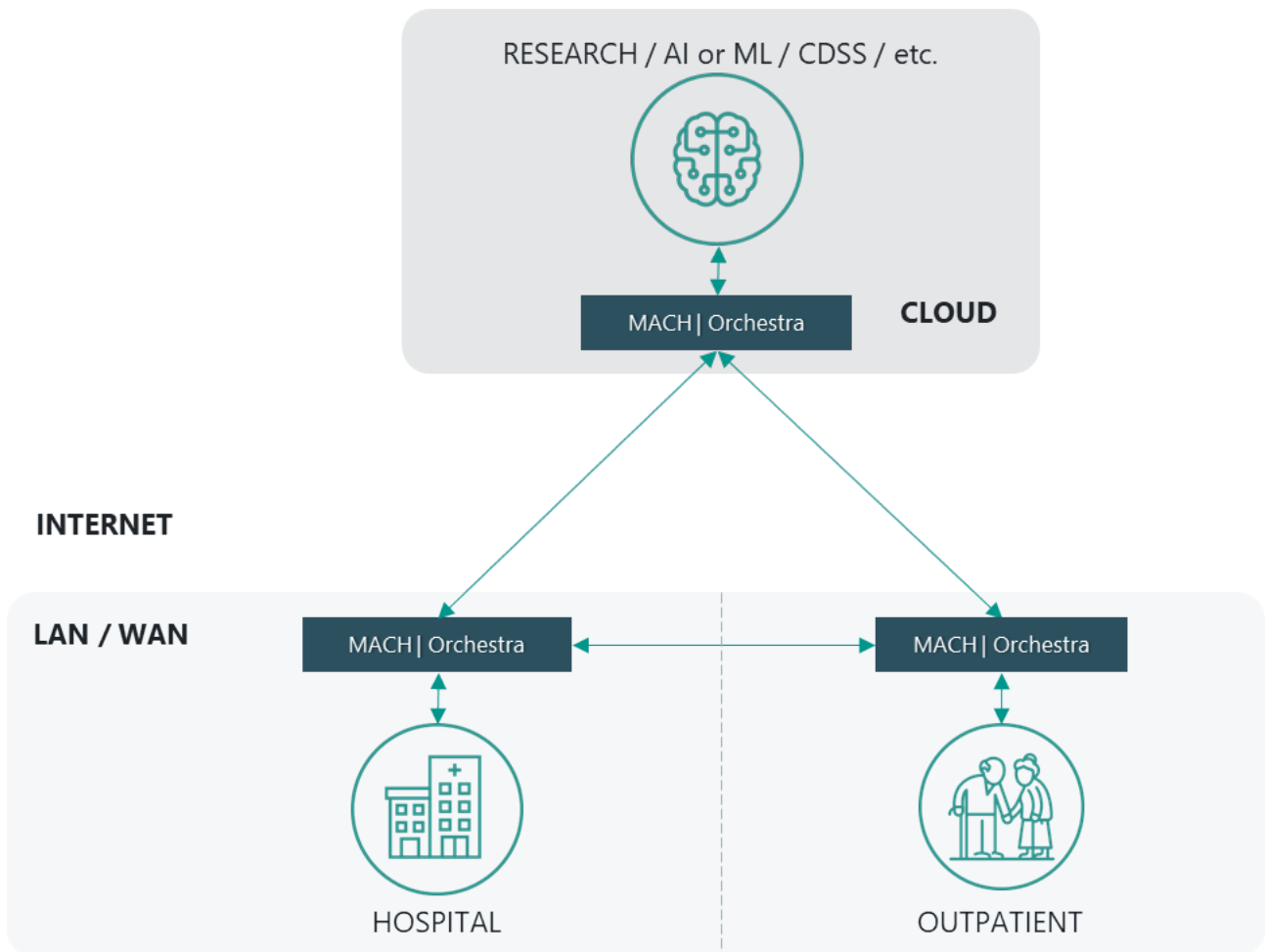


Module description

File Streaming Channel

The File Streaming Channel module exchanges files between multiple Orchestra instances using the HTTP(S) transport protocol.

