

The Benefits and Challenges of Deploying Large Regional VOD Asset Libraries

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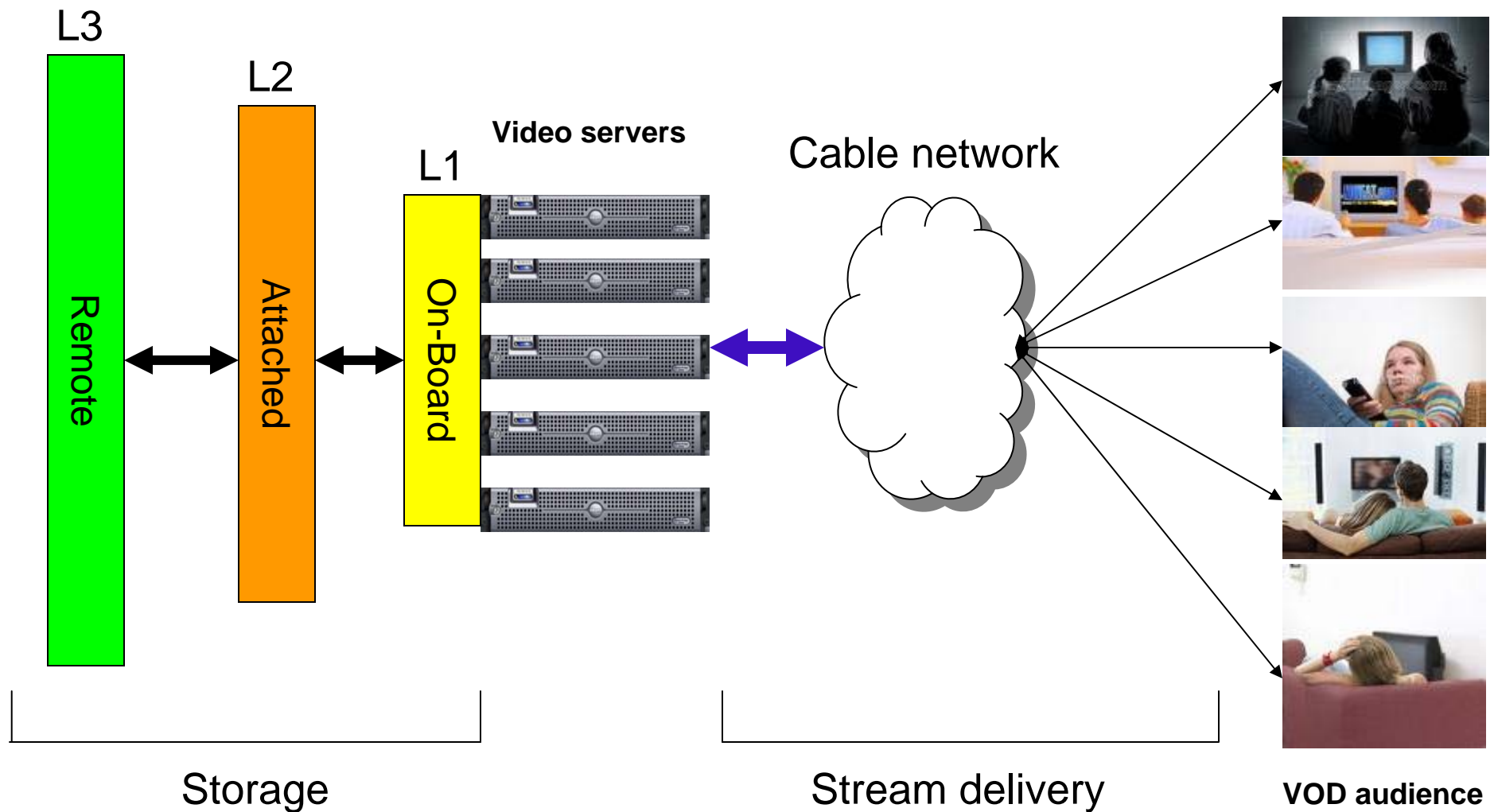
VOD Trends

- Domestic VOD systems are being upgraded to ten thousand hours of storage for basic VOD services
- Many domestic and international customers have plans to pursue LookBack and StartOver type services
 - LookBack services could require from 100 to 300TBs of VOD asset storage
- The encode, ingest, storage and control systems to support these advanced services will run well over one million dollars per VOD system
- The number of VOD systems are increasing as a result of fragmentation due to scaling methodologies employed by the digital video network control system vendors

