



Using iOra Geo-Replicator over FleetBroadband

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This document provides recommendations on the use of the iOra Geo-Replicator data replication technology over the FleetBroadband network. It explains how the technology is configured and details the benefits and new applications that can be delivered to the fleet.

1. Overview

The iOra Geo-Replicator software suite helps organisations with users in geographically distributed locations to communicate more effectively over networks that are periodically disconnected, have limited bandwidth, are price-sensitive or are high-latency.

2. Product range

The Geo-Replicator[®] technology is delivered using the following modules:

2.1 Server to Server

Gives remote and mobile offices, including shipping fleets, improved access to business portals by replicating them on the local server, and by massively reducing data transmission costs.

2.2 Server to Laptop

Allows mobile workers to take portal content offline on their laptop for 24/7 access to business information.

3. Typical users

- > Commercial maritime.
- > Government and military.
- > Media.
- > Oil and gas exploration.
- > Aviation.

4. Key Features

iOra offers the following main features over the FleetBroadband network:

- > Productivity - enables remote users to have the same experience of and access to file or web based operational content as users in HQ.
- > Cost reduction - using iOra's unique Epsilon Compression technology downloads of updated content can be reduced by 90%.
- > Security - iOra integrates with the existing security infrastructure to allow secure data to be made available disconnected. By encrypting updates on the

network and client hard disk, iOra extends enterprise security and removes the need for end users to manually copy confidential documents.

- > Scalability - supports tens of thousands of users and terabytes of replicated content.
- > Transparency - replicates web-based applications without requiring the installation and maintenance of web based infrastructure at the remote location. The end user experience is the same, so avoiding costly re-training of end users.
- > Compatibility - iOra's web virtualisation technology means that dynamic web-based content can be replicated. In addition, iOra supports any network type from low bandwidth dial up to wide area networks that use intermittent satellite connections.

5. Benefits to FleetBroadband users

- > Ensures that all users, irrespective of network connection, have access to key operational data.
- > Allows remote WAN users to access central data at LAN speeds.
- > Reduces WAN and server costs.
- > Guarantees service even when there is no network.
- > Cuts satellite communication costs by up to 90%.

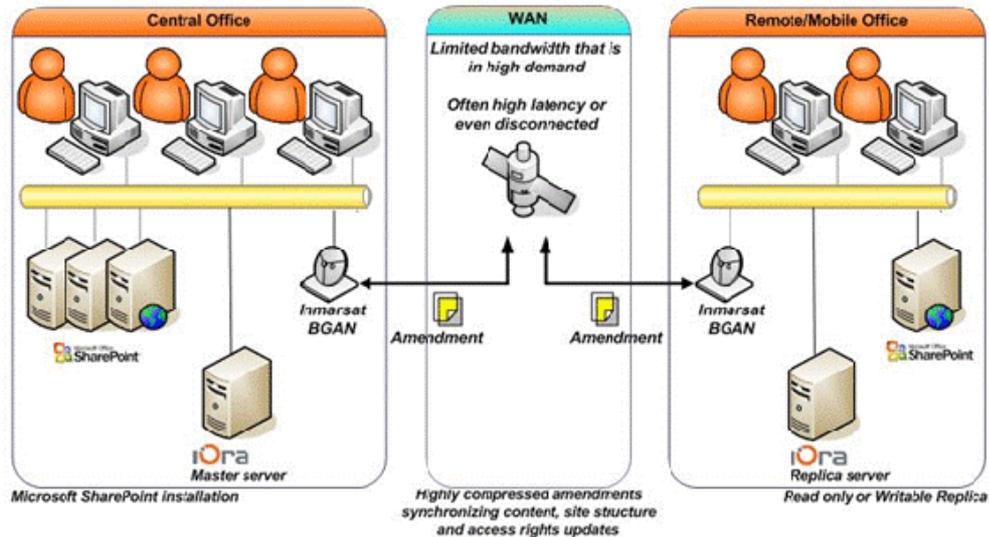
6. Setting up

6.1 Step by step set-up

To set up your computer and FleetBroadband terminal for iOra, perform the following steps:

- a. Configure your FleetBroadband terminal in the usual manner. For our testing, a FleetBroadband compatible terminal (the Thrane & Thrane Explorer 500) was used, with a variety of connection channels. Note that replication of data is not dependent on the selection of a specific channel, physical interface (for example, Ethernet or USB), packet size or terminal type.

- b. Install the iOra software in the master data environment as illustrated in the diagram below.



Note: The configuration shown above includes the Microsoft SharePoint portal application, as an example only.

- c. Install the iOra replica software on a computer at the remote location.
- d. Use the iOra software in the master environment to scope the business or operational data that you plan to replicate to the remote location. This data processing will generate an initial amendment file that will be installed at the replica.
- e. Install the initial amendment file at the replica - created as part of the last step on the master server. Once installed, you can access data directly from the replica server – disconnected from the master environment.
- f. Configure the iOra publisher software on the master server to check for changes that have been added to the master data server. Once detected these changes are efficiently bundled an iOra amendment file. Typically these amendment files are very small in comparison with the base content that has been updated, having been dramatically compressed by the iOra compression algorithm.
- g. Transport the amendment to the replica environment. This step can be automated using a facility integrated into the iOra replica software that checks for amendment files via an HTTP interface on schedule, or manual by including the amendment as an attachment on an email sent to the replica environment.
- h. Once the amendment arrives at the replica server, it is automatically unpacked by the iOra software and the changes detected by the master server are integrated into the replica server copy. The software has been designed to ensure that end users at the replica server do not have a role in the update process – for reasons of ease of use.

- i. The process then repeats on schedule, whereby the master server checks for changes and posts these to the replica on a schedule that is defined by the volatility of the data that is being replicated.
- j. A typical extension of the replication process is to enable data created at the replica server to be communicated back to the master environment. This type of deployment is referred to as two way replication.

7. Hints and tips

The following are best practice hints and tips to ensure you get the most from iOra over FleetBroadband:

- > iOra replication technology is a generic replication tool that can efficiently replicate most web-based applications and file and directory data. For example, one customer has replicated the sports section of the www.bbc.co.uk website to vessels as part of a crew welfare program.
- > The iOra technology is truly network agnostic and only requires the transport of amendment files between the nodes of the network for operation. Network bandwidth can be 2.4kb/sec or the full capability of the FleetBroadband network.

8. Test results

Recent tests of the iOra solution yielded the following results. Note that the aim of the test program was to compare a set of standard operations on the emerging portal standard Microsoft SharePoint. The test involved recording the data transfer requirements and associated response times for a series of standard operations i.e. open a connection, browse to a document library and open a document.

Test Results using a FleetBroadband compatible terminal (Thrane & Thrane Explorer 500)

Document Issue	Volume of data (kbs)		Response time (secs)	
	STD-IP	iOra	STD-IP	iOra
Connect VPN	30	0	20	0
Open Internet Explore	0	0	15	15
Browse to SPS	502	0	4	15
Browse to sites directory	290	0	120	15
Open site	74	0	75	20
Browse and open document library	50	0	15	10
Open document	2200	0 to 200*	540	30
TOTAL	3,146 KB	0 to 200	789 secs	105 secs

*The data requirement for opening a document has been averaged for a typical deployment. Note that most of the time the iOra technology will not require a data connection to the open file, as it is being accessed locally. The value of 200kb has been included to reflect the fact that changes will be made to the file over time and that these changes will need to be communicated to the replica. It is assumed that structured changes to the web portal are highly limited.

9. Further details and support

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