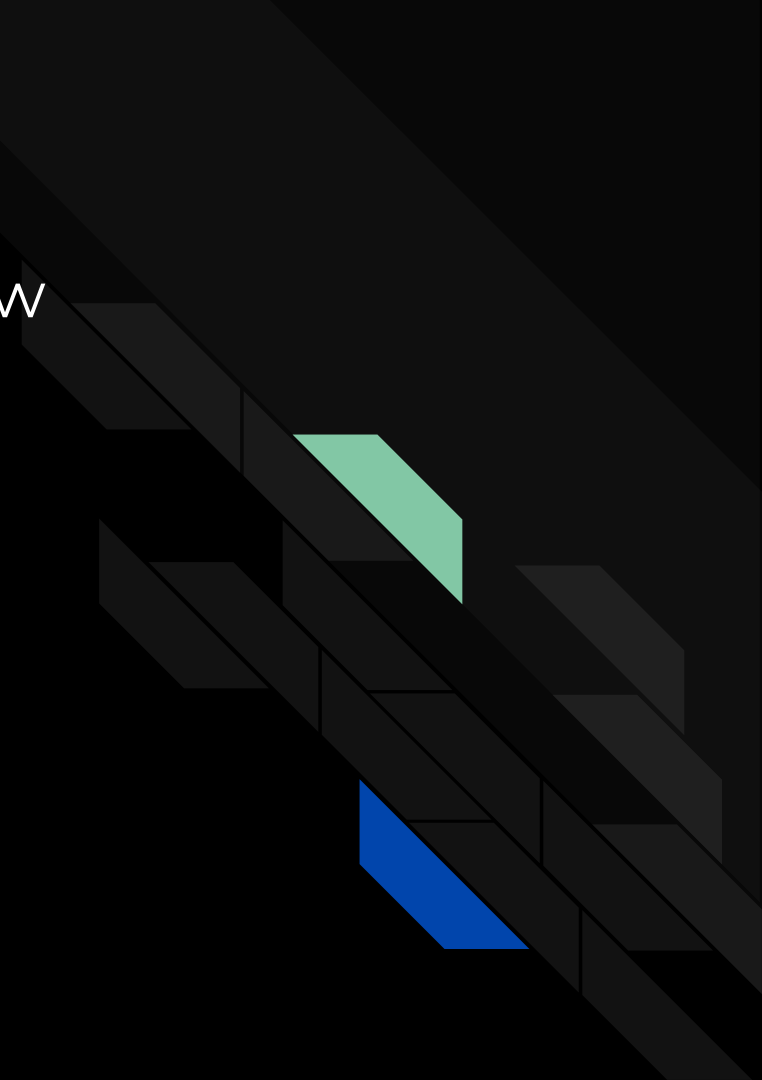


# Application Layer Traffic Optimization (ALTO)

Presented by Ole Algoritme

# ALTO Presentation Overview

- What is ALTO?
- What is ALTO trying to solve?
- ALTO use-cases
- IETF ALTO RFCs
- The ALTO architecture and Protocol





# What is ALTO?

- ALTO is an acronym for Application-Layer Traffic Optimization
- ALTO is an HTTP based client/server protocol (RFC 7285)
  - JSON encoded Request/Response over a REST-ful web API
  - Main use-case initially meant for Service Providers
    - Internet Service Providers, Network Providers, Content Delivery Networks
- ALTO is an active IETF workgroup
  - Established in November 2009



# What is ALTO trying to solve?

01

Provide an abstract definition for how Peer-to-Peer applications (+ others) can be more network aware and decide which endpoint it fetches data from

02

Reduction of Service Provider network congestion and costs due to random content fetching across networks

