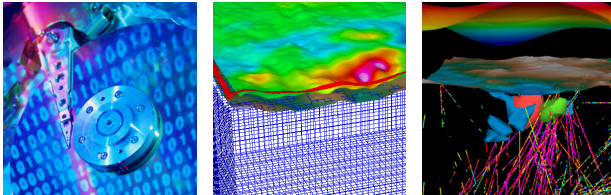


WHITE PAPER



VOXI Earth Modelling

Data Security and Architecture

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As a Geosoft VOXI customer, you have entrusted Geosoft to help protect your data. Geosoft values this trust, and the privacy and security of your data is one of our top concerns. Geosoft strives to take an industry leadership role when it comes to security, privacy, and compliance practices.

PURPOSE OF THIS DOCUMENT

This document outlines the basic design, protocols and processes used to ensure customer data security within the VOXI service.

What is VOXI?

Geosoft VOXI Earth Modelling™ is a geophysical inversion software service that generates 3D voxel models from airborne or ground gravity and magnetic data. VOXI Earth modelling is available through the Geosoft's Oasis montaj desktop application and uses the power of the Windows Azure cloud services to rapidly model large geophysical exploration datasets into 3D models. More information can be found on the [VOXI Earth Modelling home page](#) or at www.geosoft.com.

We protect your data in the cloud

All your data is transferred to/from Microsoft Windows Azure as SSL 128 bit encrypted HTTPS. This means that your data is always safe and secure. Furthermore, the VOXI service/client is only able to read/write the binary VOXI object files, this means the input model data and inversion modelling results are only understandable to the VOXI service and no other application or service can logically use the binary files.

- Geosoft relies on the security policies of Windows Azure to ensure the security of the VOXI model data stored in the cloud service during the inversion process.
- Original exploration data is not transferred and stored in the Windows Azure Service but is converted by the client into an Inversion Package that contains the minimum amount of information to run the inversion.
- The Inversion Document can only be read by the VOXI Earth Modelling Inversion Service ensuring that the information in the document is secure.
- A Geosoft Inversion Package and model results are only stored in Windows Azure for as long as needed to complete and download the inversion results to the client and then they are deleted from the Microsoft Azure service.

The VOXI Document

A fundamental concept used in the VOXI service is the "VOXI Document". A VOXI document is created by the user using Geosoft's Oasis montaj licensed software on their desktop computer. The document is a set of files that contains or references all data required for processing. The VOXI document contains information and data of the following types:

1. VOXI Model definition (number of cells, sizes of each cell, padding sizes, etc.)
2. Data and model Location (true origin, projection, etc.)
3. Observed data over the area (typically from a Geosoft Database (GDB) or Geosoft grid (GRD))
4. Digital Elevation Model (DEM) grid defining topography
5. VOXI Model constraints

6. Inversion results from previous VOXI runs

The VOXI document is never transferred across the Internet and remains only on the Oasis montaj client machine. If the document file is lost or destroyed it cannot be recovered by the service.

The Inversion Package

When the Oasis montaj user initiates the Geosoft VOXI service, an Inversion Package is created directly from the VOXI Document on the Oasis montaj client machine. This Inversion Package contains the absolute minimum data required for the inversion to take place. This data includes:

1. The VOXI Model definition
2. The input Observed data that has been windowed to the exact area of interest and converted to the VOXI inversion space. This inversion space contains no coordinate systems or location information.
3. Model Location

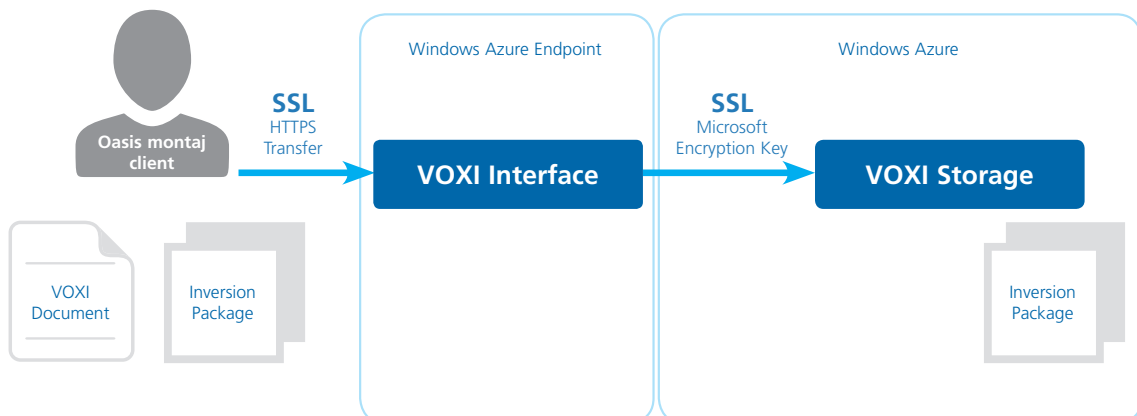
The Inversion Package can only be read by the VOXI service and cannot be reconstructed by the VOXI service. It contains the minimum amount of information to run the VOXI inversion.