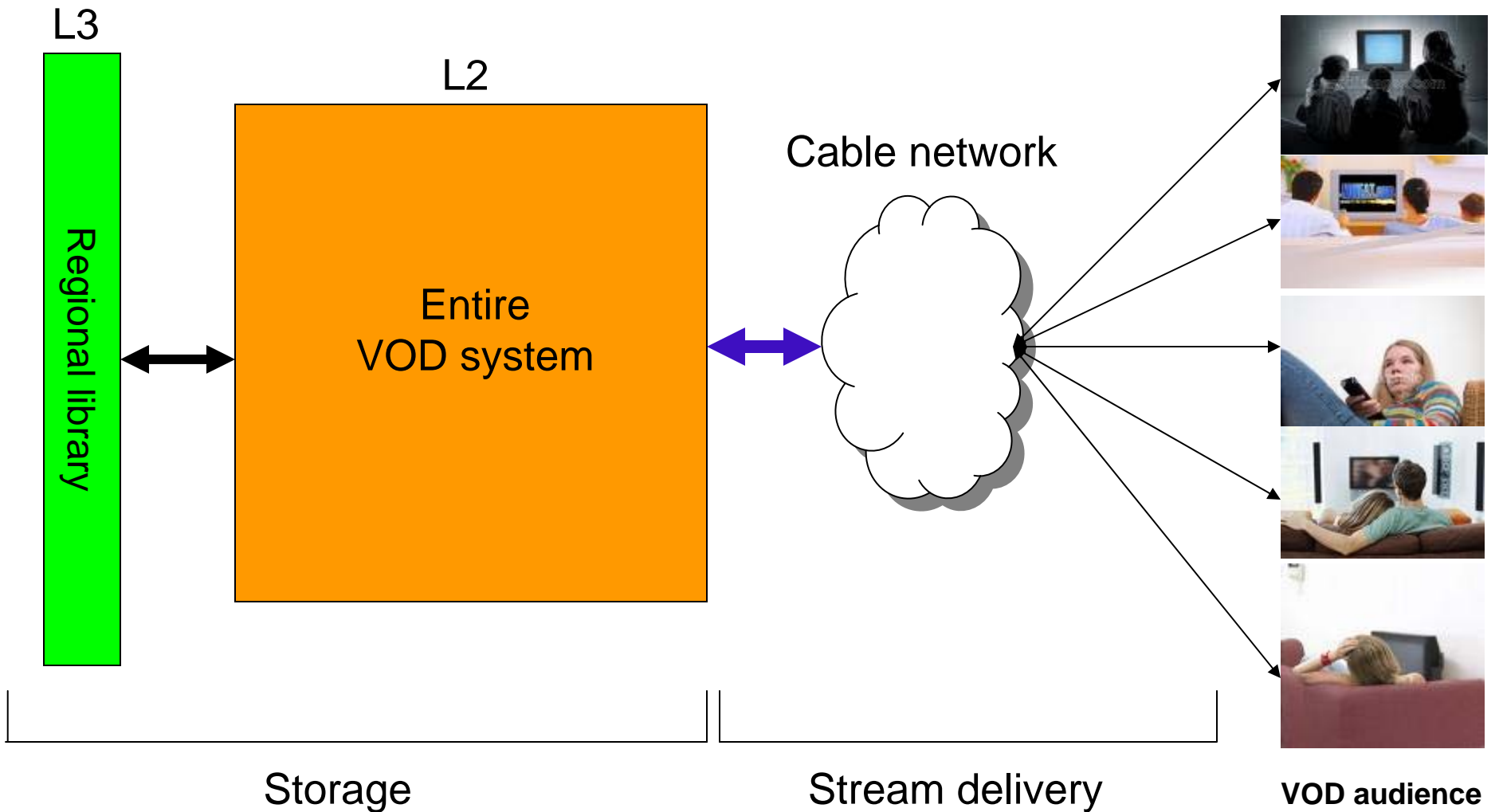
Distinction

- Hybrid VOD library & centralized VOD server
 - VOD assets are streamed to the edge QAM on request
- Regional VOD library
 - VOD assets are copied to the local VOD system on request

