About Chronologue Relay P2P Protocols

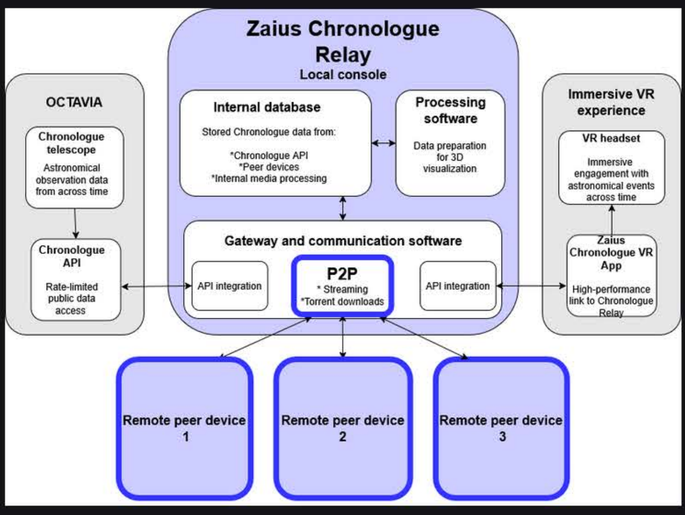
This article explains the basics of peer-to-peer (P2P) sharing protocols and will help you decide whether to opt into them on your Chronologue Relay console. It will enable you to get the most out of P2P functionality by clarifying which type works best for particular needs.

By opting into P2P sharing, you can expand your access to astronomical events from across time to experience immersive virtual reality (VR), optimize your data stream for speed, and work around OCTAVIA's Chronologue API rate limit constraints. P2P does this by allowing you to access data from remote nodes in a network. By gathering and sharing Chronologue telescope observations in a decentralized system, you overcome the limitations of single-source delivery.

A P2P network is like a library cooperative. In a neighborhood library swap, neighbors share books directly with each other instead of everyone traveling to the same library across town. With a P2P network, Chronologue Relay users gather and share astronomical data rather than depending on OCTAVIA's Chronologue API as an exclusive source.

Two P2P protocol types support most Chronologue Relay network sharing:

- **Streaming protocols** allow **real-time viewing** of low-payload media files, such as standard- or high-definition preview videos for Chronologue events or 2D interactive statistical visualizations.
- **Torrenting protocols** support the **download** of high-payload files to your local Relay console's internal database for rendering in VR. The data stream has no rate limit to obstruct its flow, and the distribution of server resources across network peers supports efficient data transmission, enhancing download speed.



P2P data sharing in the context of Chronologue Relay data flows. P2P protocols enable you to gather Chronologue data from peers, without having to depend solely on OCTAVIA's Chronologue API. You store gathered data locally in your Chronologue Relay console to prepare it for 3D rendering in the Zaius Chronologue VR app and headset.

Background

P2P sharing in the Chronologue Relay arises from the need to efficiently gather large volumes of Chronologue data on your local console to enable VR experiences.

Chronologue-based VR events require terabytes of observational data.

Chronologue API rate limits impede access to VR-scale data.

P2P torrenting provides efficient access to VR-scale Chronologue data.

P2P streaming smooths the data-sharing experience.

At a glance

The following table compares P2P streaming and torrenting usages in the Chronologue Relay:

	P2P streaming	P2P torrenting
2D videos (standard or high definition)	✅ Perfect for previewing Chronologue events.	⚠️ Need to take the extra step of downloading before viewing. ✅ Good for keeping on your local console for future reference.
Interactive 2D data visualizations	✅ Perfect for quick access. ❌ Does not permit design revisions.	⚠️ Need to take the extra step of downloading before viewing. ✅ Great for enabling design revisions.
Immersive stereoscopic 360° 3D VR	❌ Does not support VR.	✅ Your go-to option for VR.

Use cases

Using P2P protocols in the Chronologue Relay, you can:

Preview astronomical events from across time, to determine whether to download the complete data.

Download event data to your local console for an experience in immersive VR.

View interactive data visualizations to present research or astrophysical concepts for an audience.

Collaboratively harvest previously unseen astronomical data from OCTAVIA's Chronologue API to create a desired VR experience.

Contribute to the P2P community by serving as an additional data source for other people who want a copy of an event saved on your Chronologue Relay console.