03

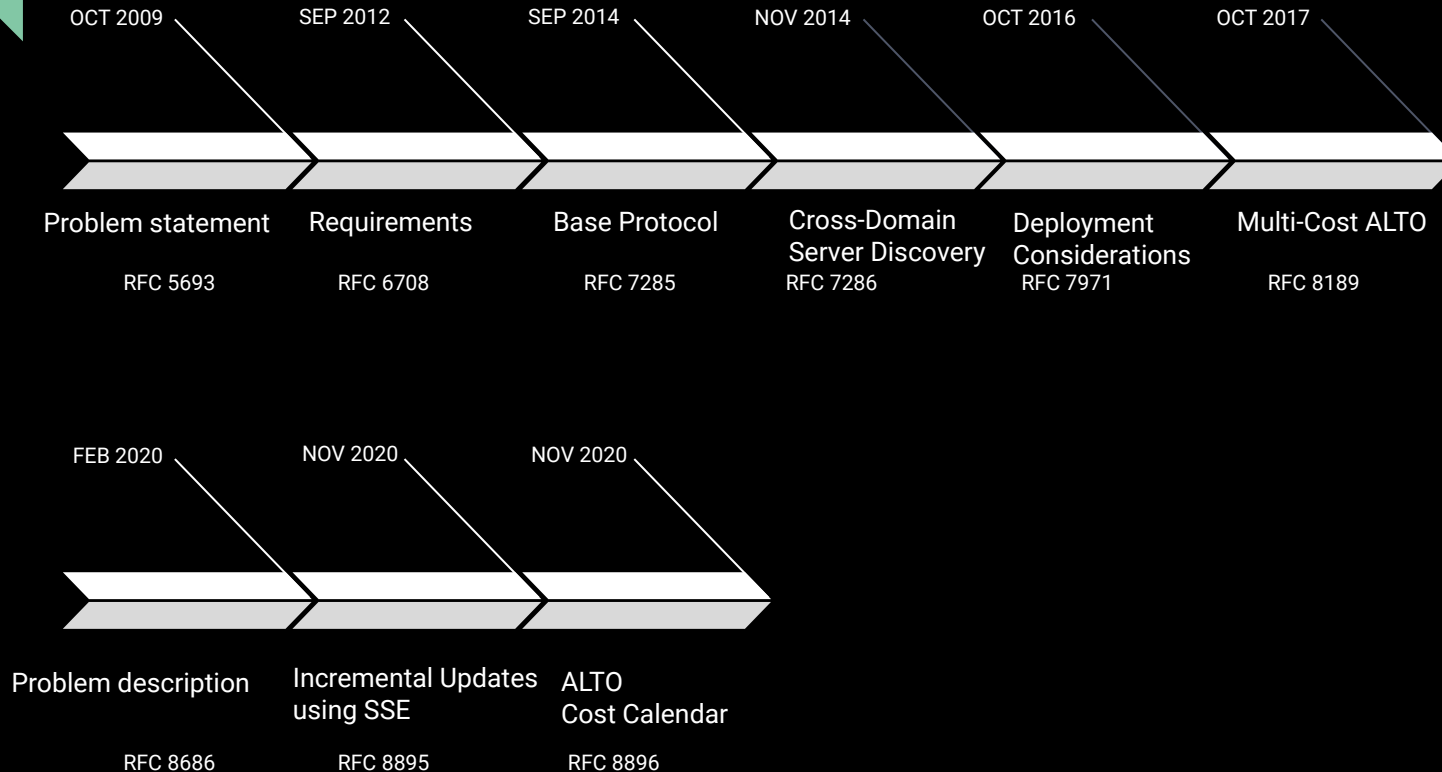
A better user experience, where users automatically get data from the “Most Optimal” endpoint instead of fetching it randomly across the globe



# ALTO use-cases

- Peer-to-Peer Applications
  - P2P File-sharing
  - P2P Video Streaming
- Deployments in CDN and ISP networks
  - Reduce latency, congestion and cost
  - Improve QoE
  - Improve QoS