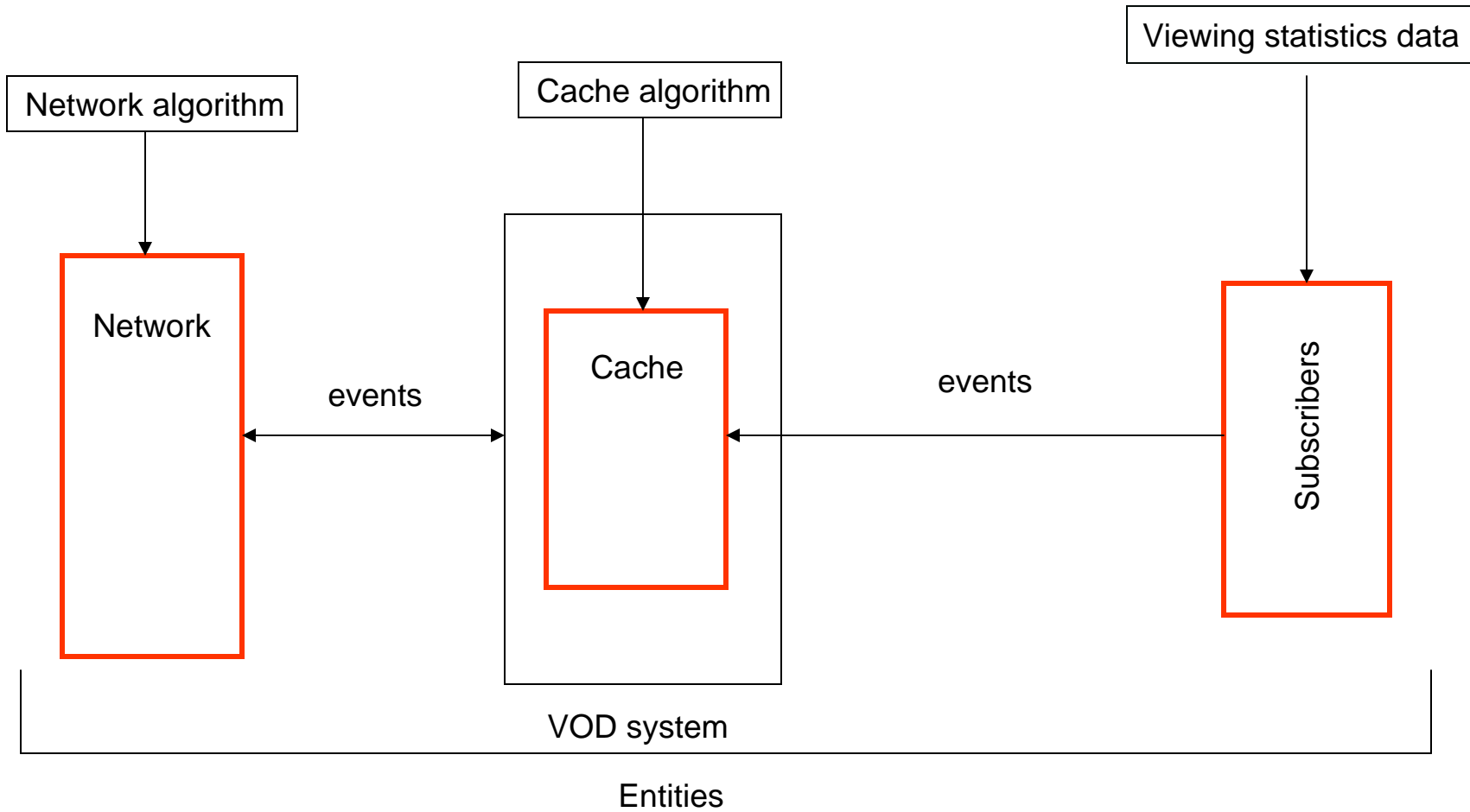
VOD System Caching Levels



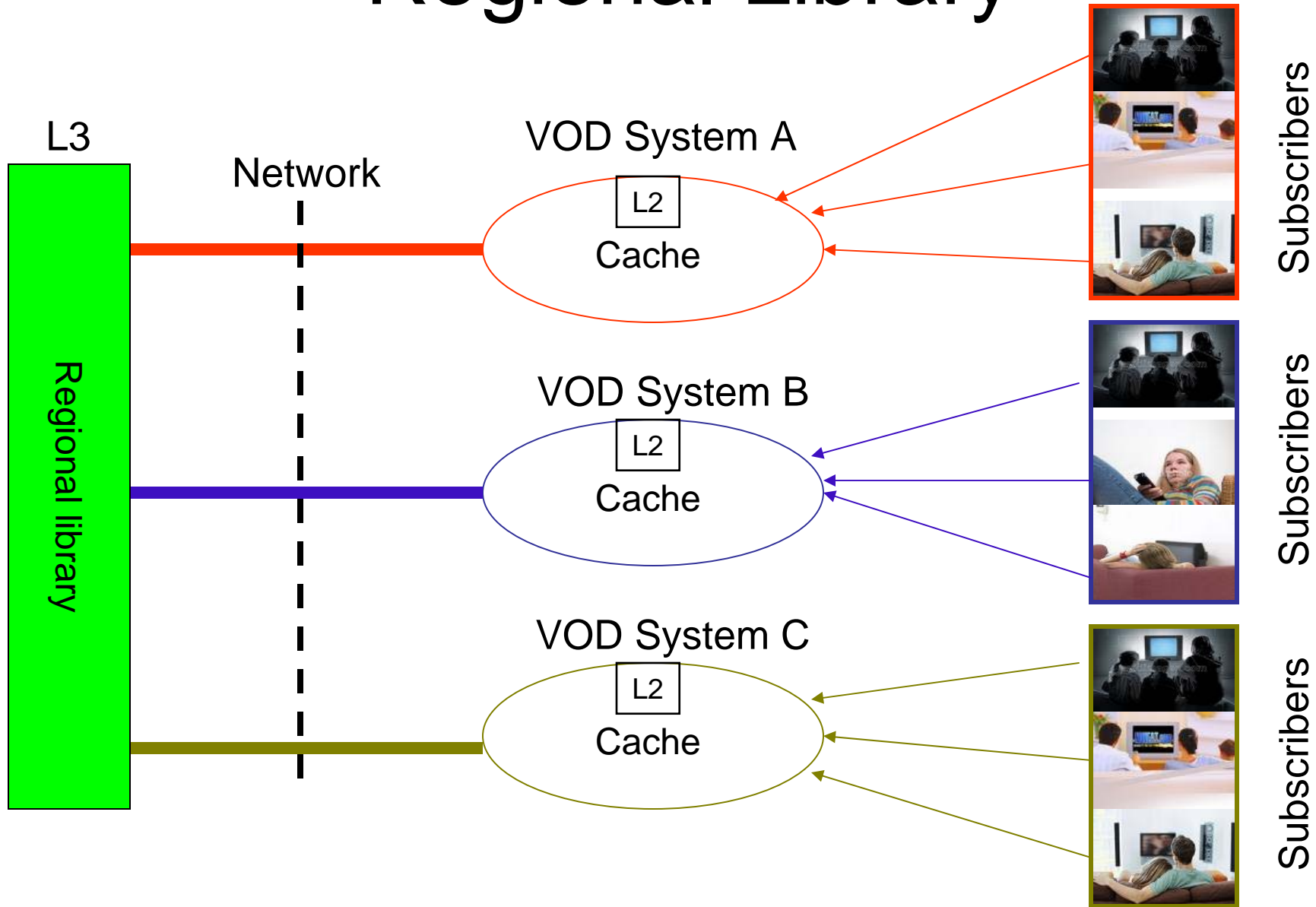
Regional Library Model



Simulation Model

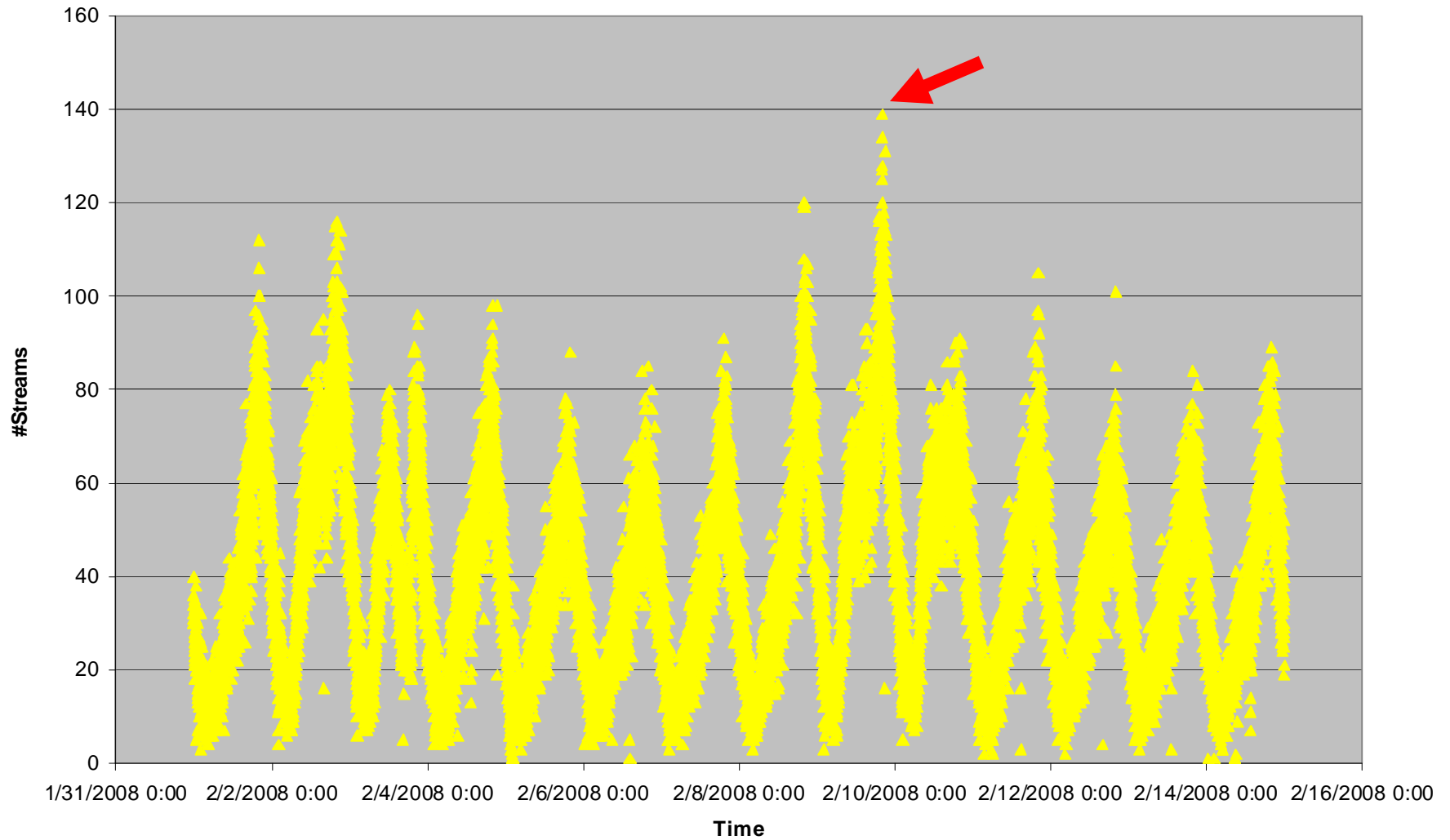


Regional Library



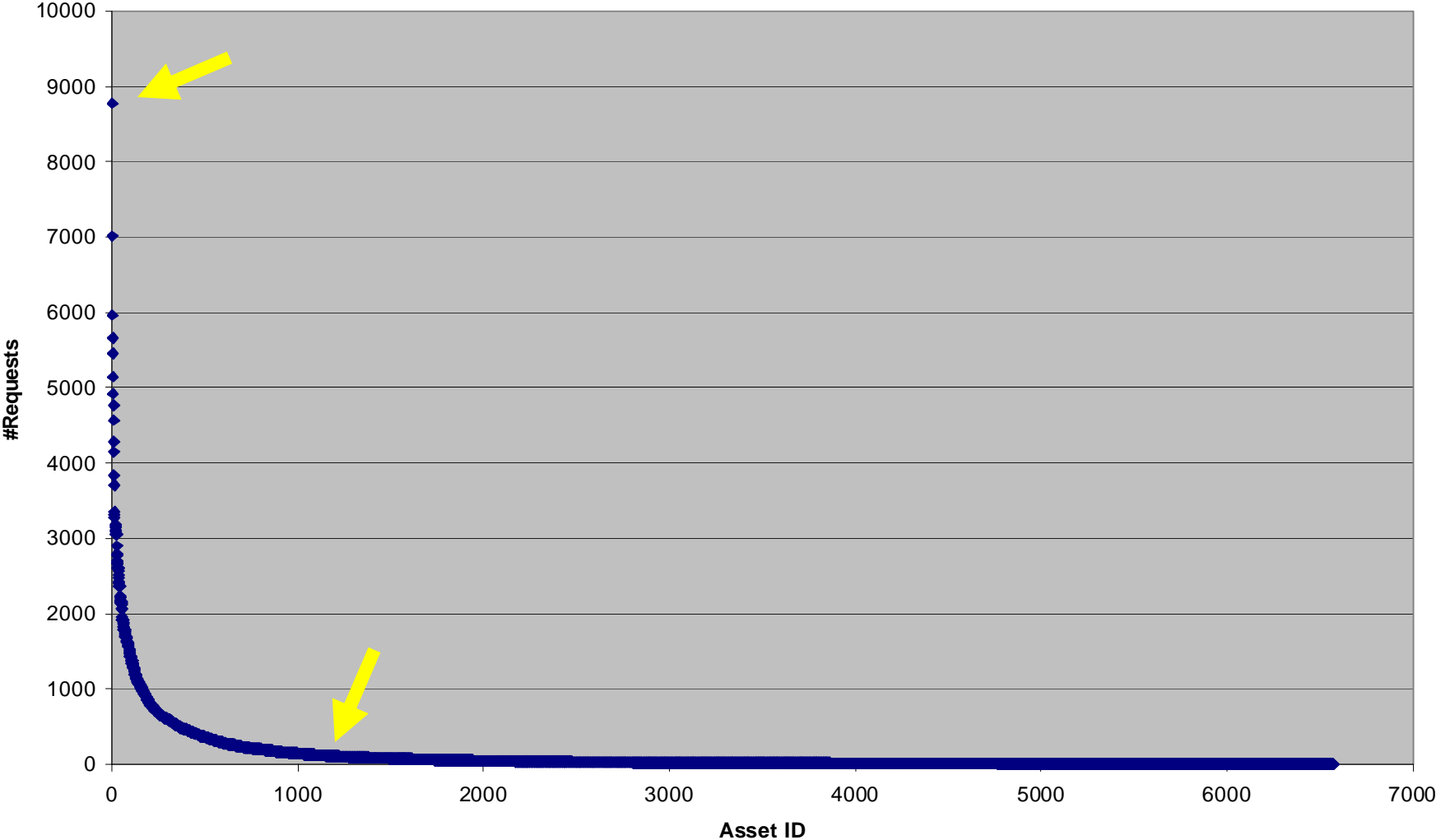
VOD System (A) Arrivals

Stream Request Arrivals



