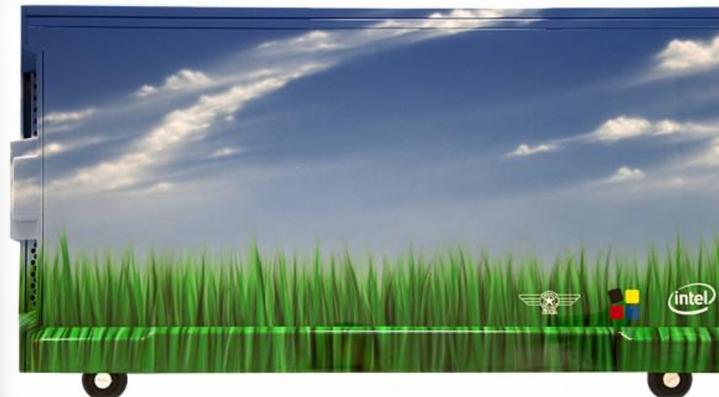
- Custom chassis skin
 - Logos
 - Branding
 - Open to imagination...
- Inexpensive customization option



Cray CX1 Custom Chassis Options

Cray CX1 Chassis options include the ability to customize the colors and even create a full custom image if desired

- Full custom painted chassis
 - Logos
 - Branding
 - Open to imagination...



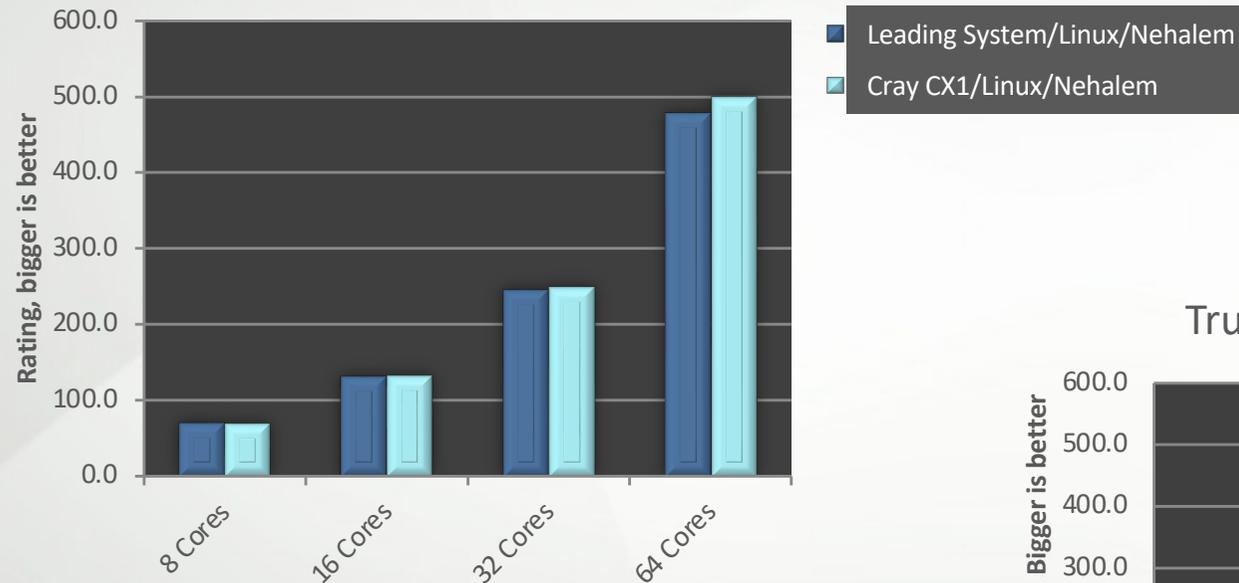
Cray CX1 Performance Example

ANSYS FLUENT 12.0 "Truck_Poly_14m" Scaling Results

External flow over a truck with polyhedral mesh 14M cells, DES turbulence, segregated implicit solver

CX1 vs competition(best published)