Based on the MACH | Orchestra channel architecture, the File Streaming Channel module is used to exchange files between two or more independent Orchestra instances. In such a setup, one or more File Streaming Channel clients connect to a File Streaming Channel server to send or retrieve arbitrary files.



Key Features:

- **Transmission ID:** Used to identify a set of data that needs to be transferred. It maps to a local folder on the server.
- **Upload/Download Functionality:** In the case of an upload, all files sent by the client are stored under the corresponding Transmission ID within the target folder. For downloads, the server checks the outbound folder for transmission folders to transfer files.

- **Completion Event:** When a transmission is completed, an event is sent to Orchestra, allowing the creation of a process instance that can automate actions like file removal post-download.
- **Metrics Data:** This component provides additional metrics data for runtime performance monitoring.

The **HTTP File Streaming Server** is an inbound channel designed to provide

an HTTP service interface for clients. Its main functions include:

- **File Transfers:** It allows clients to upload files to the server or download files from it. Each transfer is associated with a **Transmission ID**, which uniquely identifies the set of data being transferred.
- **Data Management:** Uploaded files are stored in a specific local folder on the server, mapped to the Transmission ID. For downloads, the server checks for an outbound folder

containing files associated with the Transmission ID.

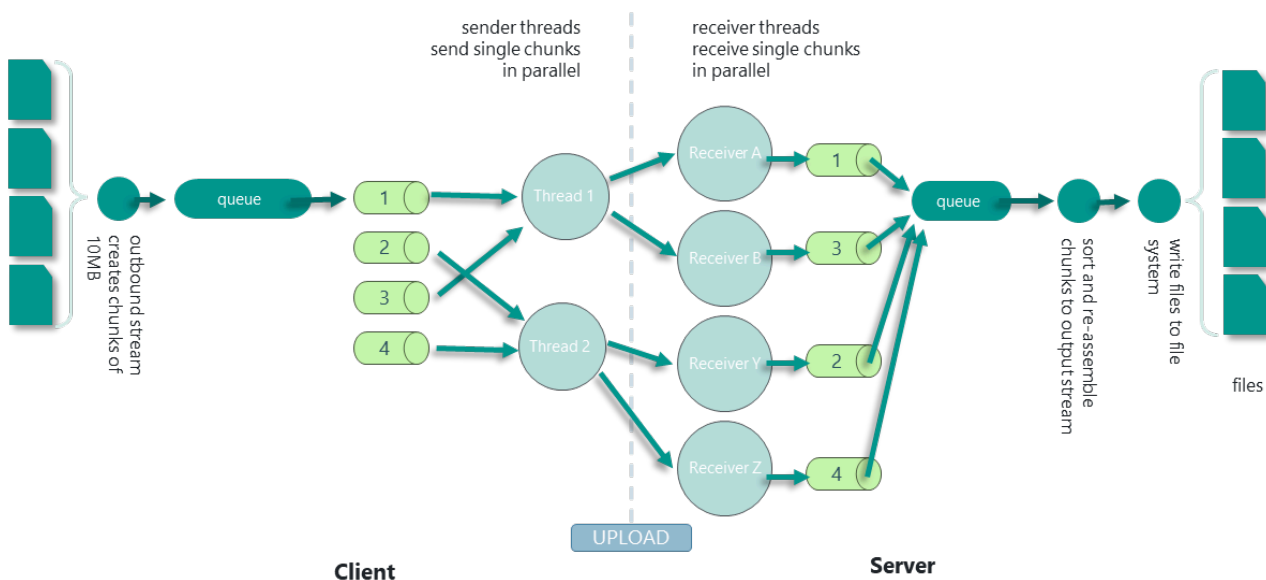
- **Process Automation:** Upon completion of file transmission, an event is sent to Orchestra to potentially trigger further automated actions, such as scheduling file removals post-download.
- **Metrics:** The component provides additional performance metrics for monitoring.

