

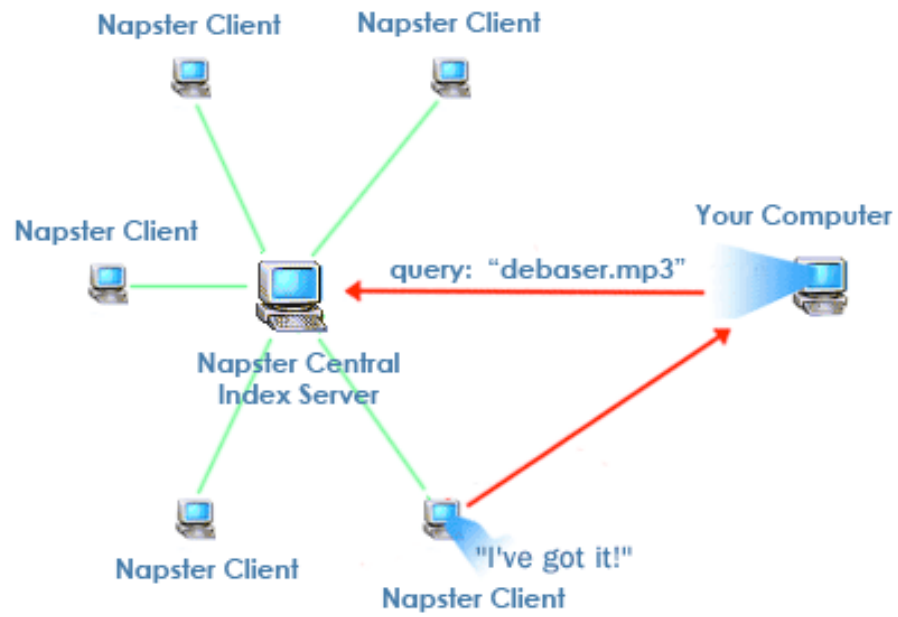
Peer-to-Peer (P2P) Systems



Napster



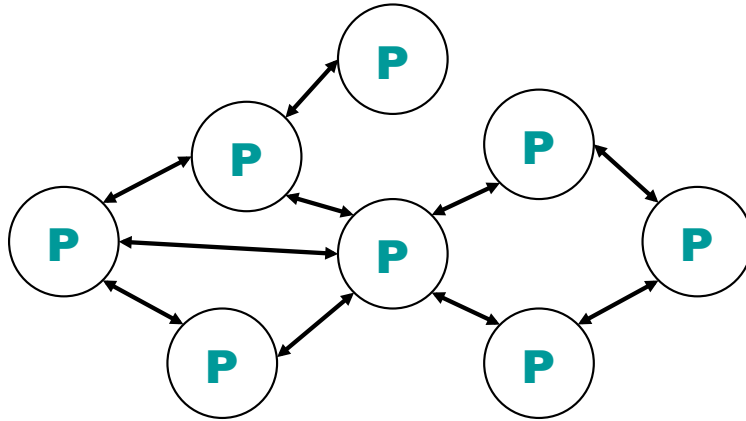
Napster Architecture



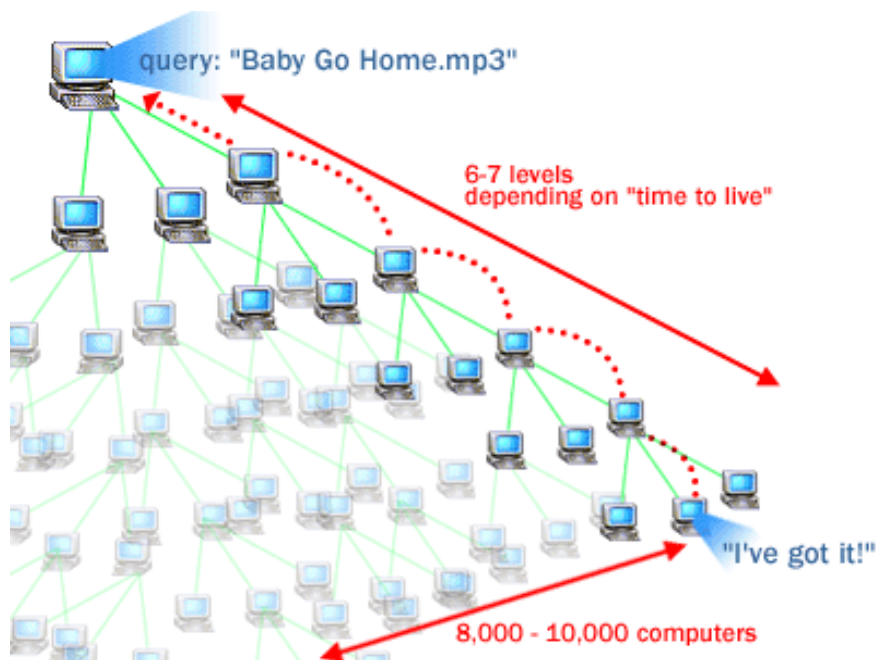
Gnutella



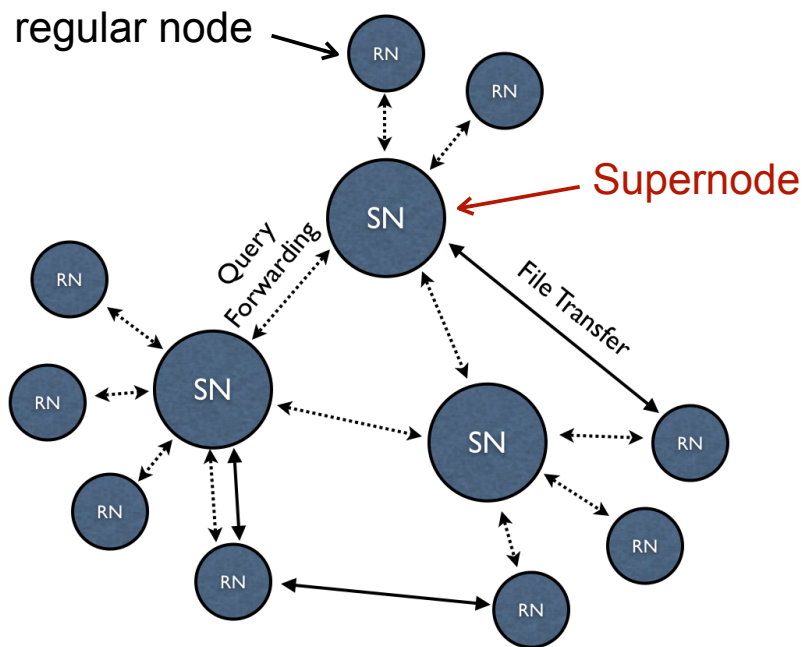
Gnutella Architecture



