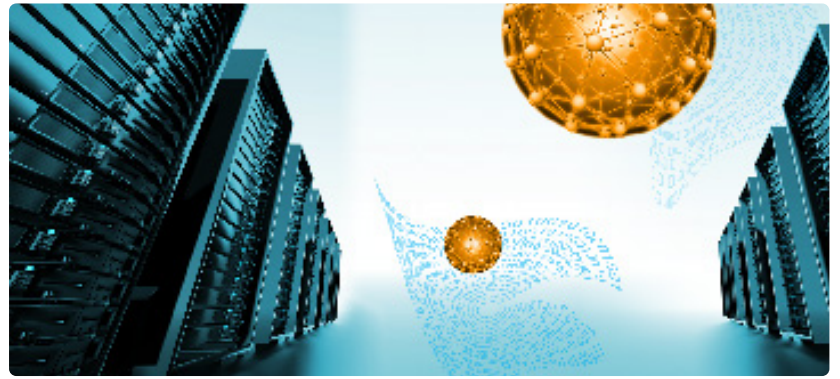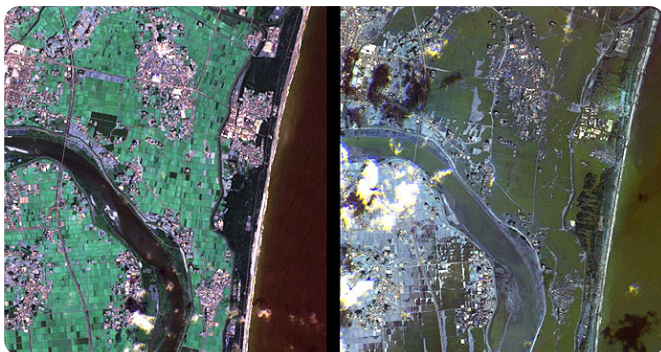**Adaptive**
C O M P U T I N G

Accelerate Insight

DigitalGlobe Leverages Adaptive Computing Technology to Aid Tsunami First Responders

The morning of March 11, 2011, started off much like any other day for the nation of Japan; yet come late afternoon, it would bring much distress and heartache as a 9.0 magnitude earthquake would hit just off the coast – one of the five most powerful earthquakes ever recorded. That earthquake triggered powerful tsunami waves that crashed across their land, traveling as far as 6 miles inland. This disaster not only shifted the earth on its axis by an estimated 10 to 25 cm, but also precipitated events leading to a nuclear emergency in the Fukushima I Nuclear Power Plant.

The nation was in need of serious aid, and many rushed to help in a variety of ways. DigitalGlobe, a digital satellite imagery provider, rose to the challenge and was able to provide assistance in a unique way. Quickly moving their satellite constellation cameras toward the affected northern shore of Japan, DigitalGlobe was able to image the Fukushima reactors one minute before reactor three exploded and three minutes after the explosion. These before and after images capturing the extreme changes to the ground provided first responders with the vital information they needed to respond to the disaster.
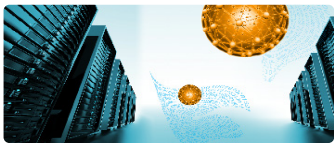

DigitalGlobe is a leading provider of commercial satellite imagery founded by scientists and satellite users with the goal of making high-quality images available for commercial application. DigitalGlobe owns and operates the most agile and sophisticated constellation of high-resolution commercial earth imaging satellites, which provides imagery to a broad group of verticals/industries.

DigitalGlobe maintains an analysis center that provides a subscription service called FirstLook. This unique planning and response tool provides imagery of an area both before and after a disaster occurs, available as high-resolution files that can quickly be delivered to organizations to assist with emergency planning, risk assessment, emergency response and recovery. By constantly looking across the globe for significant events, FirstLook allows DigitalGlobe customers to more effectively respond in times of need.

The Problem – Inefficient Workload Management Solutions

Quickly turning DigitalGlobe's raw satellite imagery into an understandable format and getting it into the appropriate hands can help thousands of people, as was the case with the Japanese tsunami. Those precious seconds are what sets DigitalGlobe apart as unique provider of high quality earth images and geospatial information. It takes an efficient and effective High Performance Computing (HPC) platform to meet DigitalGlobe's needs. But that wasn't always possible.

In the past, DigitalGlobe was running on an HPC workload management solution that was developed in-house. This system only enabled very basic or primitive scheduling of the workload, and it was inefficient in its allocation of resources. It maintained

technological resources in discrete, siloed environments, each of which was statically allocated to address specific business needs. Unfortunately, that meant that in times of high demands in one area and low demand in other, their resources were inefficiently distributed to serve changing demands. Their rigid management system couldn't take assets from one cluster and allocate them to another, to fit the businesses needs from moment to moment.

DigitalGlobe needed a system that would allow them to shift that computing capacity to all available resources. The ideal solution would also allow them to shift their computing resources back and forth on differing platforms. With those goals in mind, they began to search for the right HPC scheduling solution.

In the search for a better, more efficient HPC scheduling solution, DigitalGlobe established two main requirements. First, they needed a cross-platform, dynamic HPC workload management solution that could interact with both Linux and Windows operating systems. Second, they needed the ability to integrate the solution seamlessly into a broader enterprise communication messaging system.

The Solution – Adaptive Computing

After looking at the different solutions offered by a variety of competing HPC providers, DigitalGlobe felt that Adaptive Computing offered the best solution with their Moab HPC Suite workload management product. Adaptive provided the system that would allow Digital Globe to dynamically shift their computing capacity across all available resources. Moab stood out as the best platform through its ability to address what is sometimes called business usability, and its ability to service at peak demands.

Through the HPC scheduling solution provided by Adaptive, DigitalGlobe is now able to quickly shift the number of computing resources that are running on Linux or Windows to the business load for each specific system. Critically, this then allows them to meet constantly changing resource demands much more gracefully. Now, when there is a surge in demand, DigitalGlobe can get their high-resolution imagery to their customers much faster, as they no longer need to wait for assets to become available before they are able to compute. The system from Adaptive Computing enabled DigitalGlobe to treat all their computing resources as generic capacity and then allocate it in near real time to scale to the moment-to-moment business demands of their customers.

During the implementation process, Adaptive Computing also offered a high level of support to DigitalGlobe, with short response times and excellent customer service. In particular, their ability to act after business hours and around the clock on any critical issue was vital to prevent business downtime.

The Moab system from Adaptive Computing provided best of breed tools for DigitalGlobe, and with their high level of support, the implementation was accomplished with minimal difficulty. In the end, when DigitalGlobe's imagery is delivered faster to their customers, it saves them and their customers time and money. And, as evidenced in the case of the Fukushima disaster, seconds can sometimes save lives.

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