# Accelerate operations and drive revenue with faster large-scale computations

Intel® Scalable System Framework for Oil and Gas
www.intel.com/content/www/us/en/high-performance-computing/oil-and-gas.html

Big data insights from Red Hat
www.redhat.com/en/insights/big-data

## Introduction

Advances in high-performance computing (HPC) by Red Hat and Intel accelerate demanding oil and gas workloads. These include conventional applications, such as seismic processing and reservoir visualization, as well as emerging ones such as data analytics.

Solutions from Red Hat and Intel optimize HPC resources to simplify IT and complete workloads faster, helping oil and gas companies focus on their core business instead of tending to technology.

## Software for HPC

### Build a strong foundation

Red Hat® Enterprise Linux® builds on the innovation built into the Linux kernel by the global developer community. Hardening for enterprise-class performance, stability, and security is augmented with a range of support options to provide the platform of choice for a range of industries, including oil and gas. As a product variant offered specifically for HPC and technical computing, Red Hat Enterprise Linux for HPC helps streamline deployment, improve scalability, and simplify management.

### Put data where you need it

To accelerate intensive oil and gas workloads, Red Hat Runtimes includes an in-memory distributed data management system designed for scalability and fast access to large volumes of data. The solution also synchronizes copies of data across the cluster, making it locally available where application logic needs it. Together, these capabilities enable oil and gas customers to accelerate results, scale out solutions easily, and increase dependability.

### Improve access to data

Software-defined storage provides centralized management and control of the local storage on many servers, combining it into a single virtual data store. This distributed architecture offers more flexibility and performance than traditional storage such as appliances that tightly couple storage software and hardware. It also scales easily across physical, virtual, and cloud resources as needed.

Because Red Hat Gluster® Storage and Red Hat Ceph® Storage are self-healing, self-managing platforms with no single points of failure, they are well-suited to HPC usages. Red Hat Gluster Storage is designed to handle general purpose workloads like backup and archival, as well as analytics. Red Hat Ceph Storage is an open, massively scalable storage solution for modern workloads like cloud infrastructure, data analytics, media repositories, and backup and restore systems.

### Automate IT operations

Too often, geologists and other technical staff must spend their time managing and maintaining IT infrastructure. Every hour spent on those support tasks is an hour when they are not able to focus on revenue-producing activities. By automating common IT management tasks, Red Hat Ansible® Automation Platform puts them in the background, where they belong.

## Hardware from Intel

### Accelerate time to production

The Intel® Xeon® Scalable processor drives faster results from large-scale computations in seismic processing and reservoir modeling. With up to 28 execution cores per processor, a single eight-socket server can handle as many as 448 software threads simultaneously. That massive parallelism is complemented by a newly redesigned, low-latency memory subsystem. The complementary Intel® Xeon Phi™ processor offers even higher parallelism, with up to 72 cores and integrated on-package memory.

### Make data available faster

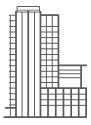
Keeping balance with the compute resources available to HPC clusters requires responsive storage for massive data stores. Intel® SSDs for the datacenter integrate optimizations for performance, including accelerated caching and NVMe-based connectivity to the system board to provide higher throughput and lower latency than older SATA-based drives. SSDs that incorporate Intel® Optane™ technology build even further on that responsiveness, combining performance similar to that of system memory with the capacity advantages of SSDs. Intel® Enterprise Edition for Lustre* software complements Intel SSDs with an open source, massively scalable storage solution designed for large compute clusters.

### Scale to massive clusters

Intel® Omni-Path Architecture improves on previous HPC fabrics such as InfiniBand* and Intel® True Scale Fabric by scaling from small clusters to tens of thousands of nodes. This new fabric is a core enabler of next-generation HPC, with enhanced abilities to route data flows more efficiently, provide quality-of-service functionality, and recover from both hardware and software errors.

### Scale to massive clusters

Intel® Software Tools for HPC help software developers complete jobs more quickly and create higher quality applications, so oil and gas companies achieve faster time to development and higher application performance.  In particular Intel® Parallel Studio XE delivers faster, scalable, and portable parallel code for HPC, enterprise, cloud, and AI applications.



### About Red Hat

Red Hat is the world's leading provider of enterprise open source software solutions, using a community-powered approach to deliver reliable and high-performing Linux, hybrid cloud, container, and Kubernetes technologies. Red Hat helps customers integrate new and existing IT applications, develop cloud-native applications, standardize on our industry-leading operating system, and automate, secure, and manage complex environments. Award-winning support, training, and consulting services make Red Hat a trusted adviser to the Fortune 500. As a strategic partner to cloud providers, system integrators, application vendors, customers, and open source communities, Red Hat can help organizations prepare for the digital future.

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