Updating iOra tactical cloudlet over Iridium Certus

Use Iridium to efficiently deliver updates to tactical cloudlets
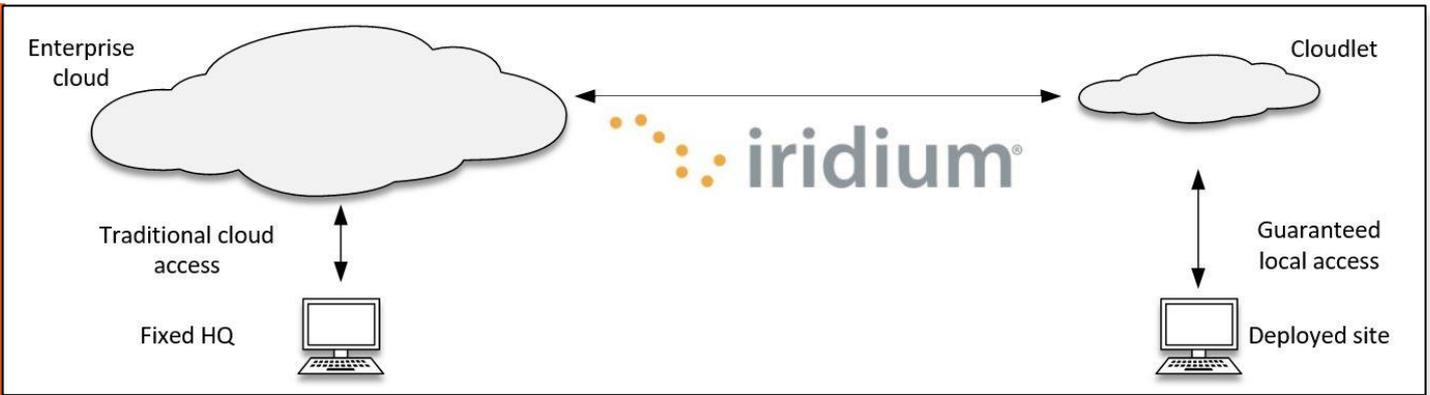
Tactical Cloudlets

Military planners have been drawn into the organizational benefits of investing in cloud technologies for scale and cost, only to find that users in remote and network disadvantaged locations are locked out of collaboration due to inadequate infrastructure. In a similar fashion the modern commercial maritime industry is controlled by changing operating regulations and the requirement to continually streamline operations to manage costs. Shipping operators have focused on the cloud to manage their operations but find that the cloud cannot be reliably accessed by the very users who need daily access to them whilst at sea.

Attempting to address this problem organizations are looking at ways of positioning sub-sets of data and services, termed Cloudlets, closer to the disadvantaged users. These Cloudlets provide fast and efficient local data processing capability where secondary data communication and consolidation technologies are used, merged, and update data to and from the primary cloud instance. Importantly these cloudlets are operated in the same way that users would interact with the primary information cloud. Access is totally transparent. In this way users are not excluded from the operational picture and can equally collaborate on programs and initiatives. These Cloudlets are effectively local cloud infrastructure that travels with the users to the remote locations, and locally store and process data for later broadcast back to the hub for inclusion as part of the primary cloud.

As infrastructure they ensure the validity of the primary cloud as the 'single point of truth', but ensure that users at the network edge, in remote locations, can access data and enjoy the benefits of cloud-based services.

For a detailed military context, cloudlets provide the answer for operations that involve forward deployed patrols or units that have a critical requirement to carry the latest operational data in a compact and always available capability. Whilst deployed on the mission, these units review and record additional data locally to the cloudlet for extended periods of operation. At the culmination of the operation where the patrol returns to the operational headquarters, data added to the cloudlet as part of the mission can be consolidated back to the primary cloud to ensure data integrity and ensure the maintenance of a 'single point of truth'. Cloudlets are increasingly being viewed as the missing part of the Cloud jigsaw, ensuring that all users irrespective of physical location and network capability can have guaranteed and continued access to the data and services of the enterprise cloud.