Truck_poly_14M Benchmark

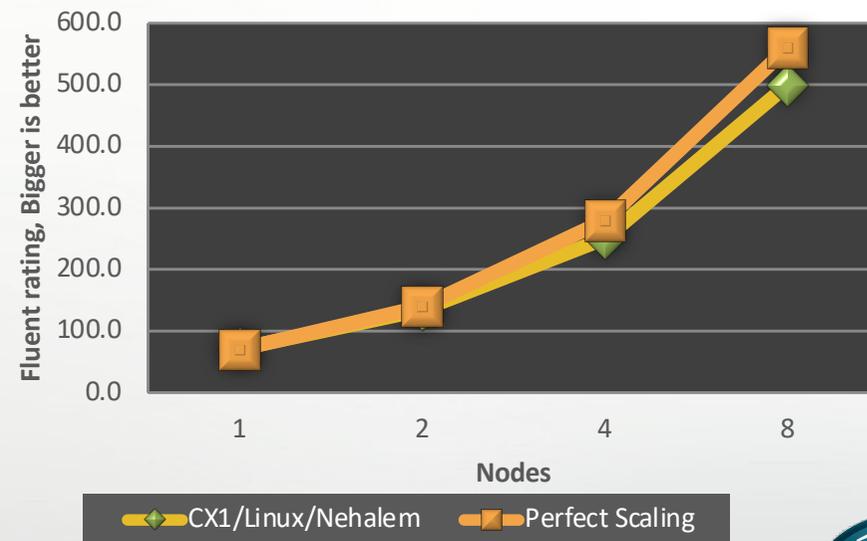


Cray CX1 scaling is excellent to 64 cores with InfiniBand

Cray CX1 Configuration as tested:

- Rocks+/Redhat EL 5.3
- 8 compute blades
- Intel X5570, 2.93GHz
- 24 GB per blade
- InfiniBand interconnect

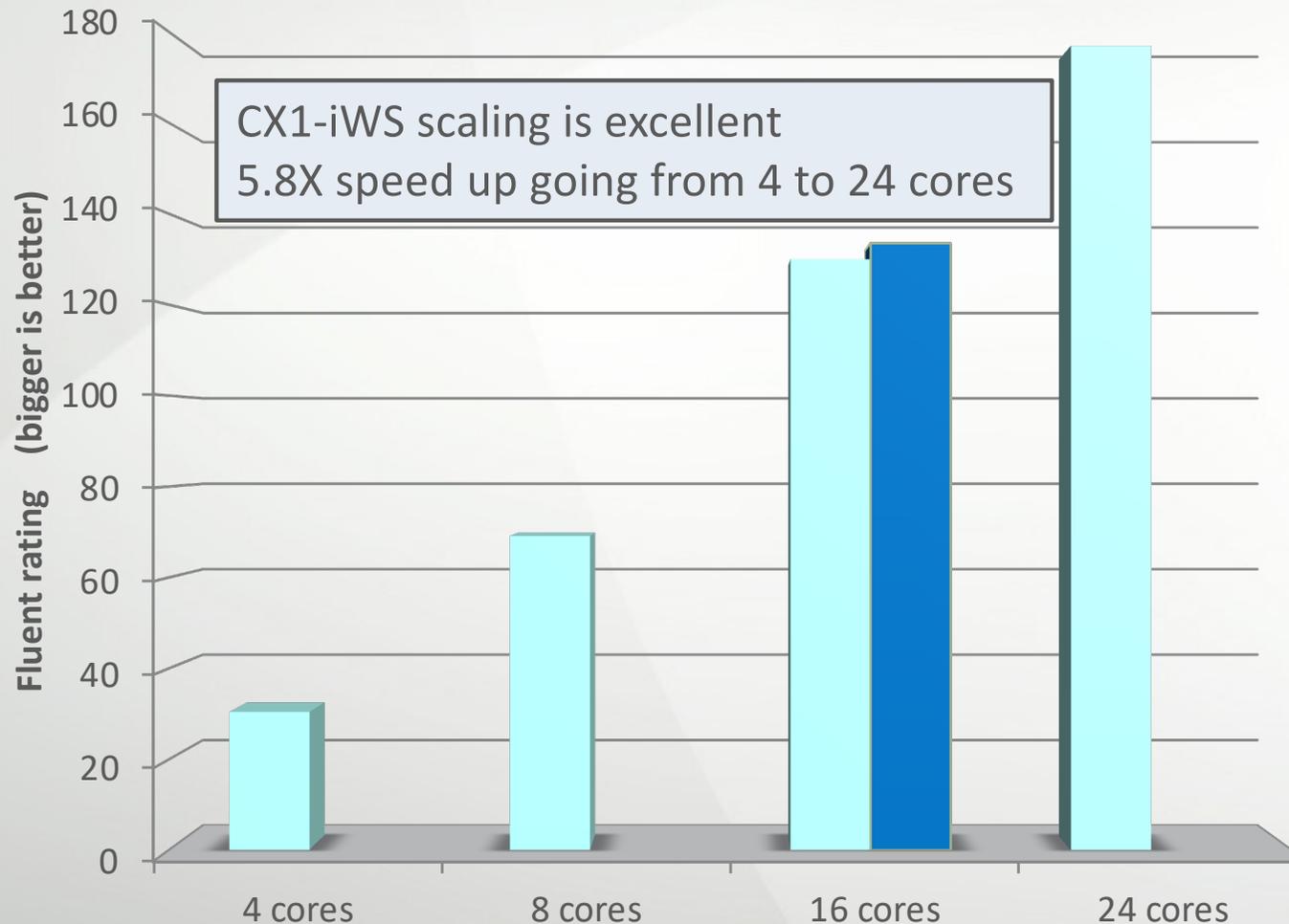
CX1 Node Scaling Truck_poly_14M Benchmark