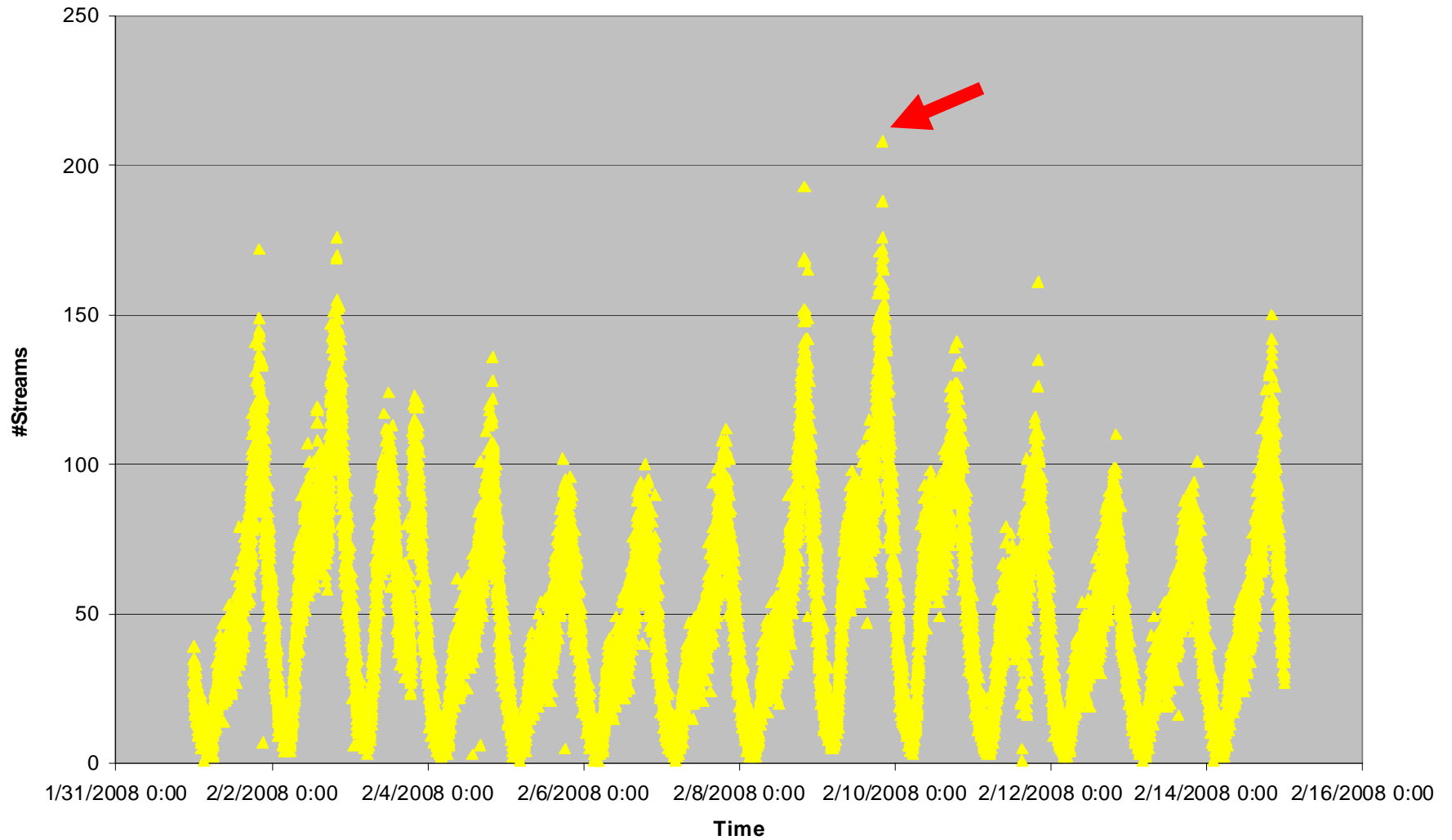
VOD System (A) Asset Distribution

Asset Access Distribution



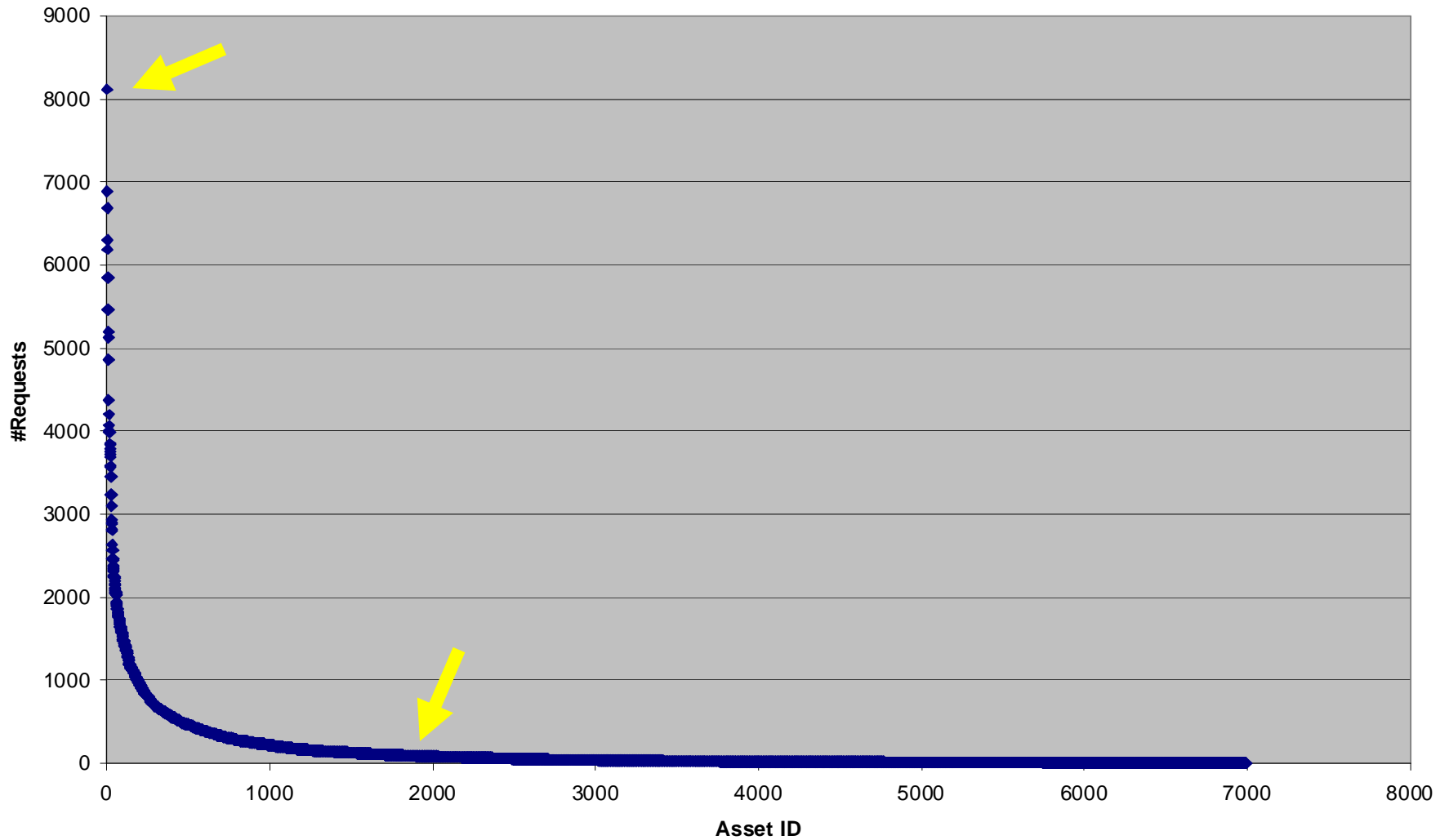
VOD System (B) Arrivals

Stream Request Arrivals



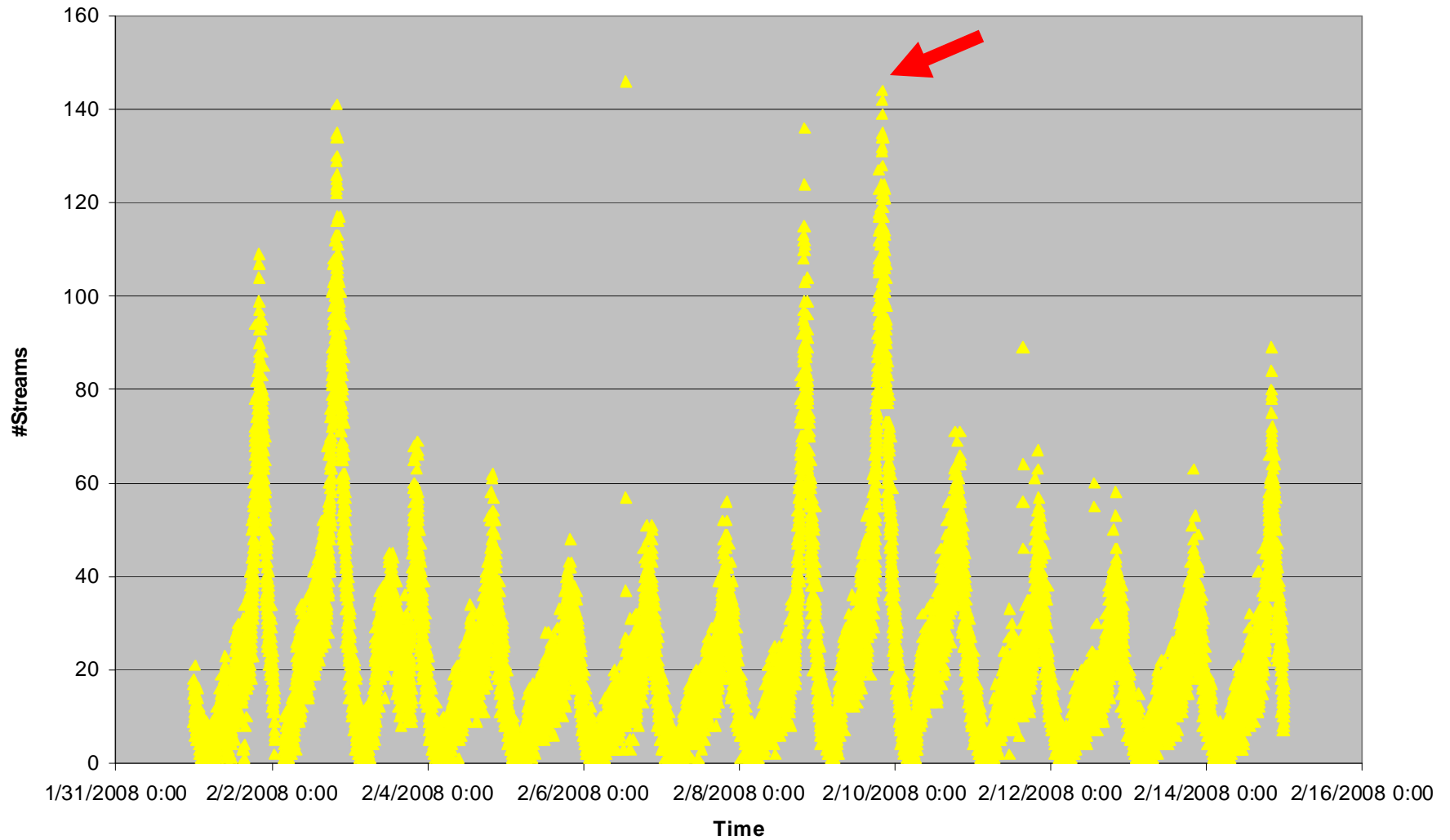
VOD System (B) Asset Distribution

Asset Access Distribution



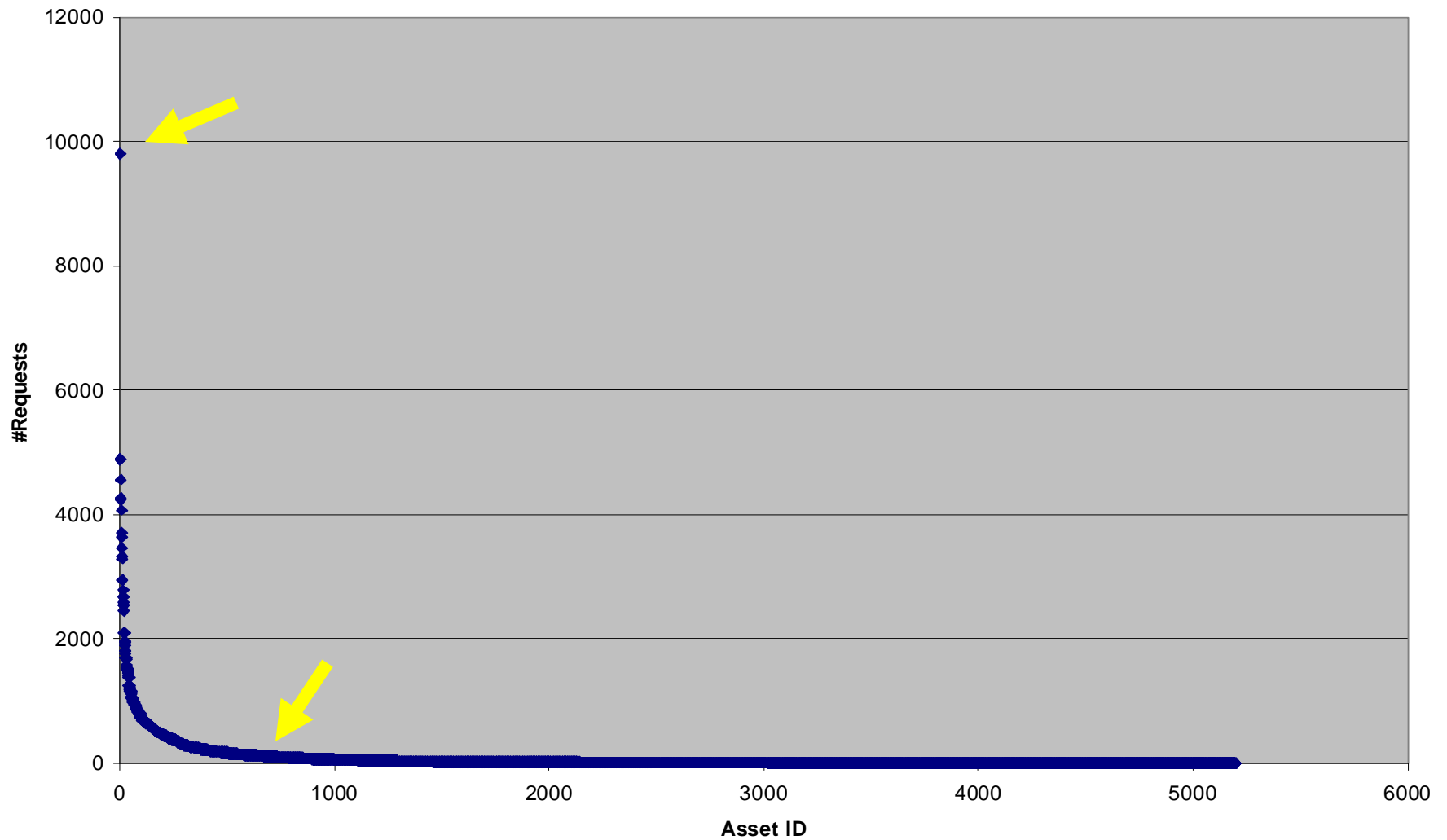
