SGI® Cyclone™
results on demand™

Cloud Computing for Technical Applications

Introducing the HPC Cloud

Until the introduction of Cyclone, Cloud solutions have been primarily focused on running important business tools like CRM, ERP, email and other database applications. Cyclone capitalizes on over 20 years of SGI high performance computing (HPC) expertise to specifically address the technical applications market. Cyclone serves the science and engineering sectors that rely on very high-end computational hardware, software and networking to accelerate results. Cyclone supports a number of leading applications partners and five technical domains, including Computational Fluid Dynamics, Finite Element Analysis, Computational Chemistry and materials, Computational Biology and Ontologies.

Two Service Models

Cyclone is available in two service models: Software as a Service (SaaS) and Infrastructure as a Service (IaaS). With SaaS, Cyclone customers can significantly reduce time to results by accessing leading-edge open source applications and best-of-breed commercial software platforms from top Independent Software Vendors (ISVs). The IaaS model enables customers to install and run their own applications.
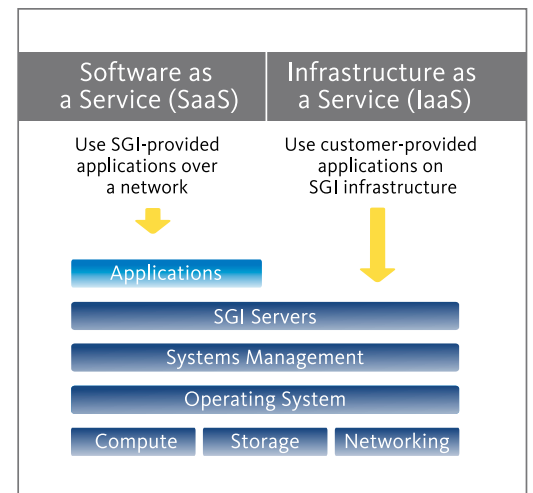
It's There When You Need It

Cyclone is well suited for a large number of temporary and ongoing needs. It represents an ideal way to fulfill part-time need for HPC resources. It can "top off" in-house resources already stretched to the limit as more resources are required. Or customers can use it in place of a dedicated disaster recovery site. And because the latest resources are available here first, Cyclone is a perfect solution to validate the relevance of new technologies such as compute GPUs with your own applications and data. All of these benefits are available on demand with no up-front capital outlay.

Technical Computing Requires Dedicated Cloud

The SGI technology at Cyclone's core is comprised of some of the world's fastest supercomputing hardware architectures, including Intel® Xeon® and Itanium® processors-based SGI® Altix® scale-up, Altix® ICE scale-out and Altix® XE hybrid clusters. The hybrid architecture offers either NVIDIA® Tesla GPUs or AMD FireStream™ GPU Compute Accelerators, both for floating point double precision; Tilera accelerators are supported for integer workloads. High performance SGI InfiniteStorage systems are available for scratch space and for long-term archival of customer data.

At the system software level, Cyclone offers a flexible computing environment with the choice of Novell® SUSE® or Red Hat® Linux® operating systems, further performance-optimized through the addition of SGI® ProPack™. Altair PBS Professional® and SGI® ISLE™ Cluster Manager provide system scheduling and management.

Software as a Service (SaaS)	Infrastructure as a Service (IaaS)
Use SGI-provided applications over a network	Use customer-provided applications on SGI infrastructure

Applications
SGI Servers
Systems Management
Operating System

Compute	Storage	Networking

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Applications Domain Focus

Technical Domain	Use Cases	Targeted Applications*
Computational Biology (BIO)	Genomics, proteomics, molecular modeling and drug discovery	BLAST, FASTA, HMMER, ClustalW
Computational Chemistry and Materials (CCM)	Nanotechnology, materials research (metal alloys, polymers, composites, ceramics and plastics)	Gaussian, Gamess US, Namd, Gromacs, LAMMPS, DL_POLY
Computational Fluid Dynamics (CFD)	Automotive design, aerospace design, defense systems design and power generation design	OpenFOAM®, Acusolve, NUMECA FINE™ Environments
Finite Element Analysis (FEA)	Structural, heat transfer, fatigue and vibrational analysis for manufactured products	LS-DYNA®
Ontologies (ONT)	Semantic Web, data mining	OntoStudio, SemanticMiner

* check the website for most up-to-date listing

Cyclone Usage Diagram

Cyclone Customer Secure Login

SGI Firewall

VPN   Results on Demand™

VPN   Data/Application Licence Loaded

Persistent Storage

Management Server for Pre & Post Processing and Job Scheduling

SGI Servers

Scale-Up   Scale-Out   Hybrid

Systems Workload Storage
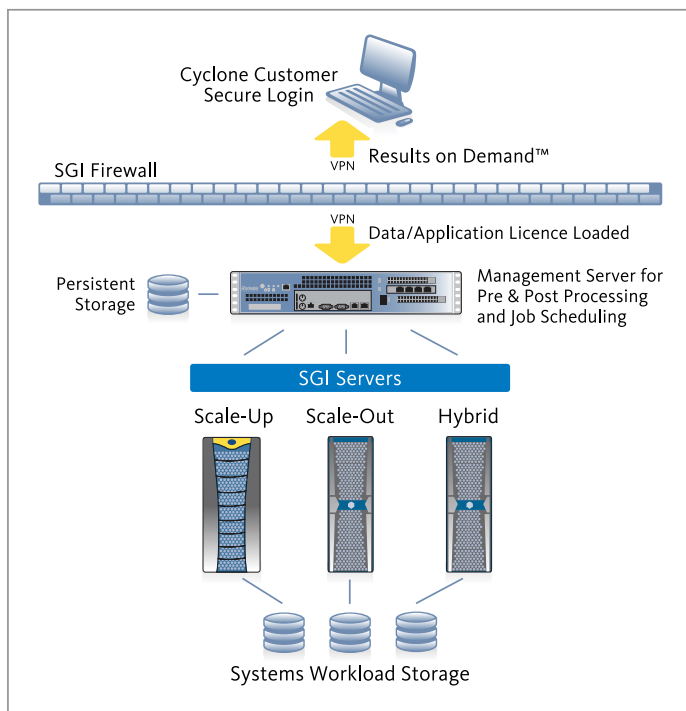
Cyclone Key Features

• Pre-configured, pre-certified applications and tools
• High speed Scale-up, Scale-out and Hybrid (GPU/Graphics) platforms
• High speed processors
• High speed networking (NUMAlink, InfiniBand)
• Non-virtualized environments
• Dedicated management node for security
• Virtual Private Network (VPN) access
• From scratch storage to long-term storage
• Data exchange service
• 24 x 7 x 365 monitoring and support
• Dedicated customer accounts

Customized services via SGI Global Services include:
• Operating system and/or application configuration
• Application tuning
• Application benchmarking
• Remote Data Visualization