# IETF ALTO RFCs





# IETF ALTO RFCs

## Extensions in Active Drafts Status:

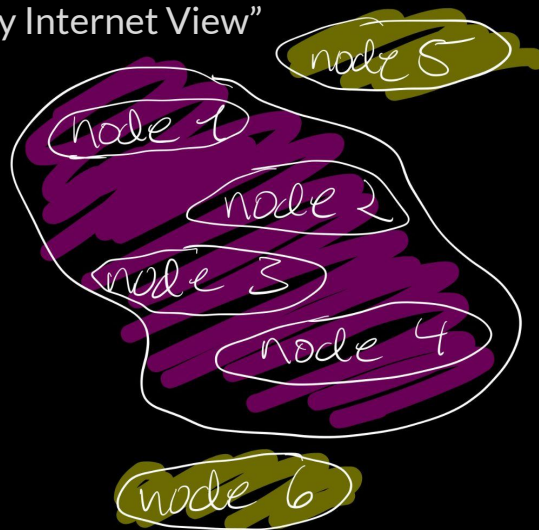
- CDNI Extension
  - CDN Interconnection Advertisement
  - A set of protocols to interconnect multiple CDNs
  - Defines a new ALTO Service to provide CDNI footprint and capability advertisement interface (FCI)
- ALTO Path Vector Extension
  - Provides detailed abstracted routing information using ANEs
- ALTO Performance Cost Metrics
  - Provides a set of new network performance metrics
    - Network delay, jitter, packet loss, hop count & bandwidth measurement
- Unified Properties for the ALTO protocol
  - Abstracts the concept of an ALTO Endpoint by presenting those as “property maps”

# ALTO Architecture

## The ALTO Server

- Is an HTTP REST-ful based server deployed in an arbitrary network
- Responds to queries from ALTO Clients to give better options in peer selection
- Each ALTO Server maintains a “My Internet View”
  - My Internet View is an allocation of
    - External Node Sets
    - IntraDomain Node Sets

“My Internet View”



