

Convoy™

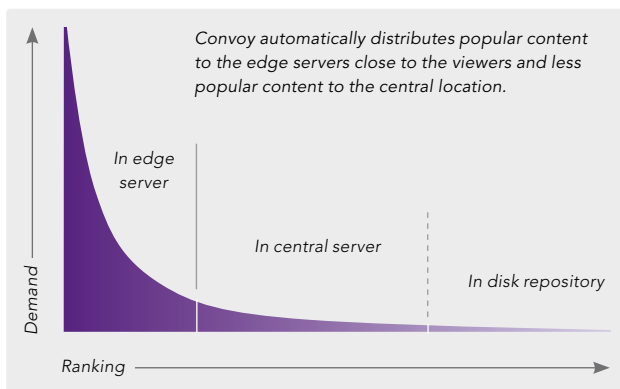
The Orbit 2x Distributed Asset Propagation System

Preliminary

The Convoy system adds integrated asset propagation capability to the Orbit 2x streaming platform, streamlining the deployment of efficient distributed streaming architectures.

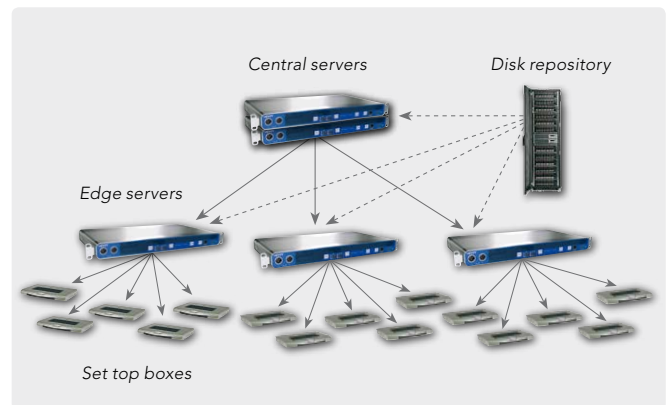
Efficient deployments of scalable streaming systems require decentralized solutions where distributed streaming capacity handles the majority of the requests through the use of edge servers close to the end-users. The Orbit 2x streaming server is uniquely well suited for distributed deployments, based on its high capacity, small form factor and exceptional reliability.

Achieving the full benefits of a distributed system requires efficient propagation of content to make sure that the most requested assets are available in the edge servers. Demand for content falls rapidly with the ranking, with most of the requests resulting from a quite small number of the top-ranked titles, as illustrated in the picture below. The main task for an asset propagation system is then to make sure that the storage in the edge servers is filled with the most popular titles. Since the popularity changes over time the edge storage must be continuously updated. Therefore a dynamic distribution method must be used.



Fully distributed

Convoy is a fully distributed asset propagation system that is an integral part of the Orbit 2x servers. Each server collects usage statistics based on the requests entering that specific server. This information is then used to decide which content should be available locally. When popular content, not already available in local edge storage is identified, it is automatically downloaded from the central server. To make room for new content, the least popular content is automatically removed. When an edge server receives a request for content not currently available in local storage, the request is automatically re-directed to the central server, through the use of standard RTSP signalling.



The same mechanism can also be used in the central server to further extend the storage hierarchy to external disk-based solutions. This may be more optimal for really long-tail/low-demand content, such as very large VoD catalogues or nPVR applications. When a central streaming server receives a request for content not currently available, the content is automatically pulled from the disk server using standard ftp transfers. Streaming starts immediately, without having to wait for the whole file to be downloaded.

Scalable and reliable

All decisions are made locally in each server and require no external or centralized management resources. This ensures a system that scales without limitations when the streaming capacity is increased. Due to the distributed nature there is no single point of failure, making the asset distribution system provide the same high reliability as the Orbit 2x streaming platform. The decisions are made by each server based on requests directed to the same server, why different assets may be stored in each edge server.

The fraction of requests that are served by the edge servers depends on a number of parameters, including the amount of memory in the edge servers and the steepness of the popularity curve. It is quite possible to handle more than 90% of the requests in the edge servers when an efficient asset propagation system is used.

The Convoy system offers several parameters for tuning performance for specific network environments and usage behavior.

With Convoy, Edgware introduces the first fully distributed asset propagation system. Convoy takes the Orbit 2x streaming platform to a new level by offering a complete distributed system solution that optimizes the utilization of network resources.