Network deployment

iOra specializes in the delivery of data over satellite and radio networks and the provision of Tactical Cloudlets. For the purpose of this trial the technology was configured to delivery updates to a deployed virtual copy of Microsoft SharePoint that presents a view of operational HQ portal (see inset picture). The HQ portal included several SharePoint document libraries including typical operational documents and files e.g. Microsoft PowerPoint, Word,

Adobe PDF. By way of evaluation the trial introduced a set of 6 new documents to the HQ portal that would then be required to be replicated to the remote tactical cloudlet instance connected over the Iridium network. These files were intended to simulate the typical update packet of data that would need to be deployed to the remote users following initial deployment from the HQ. To perform the replication iOra was used to compress these documents using the iOra Epsilon compression that performs cross file set compression. The impact of compression was as follows:

New updated files: *13.6Mb*
iOra amendment: *33.8Kb*
Data reduction: *over 99%*

As a consequence, to update the 13.6Mb of files on the remote tactical Cloudlet an update of just 33.8Kb was needed to be transmitted over the Iridium network. The dramatic reduction in the size of the data payload required for transmission over the network opens the door for applications that require data transmission.

iOra develop a set of unique technologies that can deploy to and from installed or virtualized cloudlets, and importantly embed compression technology that ensures data can flow to all nodes on the network, even over the most challenging of network connections. In providing an architecture that includes cloudlets to support users at the tactical edge, organizations build a framework that supports total information sharing irrespective of network capability.

Server to Laptop replication
Additionally, iOra Geo-Replicator® can be used to create virtualized copies of hosted SharePoint deployments on end users' laptops. By replicating SharePoint content to the laptop, Geo-Replicator® allows mobile workers to continue using and accessing the critical business content stored in the hosted SharePoint, even when they are offline.

Geo-Replicator® replicates all the SharePoint data structures and content directly onto the laptop over any network connection, using iOra's unique compression and web virtualization technologies. Huge volumes of content can be very efficiently replicated on laptops – giving users 24/7 access to vital information, even when they have no network connection. The Epsilon compression not only reduces the size of the update amendment, it also has a dramatic effect on the local storage requirements for the offline repository.

Iridium Certus® is an advanced multi-service platform enabled by the upgraded Iridium® constellation. Offering the highest L-Band data throughput, Iridium Certus redefines the capabilities of mobile satellite communications across maritime, IoT, aviation, land mobile, and government applications. Iridium Certus is ideal for supporting critical connectivity needs regardless of location, terrain, and weather events – all in a single platform.

iOra is a leading global provider of the portal and file-based data replication technology for organizations that need to operate in the most demanding environments. Our technology enables an intelligent, complete and transparent data exchange strategy that is consistent and guaranteed, irrespective of location or network connection. Trusted by Governments, corporates, military and global organizations, iOra technology has been selected for its proven capabilities in hostile and remote environments. iOra products replicate data between installed Microsoft SharePoint servers, or by creating virtualized servers or web applications for mobile users - thus enabling guaranteed access to up-to-date operational critical information.

Successfully deployed on tens of thousands of machines over networks with speeds as low as 8kbps.

The iOra Product Suite:
iOra Epsilon is the iOra patented compression engine that is the core component of all iOra replication configurations. The world leading cross file compression technology ensures that data replication over the network is highly efficient.

iOra Geo-Replicator is a replication platform using iOra Epsilon that provides the tools for defining the scope of what is replicated, as well as managing secure, efficient, automated and transparent data updates.

iOra Monitoring provides a diagnostic user interface to support the operational deployment of iOra technology. The iOra Monitor maintains a graphical indication of the operational health of all deployed replication – both local and remote. When iOra detects a warning or network error, iOra can be used to drill down to more detailed diagnostic information.

Customers
Over the years iOra has been deployed in applications with the following organizations:

US Navy – NIAPS program and other associated programs

NATO – Document handling System (DHS) in addition deployment to NRF 1GNC

US Marine Corp (USMC) – Tactical Collaborative Work Suite (TCWS)

US Special Operations Command (USSOCOM)

UK MoD – supporting classified data replication

Australian Department of Defense – delivering collaboration in remote regions

US Army and Army Corp of Engineers (ACE)

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