What is not placed in the inversion package is:

1. Coordinate System
2. Previous inversion results

VOXI data transfer

Once an Inversion Package has been created it is uploaded using SSL 128 bit encrypted HTTPS by the Oasis montaj client to the VOXI Service Interface that resides on the External Windows Azure Deployed Endpoint.



Only the VOXI Interface on the Windows Azure Deployed Endpoint is exposed to the Internet. All other VOXI inversion services reside inside the firewalls and security protocols provided by Windows Azure. The VOXI Interface uses both SSL and a Microsoft encryption key to place the Inversion Package into the Internal Azure System storage. We rely on Windows Azure's security features and policy for storage level security to meet our end user requirements.

There are numerous articles and white papers that discuss the Windows Azure security features and policies. They are found on-line in the Windows Azure Trust Centre or at Microsoft.com.

Windows Azure Trust Centre:

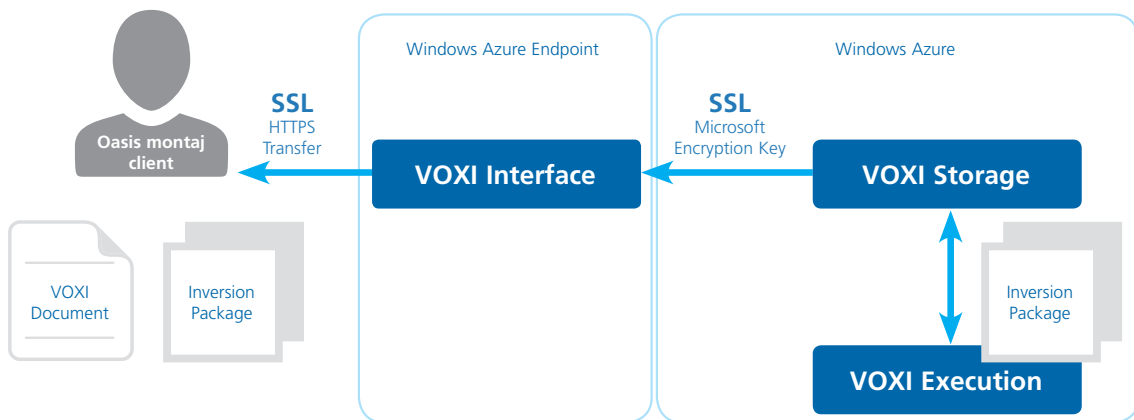
www.windowsazure.com/en-us/support/trust-center/

Understanding Windows Azure:

www.windowsazure.com/en-us/develop/net/fundamentals/intro-to-windows-azure

VOXI inversion execution

Once an Inversion Package has been placed in VOXI storage the resources required for executing the inversions will be provisioned. This process can take up to 30 minutes as Windows Azure services instantiates the appropriate number of new machines (cores) and a cluster is formed to run the inversion process (for larger inversions).



Once all the resources required for execution of the Inversion Package are ready, the inversion execution process begins with the Inversion Package being pulled from storage. During this phase only progress information is communicated to the client through the VOXI Interface. The Inversion Package remains completely inside the VOXI Internal server Within the Windows Azure storage.

Inversion result

Once the inversion is complete an inversion result is produced and stored in the VOXI Storage within the Windows Azure. At this point the original Inversion Package is deleted from the VOXI storage. The inversion result remains in storage until the Oasis montaj client requests the VOXI Interface to download the results. These results are transferred using SSL 128 bit encrypted HTTPS. Once the download is complete the inversion results are deleted from the VOXI storage within Windows Azure.

Debug artifacts

As a final step before releasing the VOXI Execution resources a Debug Artifact and a process report is produced and placed in storage. This artifact contains all the raw inversion inputs and outputs (zipped together) and is used to diagnose the inversion execution process. These artifacts are retained for an administrator set period of time (2 weeks) and then deleted from the VOXI storage.

Privacy policy

For further information regarding our privacy policy go to www.geosoft.com/privacy/.

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