Powering energy results
High performance computing in oil and gas
Today’s new challenges

While prices continue to fluctuate, the basics of oil and gas remain: Companies must drive production efficiencies and reduce risk across individual fields and global portfolios.

As companies work to access previously inaccessible reserves, and geoscientists strive to more clearly understand subsurface prospects, they use massive new volumes of data and need vastly more powerful computing capabilities. Companies are utilizing a wider range of reservoir, sensor, and machine parameters, and using new types of data acquisition and 3D processing techniques. Those and other advances will conservatively double expected data volumes in coming years.

To transform that data into usable insights—and make that output available to the right people, at the right time, forward-looking companies now seek robust analytics, more advanced algorithms, greater collaboration, and remote interactive 3D visualization capabilities. At the same time, to control rising infrastructure costs, many firms are investigating cloud, Big Data, and managed service options.

Oil and gas firms are shifting remote visualization and other processing away from desktop workstations and back to consolidated data centers—where they have greater control, increased security, reduced networking, and improved efficiencies. Most now run high-end algorithms on graphics processors. Companies must keep that infrastructure up to date with optimized code, and be flexible enough to meet shorter computing system lifecycles.

A new generation of high performance computing (HPC) systems and solutions are solving the industry’s most difficult data, engineering, and scientific problems.

Available solutions

Turn to Hewlett Packard Enterprise. We offer a comprehensive portfolio of fully integrated, standards-based HPC solutions and services specifically for the oil and gas sector.

Working closely with energy firms worldwide, we create and tune HPC solutions to meet seismic exploration, reservoir management, and simulation workflow requirements. Those solutions combine industry-leading hardware, software, and services—working in concert to solve your complex challenges.

HPE uses this approach to deliver purpose-build, application-ready HPC solutions—designed to meet current requirements and open a clear pathway for your growth. Forward-looking companies can leverage them to accelerate innovation, improve production, reduce risk, and meet the changing realities of global demand.

• Comprehensive HPC solutions—Servers, networking, storage, schedulers, cluster management, base software support, and optional staffing to run clusters, file systems, archiving, and data management

• HPC for key oil and gas workflows—3D seismic processing and imaging, reservoir management and simulation, remote visualization, cloud, and Big Data
• **Traditional hardware and software solutions**—Seamless HPC integration to existing platforms, applications, and storage environments

• **HPC managed services**—This consumption-based model shifts cost from capital expenditures (CAPEX) to operating expenses (OPEX), with Hewlett Packard Enterprise handling HPC complexities, code optimization, and modifications, so you can focus on the science of petroleum.

**Your workloads handled**

HPC is uniquely suited to a crucial and growing range of oil and gas activities. HPC clusters provide the horsepower needed to accelerate exploration and production.

• **Comprehensive HPC solutions**—Servers, networking, storage, schedulers, cluster management, base software support, and optional staffing to run clusters, file systems, archiving, and data management

• **Seismic**—Real time data analysis, data acquisition data quality and management, seismic processing, imaging, modeling, interpretation

• **Reservoir modeling**—Basin and asset modeling, reservoir characterization and simulation, remote visualization, and production flows and potentials analysis

• **Structure codes**—Workload evaluations of well heads, pumping units, pipelines, and refineries—including fluid dynamics, heat transfer, pressure, and other dynamics—used to move product downstream

• **Analytics**—Very large data sets handled to evaluate gas lift optimization, well and field performance, and other production-related variables

• **Portfolio optimization**—Field performance connected to back-end financial systems to analyze activities across regional and global operations

• **Trading**—Workload solutions for commodities market activities.

**Time to oil accelerated**

Get the seismic, data, and visualization capabilities needed in tomorrow’s competitive energy sector. You can use HPE HPC:

• Improve engineers’ and geoscientists’ productivity

• Drive multifold performance increases—reducing processing times and delivering faster time to oil

• Reduce CAPEX and OPEX

• Improve return on computing investments by leveraging Hewlett Packard Enterprise financing, shortened leases, and upgrade-inclusive lease arrangements

• Leverage advanced reservoir characterization on simulation systems to quickly estimate risk and reserves, and better manage drilling and production

• Integrate additional information from well logs, wireline, and other sources to enhance basin and asset modeling

• Enable more efficient modeling of entire fields, improving production simulation and management

• Maximize hydrocarbon discovery/recovery by providing access to different drilling and production strategies

• Accelerate data acquisition, turnaround, and movement into crucial processing and imaging steps—providing data management and governance needed to fully leverage HPC in oil and gas
• Support new processing and imaging algorithms capable of improved resolutions, yielding better physics and more intelligent decisions

• Optimize available computing resources to support remote connections and collaboration for 3D visualization and interpretation

• Protect sensitive data in secure data centers

The value of partnership

• Hewlett Packard Enterprise is a leading provider of IT services to the oil and gas industry worldwide

• According to ISC in 2014, HPE provided 64% of HPC and 39% of supercomputers across all industry segments.

• HPE is the dominant provider of high performance computing hardware to the energy sector.

• We provide IT solutions to all of the top eight national oil companies.

• HPE has provided HPC and analytics and data management services to Fortune 500 clients globally, including leading integrated and non-integrated oil and gas firms, for more than 16 years.

• HPE Energy has 400+ energy clients in over 130 countries.

• Our company invests $3.5 billion annually in research and development.

• HPE rack-scale HPC solutions deliver up to 4x teraflops per square foot and 4x density per rack, per dollar.

• HPE powers 575 private and public clouds, and manages the world’s largest private cloud with 50 PB of storage.

• HPE is the world’s third-largest managed security services provider, has more than 600 security patents, and employs more than 3000 security and privacy professionals.

• We can reduce application operating costs by 30% to 60%, application maintenance by 50% to 65%, and application development costs by 30% to 50%.

• We have 3500 information management and analytics consulting professionals, averaging 18 years of experience.