Gnutella Queries



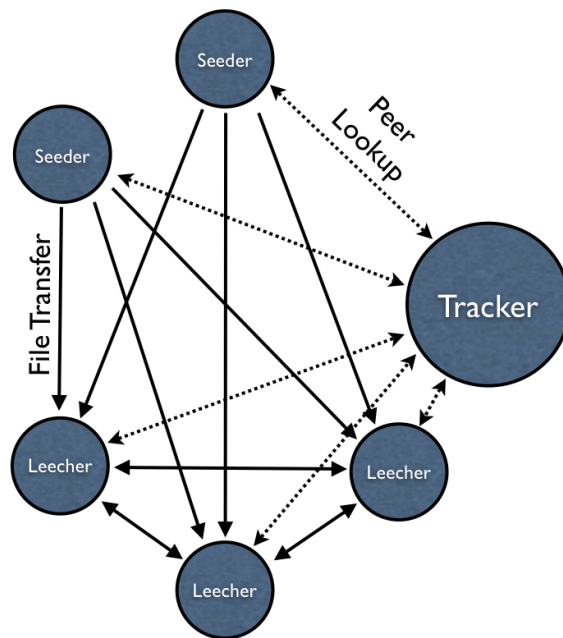
Kazaa / FastTrack



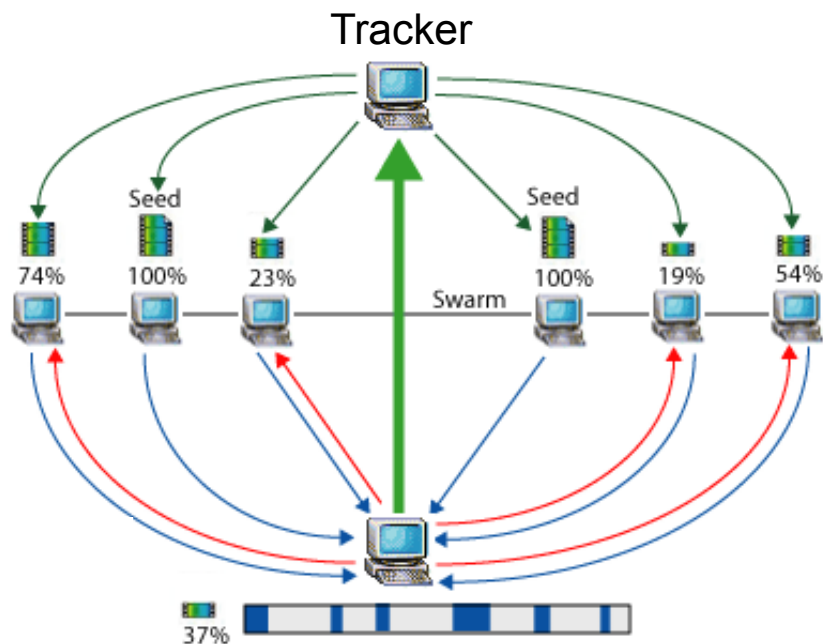
BitTorrent



BitTorrent Architecture



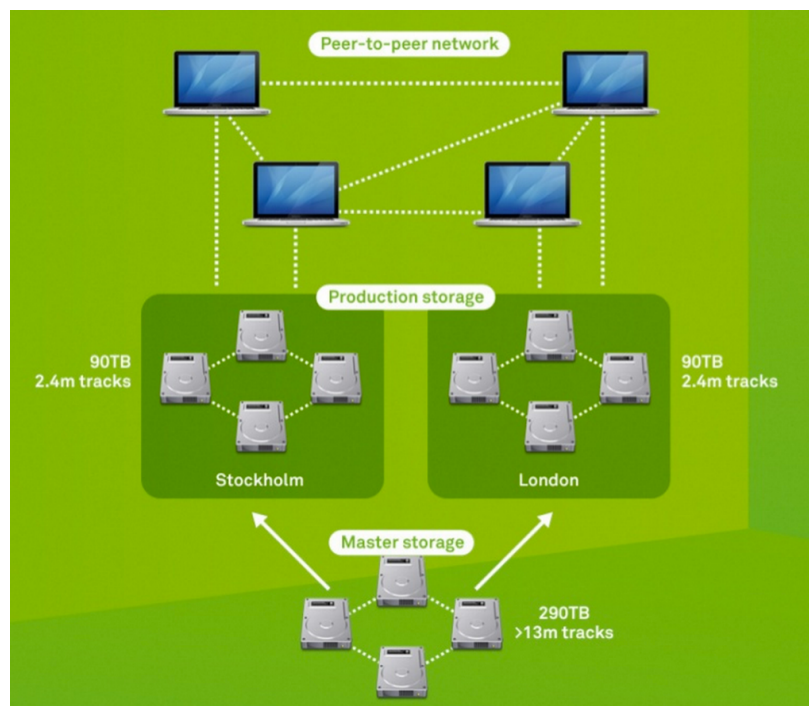
BitTorrent Downloads



P2P Comparison

	Centralization	Query Model	Scalability	Overhead
Napster	High; central server	Direct server lookup	High	Low
Kazaa	Moderate; SuperNodes	Query flooding	Moderate	Moderate
Gnutella	Low (pre-UltraPeers)	Query flooding	Low	Low
BitTorrent	Moderate; trackers	N/A	High	Moderate

Spotify (c. 2011)



Spotify Request Servicing

