Guideline for including an EPOS GNSS data node in EPOS

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1. Introduction

This document is addressed to the ***node manager*** and describes the procedure for adding a new ***GLASS node*** into the ***GLASS network***.

There are two main aspects to consider when adding a new node to the ***GLASS network***: the legal-administrative aspect (who can set up a node, first thing to do in the procedure, section 3) and the technical aspect (how to set up a node, sections 3 and 4)

The contact to go through this procedure and validate the integration of the GLASS node into the GLASS network is the GNSS Data Gateway (gnss-dgw@oca.eu).

2. Architecture of the EPOS GLASS network

2.1. Terminology

Data dissemination consists of

   A. Virtual layer (**GLASS network**): represented by GLASS nodes and its hierarchy operating on metadata

   B. Physical layer: represented by data centers/repositories storing actual GNSS data

Metadata:
   ● **T0** – metadata on GLASS virtualization architecture (node-specific) which describes the topology between the various nodes.
   ● **T1** – metadata on GNSS sites (T1) / data centers (T1b) (centralized, downward synchronized)
   ● **T2** – metadata on GNSS files (decentralized, upward synchronized)
   ● **T3** – metadata on GNSS data quality (decentralized)

A GLASS node (A): is an access point (hostname) for database services accessed via an Application Programming Interface, it has information about data centers.

Data gateway (A): is the top-level federated GLASS node for data. It manages the T0 metadata and maintains a central DB controlling primary T1/T1b metadata.

M3G : **M**etadata **M**anagement and distribution system for **M**ultiple **G**NSS Networks. It allows to upload, validate, and distribute GNSS station metadata (e.g. site logs).

Data center (B): is the access point (hostname) to data repositories (e.g. ftp server)

Data repositories (B): are the physical locations of the data files, for instance the directories of the data files (relative path within e.g. the ftp server or path to external directories.)

GLASS package: A set of tools installed at a GLASS node for providing virtualization level of data dissemination. At each individual GLASS node a subset of tools are activated according to the node functionality. Some of the tools may also be also installed at Data Center.
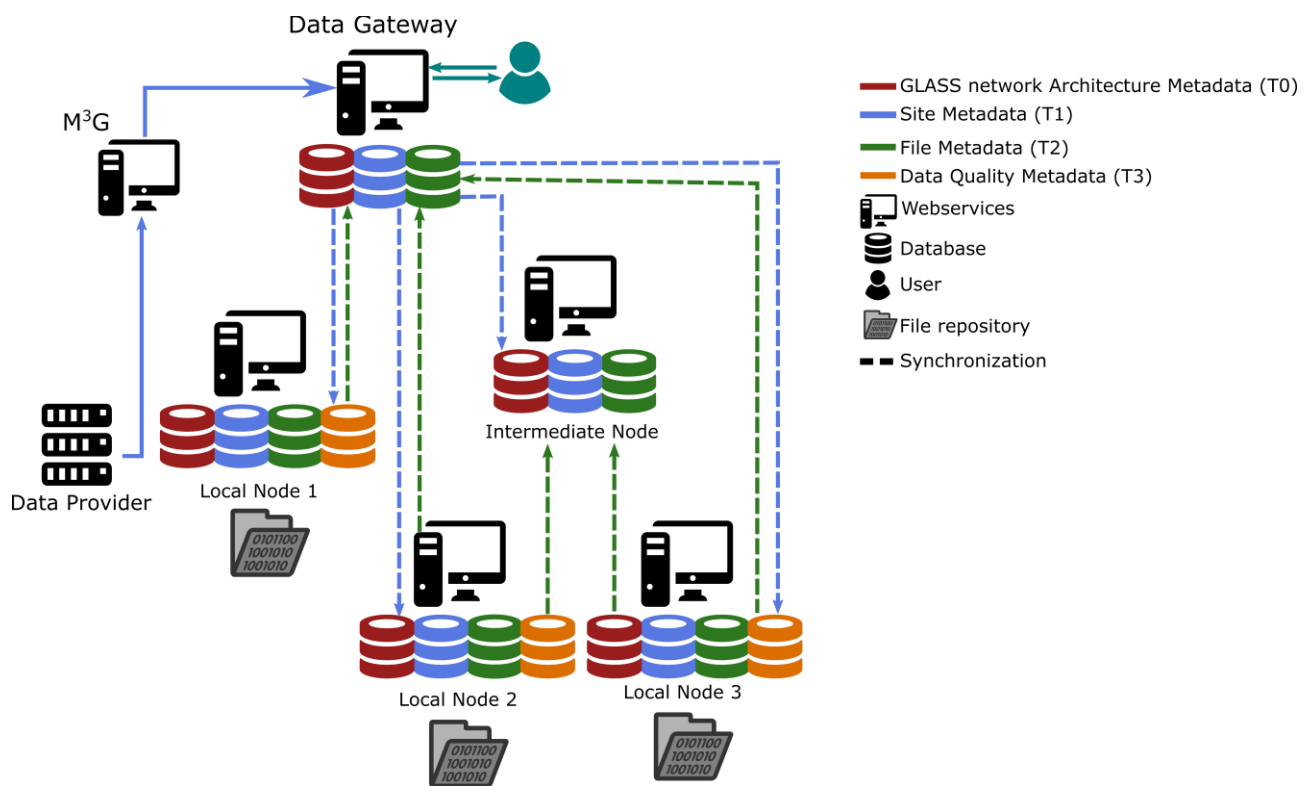
2.2.Schematic overview

Figure 1: Flow of the GNSS metadata in the GLASS distributed network

3. Procedure for adding a GLASS node to the EPOS GLASS network

1. Fill and send to the **M3G** (m3g@oma.be), with the **Data Gateway** in copy (gnss-dgw@oca.eu), the "*epos-gnss data node letter*", supplied at this address: https://gnss-metadata.eu/index.php?r=site%2Fguidelines .
2. Install and configure the **GLASS package** (see *GLASS package - configuration, installations, virtual machine document* – in preparation UBI, supplied at XXX)
3. Download the document "*epos-gnss data node parameters*", supplied at XXX.
   a. Collect the parameters of the **GLASS node** (name, IP, port, database name, username and password for the database).
   b. Collect the information concerning the **Data Centers** linked to the **GLASS node** (name, acronym, agency information, server parameters).
   c. Fill and send to the **Data Gateway** (gnss-dgw@oca.eu) the document "*epos-gnss data node parameters*".
4. Add the **Data Gateway** parameters that you received to the database.

The GLASS node is ready to be made operational.

4. Procedure to make operational the GLASS node

1. Ask **Data Centers** to add stations following the procedure described in the "*procedure for including GNSS Stations in EPOS*", supplied at https://gnss-metadata.eu/Guidelines. Do not forget to inform the **Data Centers** about the **GLASS node** name.
2. Read and follow the "Procedures for table synchronization and solving issues" (in preparation, UBI) document, supplied at xxx, to link the **GLASS node** to the **Data Gateway**.
3. In contact with the **Data Gateway**:
   a. Check the database is filled with the *station metadata (T1)*.
   b. Add *file metadata (T2)* and *QC metadata (T3)* for one station (see *GLASS package - configuration, installations, virtual machine document* and *QC doc*, In preparation UBI, GOP)

   Once the metadata related to the station used for the test are discoverable from the **Data Gateway**, the **GLASS node** is operational.

4. Complete the population of the database.

5. Additional Remarks

1. Intermediate GLASS node can also be installed. The procedure is mostly the same, except for synchronization. Contact the **Data Gateway** if needed.