The **HTTP File Streaming Client** is an outbound channel that facilitates file transfers between a local client and a remote HTTP File Streaming Server. Its features include:

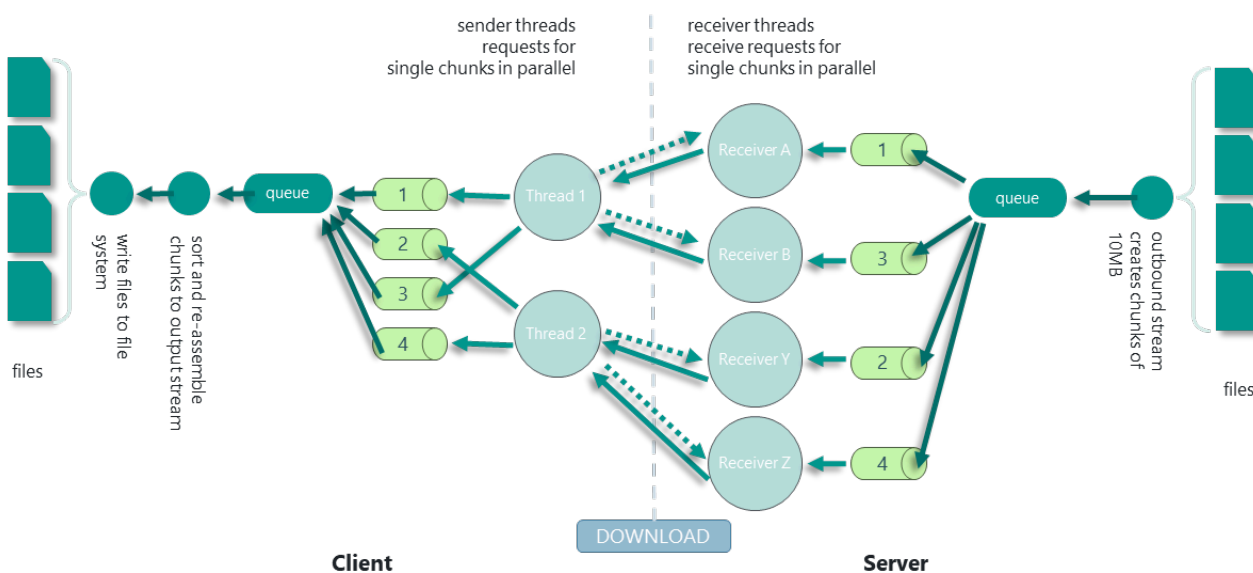
- **File Upload/Download:** The client can upload files from a specified directory to the server or download files to a specified local directory.
- **Parallel Connections:** It can be configured to support multiple parallel connections for file transmissions, enhancing throughput.

- **Recovery Mechanism:** In case of transmission failures, the client supports re-transmissions, allowing it to skip already sent or received data.
- **Operational Metrics:** Like the server, this component also provides metrics data for Orchestra's performance monitoring.

A File Streaming Channel client can act as sender to push files to the corresponding File Streaming Channel server.



A File Streaming Channel client can act as receiver to pull files from the corresponding File Streaming Channel server or can act in both modes in parallel.



The File Streaming Channel module is prepared to connect the independent MACH | Orchestra instances over the

public internet, as it allows to configure the maximum transfer size to deal with firewall settings of public cloud provider.

For optimal utilization of the available network bandwidth between the client and the server instances, the File

Streaming Channel module splits the input files into chunks of configurable size and sends them in parallel streams so the server.

To handle arbitrary data formats, the transferred data chunks can be Base64 encoded.

The File Streaming Channel utilizes the HTTP(s) protocol to synchronize the content of configurable folders.

For enhanced security the File Streaming Channel transport

connections can be configured for MTLS mutual authentication of the connection endpoints.

Supported use cases

A commonly known use case is to synchronize DICOM studies from multiple on-premise MACH | Orchestra client instances with a cloud based MACH | Orchestra server instance.

Another use case is to send DICOM studies from multiple on-premise

MACH | Orchestra instances to a central cloud based MACH | Orchestra instance for study analysis and retrieve the analysis result, once it is available, in an asynchronous pattern.

Dependencies

You need to have a licence for MACH | Orchestra and the optional File Streaming Channel module to use this module.

Regulations and instructions for the intended use and application of the software module can be found in the module documentation supplied with the software.

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