Cray CX1-iWS Performance Example

ANSYS FLUENT 12.0 "Truck_Poly_14m" Scaling Results on Cray CX1-iWS

External flow over a truck with polyhedral mesh
14M cells, DES turbulence, segregated implicit solver



Cray CX1-iWS scaling is excellent
5.8X speed up going from 4 to 24 cores

Cray CX1-iWS
Windows HPC Server 2008
3 compute blades
Intel Xeon X5570, 2.93GHz
24 GB of memory per blade
GigE interconnect

- iWS with GigE
- Best published result with IB

Intel X5570 (Nehalem) Comparison – Dec'09



Easy To Maintain

- The Cray CX1 comes with a three year warranty for parts and service
- Cray provides next day business hours on site support
- Real people providing real service, vs. other vendors “return to depot” type service
- Cray’s goal is to give you high product reliability coupled with strong customer service



Cray CX1 Recognition



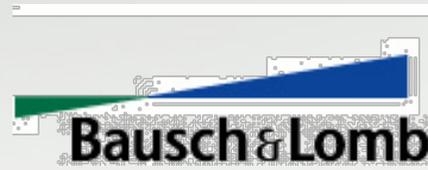
Cray CX1 Wins HPC Wire “Best HPC Cluster Solution” for 2009

Cray is Supercomputing!

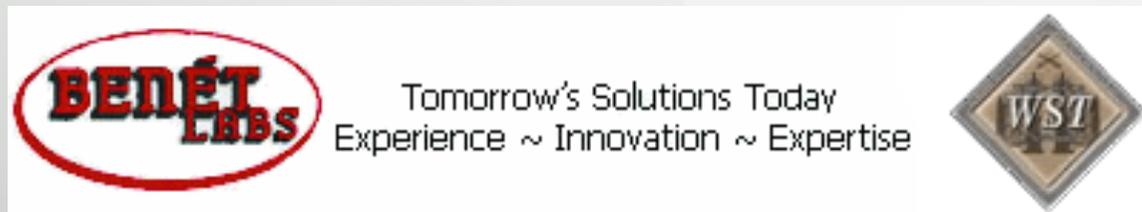
- Cray created the Supercomputer industry in 1972 with the Cray 1
- Over 35 years experience with the “grand challenges” of science and simulation
- Today Cray systems are among the most powerful in the world
 - ORNL’s Jaguar was the first system to run real world applications at over a petaflop sustained performance
- The Cray CX1 captures that legacy to provide power and performance to a much broader community of users



Example CX1 Customers



UC SANTA CRUZ



The Power Is In Your Hands

- The power user needs a powerhouse tool to get the job done
- The Cray CX1 is that powerhouse, with compute, storage, GPU, switches and visualization all integrated in one affordable, attractive office installable unit
- Cray represents the pinnacle of power and performance

Small Footprint
Huge Performance



It's a Cray!