



WHITE PAPER

Five Ways Cloud Computing Can Benefit Oil, Gas, and Mining Companies

Presented by Green House Data



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Introduction

Within the last few years, cloud computing has come out of the fringe and into the forefront of the information technology world. For industries yet to fully embrace the cloud, real benefits are waiting to be realized. There are five main ways that the cloud can help the energy industry in particular, from oil and gas companies to global mining operations.

The cloud is revolutionizing IT across virtually every industry. The concept is simple: instead of a single server running a single operating system and only using 10-20% of its potential computing power, a piece of software called a hypervisor allows multiple virtual machines to run on a single server, increasing resource utilization to 80% or more. Alongside virtualization tools come new abilities for automation, economies of scale, and simplified management, allowing IT departments to quickly deploy new virtual data centers at a fraction of the cost required to procure physical equipment. Infrastructure as a Service (IaaS) companies provide this infrastructure with guaranteed levels of uptime and security.

In a fast paced and data-oriented field like the energy industry, a public, private or hybrid cloud allows the type of collaboration,

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What Can Go in the Cloud?

The cloud can be configured to securely deliver applications throughout the enterprise.

Infrastructure as a Service is ideal for:

- Accounting, revenue distribution, and reporting
- Land management
- Asset management
- Data acquisition, storage, and analysis
- Customer relationship management
- Supply chain tracking
- Document sharing and change tracking
- Imaging technology

measurement, and analysis tools needed to compete globally. Maintain equipment at a higher level to avoid asset maintenance costs. Gain insight into worldwide supply chains and big data generated from thousands of workers in the field. Eliminate inefficiencies and be the first to reach resources.

Here are five ways cloud computing can help energy and mining companies:

1) Real-Time Data and Analytics

The scalable nature of the cloud means additional resources can be added at any

time. For large data sets, large storage arrays and elastic computing enable real-time data analysis. Whether the cloud hosts imaging technology for forecasts and deep drilling, geological data, fluid dynamics simulations, or energy trading information, flexible infrastructure is the most cost-effective way to crunch serious numbers.

Figure 1

*Importance of Reasons to Switch to Cloud Computing
(% who rated "Critical/Very Important")*



http://resources.idgenterprise.com/original/AST-0063424_VMwaDell_plybk0601.pdf

Frameworks like Hadoop allow enormous datasets to be sorted through and analyzed for valuable insight. 3D and 4D modeling software can be installed on cloud computers without purchasing expensive powerful desktop machines or servers, and the resulting large files can be stored forever in the cloud.

Asset management is another category ideal for cloud computing. With the rise of the Internet of Things and tracking codes, equipment is either connected directly to a network or otherwise tracked using connected devices. The cloud can keep track of every asset in the field, from truck fleets to rig tracking to land and right-of-way information. Knowing when and where to send assets,

what sites are drillable, and when equipment requires maintenance results in significant cost savings and more streamlined operations.

2) Enterprise Resource Planning (ERP) Software

The cloud allows access to powerful Enterprise Resource Planning software for any user with a network connection. Microsoft Dynamics, SAP, and Oracle are all popular solutions for ERP, allowing companies to maintain a database with information from every side of the business.

ERP software includes data, visualizations, projections, reports, and more from cost planning, marketing and sales, inventory management, and logistics. Revenue distribution and reporting is simple with insight into where every dollar goes. ERP tracks cash, raw materials, order status, and even payroll, all from a single interface.

3) Collaboration, Administration, and Marketing

Although some of these functions can be handled by ERP software, additional applications enable cloud-based collaboration, document management, administration, and sales and marketing support. Software as a Service companies like Salesforce have delivered Customer Relationship Management (CRM) tools for many years. CRM tools can be customized and installed in private clouds as well. A CRM makes it easy to keep an eye on interactions with current and potential customers, helping sales, marketing, and customer service communicate and work together.

Document sharing and management in the

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cloud helps enable workflow rules for change management. Multiple users can edit a single file at the same time. Large files like maps, CAD files, and datasets can all live in cloud storage with automated backups. Microsoft SharePoint, a popular productivity application that plays well in the cloud, is designed to foster company-wide file management, in-house social networks, enterprise search, and business intelligence.

4) Data Security, Compliance, and Availability

With sensitive information like land leasing, product treatment, and proprietary processes, energy companies need secure networks and applications. They also have compliance standards like NERC Critical Infrastructure Protection (CIP) to contend with. Upgrading and maintaining infrastructure to these standards can be a difficult task, while IaaS providers often meet or exceed compliance standards with traffic monitoring, antivirus and antimalware, alerts, and physical facility security.

IaaS providers engineer their data centers to high redundancy and availability standards. Most cloud contracts include a Service Order Agreement (SOA) that describes the expected amount of downtime (usually less than half a percent) and what compensation customers

Public, Private, or Hybrid?

Executives might be rightly nervous in putting their data in the hands of an outside company. Cloud services come in three generic flavors: public, private, or hybrid. Each has different privacy and security implications.

Public clouds run on shared infrastructure. Your virtual machines would reside on the same server as others. The data is completely separate. Power up servers as you need them and Pay as You Go, if you like. Public clouds are all about flexibility.

Private clouds are the equivalent of an in-house data center, but hosted remotely. All data and virtual machines are stored on dedicated infrastructure. This is ideal for applications with security or compliance standards.

Hybrid clouds are a mixture of the two, allowing private virtual machines to connect with additional public resources when necessary. Sensitive data can be kept on dedicated, private servers, or even in-house at legacy data centers. Hybrid is the perfect mix of flexibility and security.

can expect if the downtime exceeds this limit. With highly redundant infrastructure, it is unlikely that a data center will experience failure due to a single piece of equipment. Even power outages can't take down IaaS data centers, as diesel backups and Uninterruptible Power Supplies (UPS) kick in to keep servers up and running.

These factors combine to make a remote data center a viable location even for sensitive information.

5) Reduced Environmental Impact

The energy and mining industries are often looking for ways to make their operations greener. Virtualization can help increase server efficiency by up to 80%. Because a server draws the same amount of electricity whether it is 20% or 80% utilized, higher efficiency leads to less energy use for the same amount of work.

Many data centers also strive for highly energy efficient operations by using outside air to cool their equipment, purchasing efficient equipment, isolating the hot air expelled from servers, and more. This is in their best interest because the less energy used by a data center, the greater the cost savings.

Building a virtual data center in the cloud can be a quick and easy way for oil, gas, and mining companies to reduce their carbon footprint. Replacing just 50 servers with a virtual environment is the equivalent of planting about 450 trees.

The Bottom Line

The cloud at its simplest is a scalable and cost-effective replacement for in-house data centers. By putting additional computing resource at the fingertips of energy companies, however, powerful benefits can be realized including automated financial, customer relationship, and supply-chain management; more efficient operations; and flexible, fast business reactions based on real-time data.

About Green House Data - Green House Data provides VMware powered cloud hosting and colocation backed by 24/7 live support. Headquartered in Cheyenne, Wyoming, the company has data centers in Cheyenne, Portland, OR, and Newark, NJ. The facilities are HIPAA and SSAE 16 Type II compliant, powered entirely by wind and solar power, and designed to be 40% more energy efficient than comparably sized data centers.

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