VOD System (C) Arrivals

Stream Request Arrivals



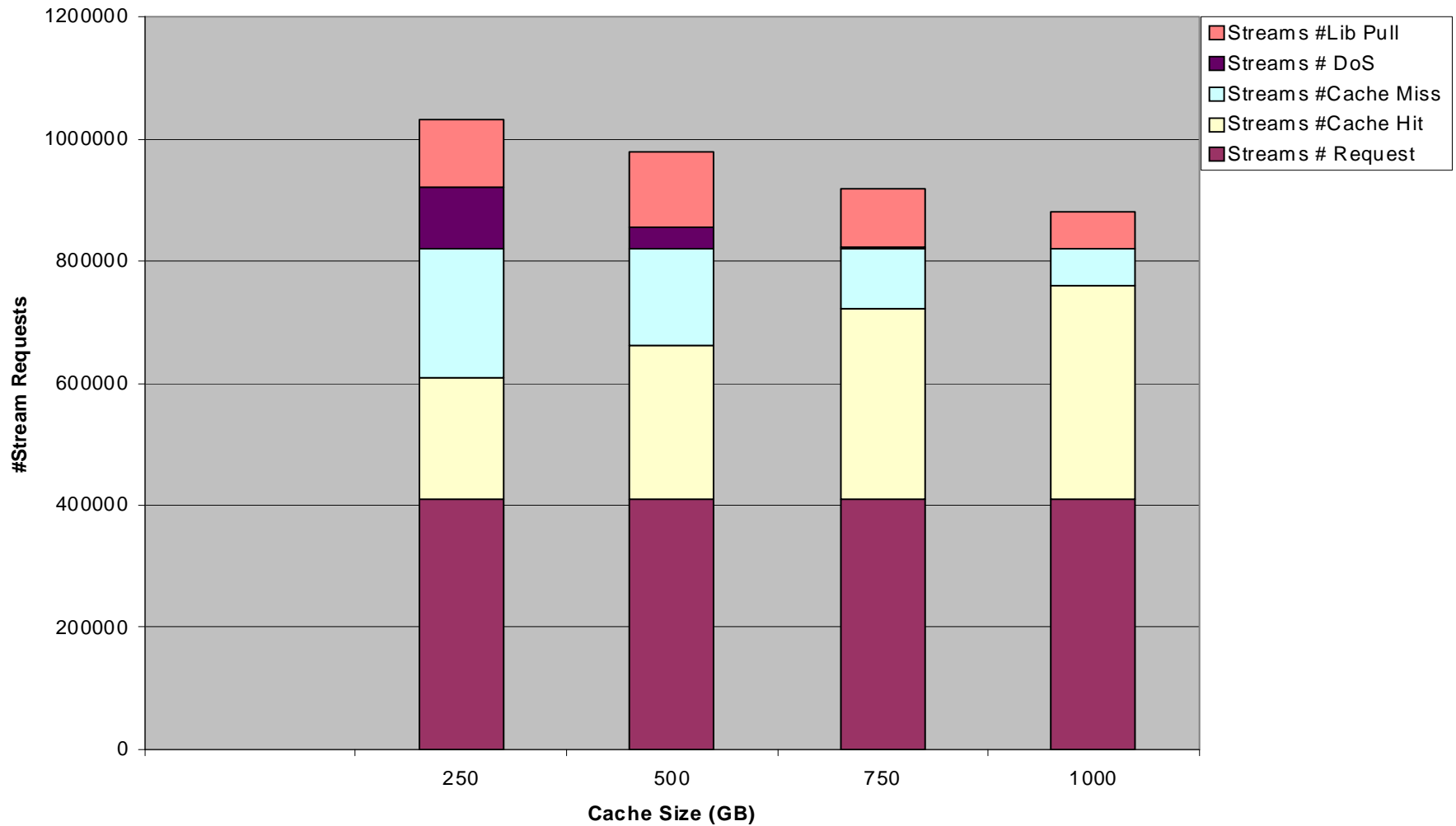
VOD System (C) Asset Distribution

Asset Access Distribution

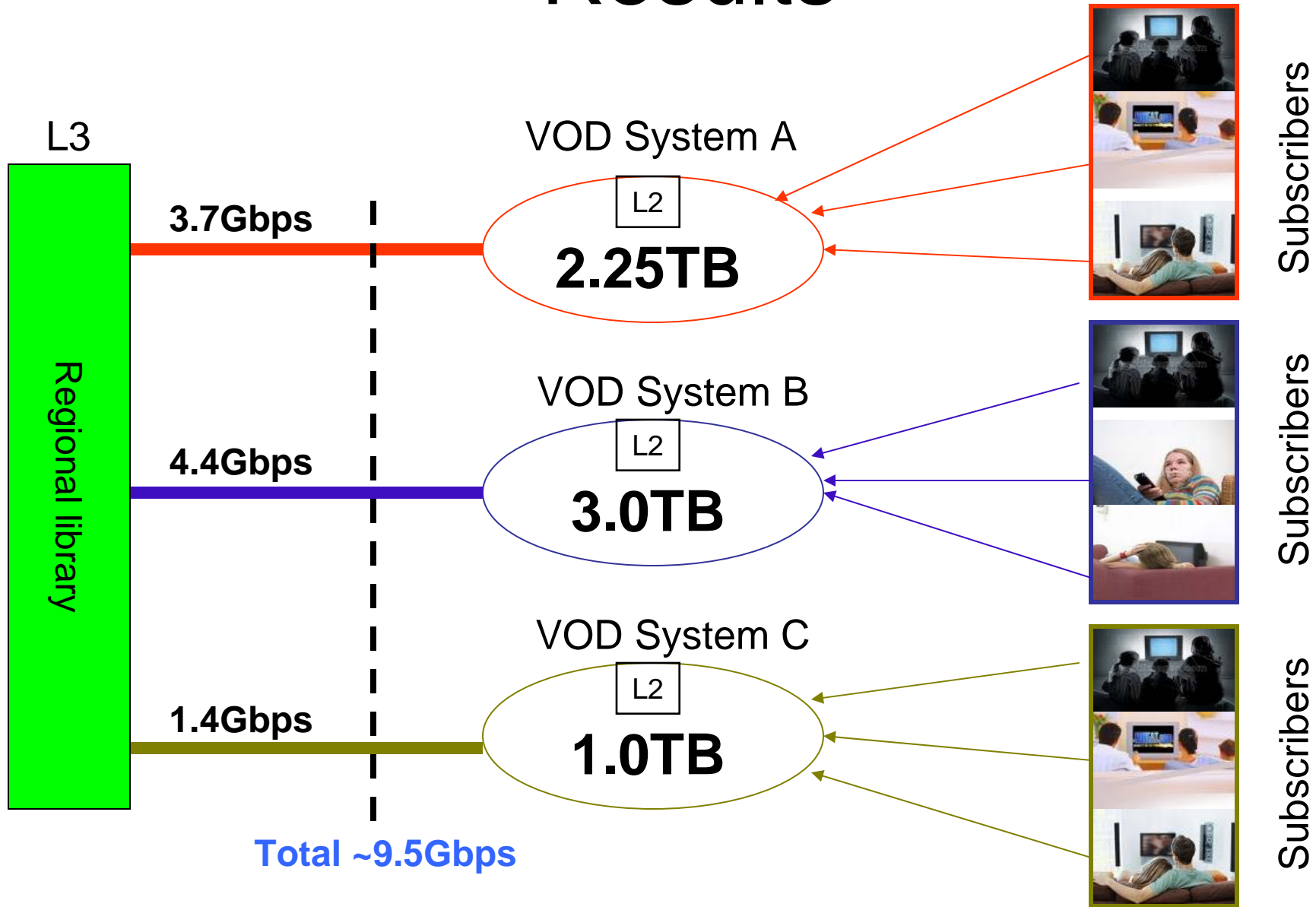


Result: VOD System (C)

Cache Performance



Results



Technical Challenges

- Metadata publishing
- Trick modes
- Latency
- Asset lifecycle
- Bookmarks, active rentals, etc...
- Ad zones

Areas of Investigation

- Impact of HD content on library storage, network BW and L2 cache
- What has a larger impact on the asset distribution curve?
 - Content depth or number of subscribers
- How will time zones help distribute the network load?
- Usage patterns for StartOver and LookBack

Conclusion

- Significant capital savings should be realized if regional libraries can be in place to support new advanced VOD services
- Employing a caching model with a regional VOD library will reduce the network BW required by 90%
- Reserving 5Gbps of network BW and a LRU cache of ~1000 hours per system is a good starting point to support a regional library
- Subscriber usage patterns can have a very large impact on network BW and cache values
- Our industry has a lot of engineering to do to make regional libraries operate with NGOD, ISA and other proprietary VOD architectures