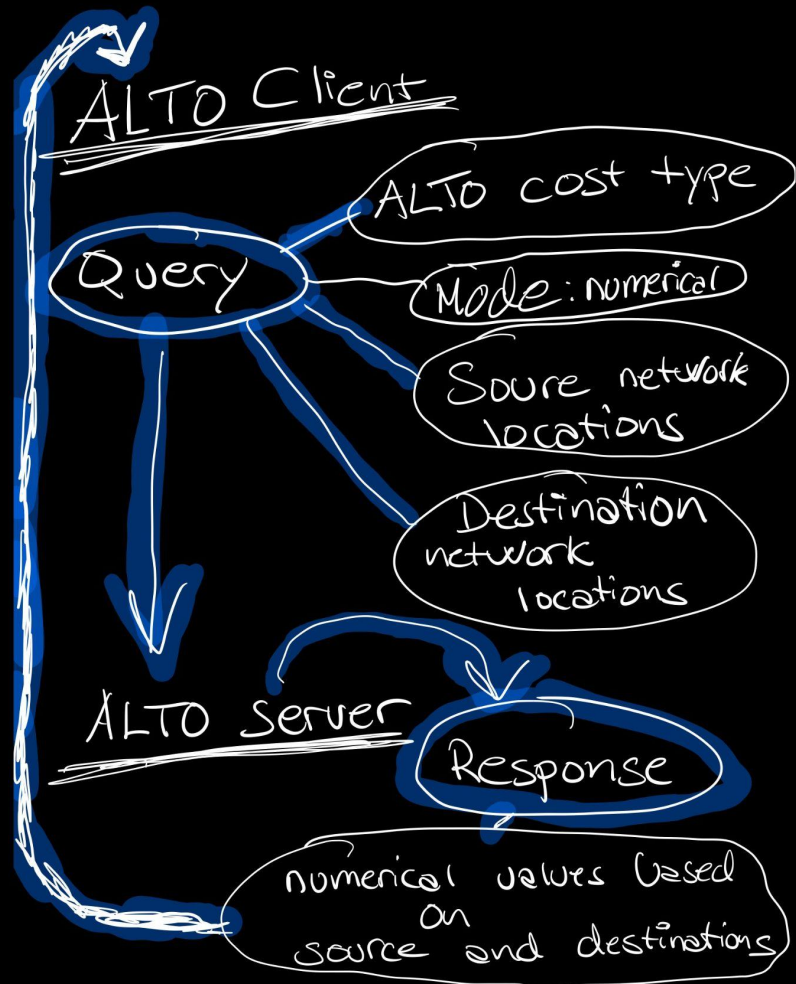
External  
Intra Domain



# ALTO Architecture

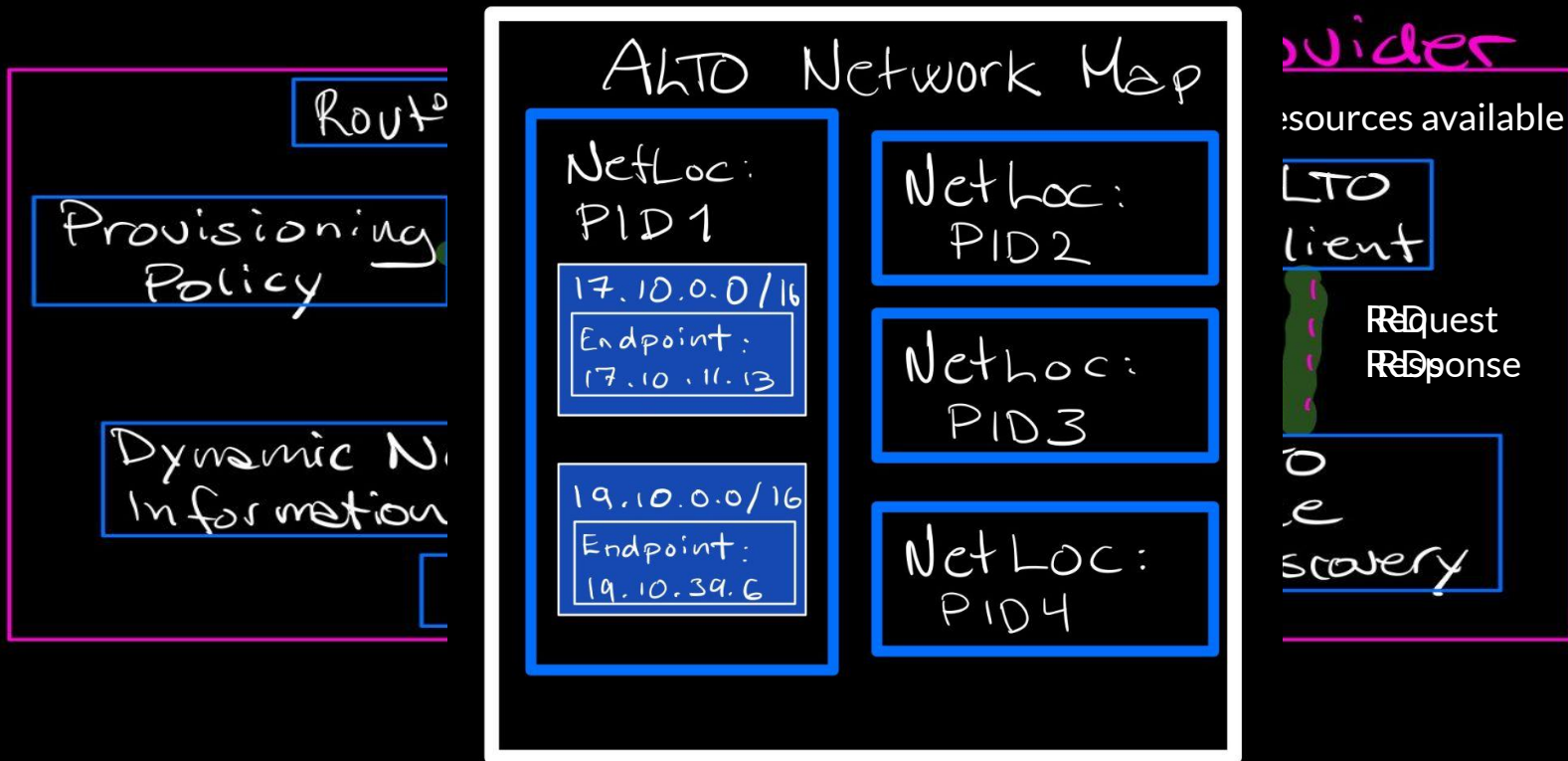
## The ALTO Client

- Sends Query to ALTO Server
  - Query Cost Maps
- ALTO Client uses the results to make peer gathering decisions



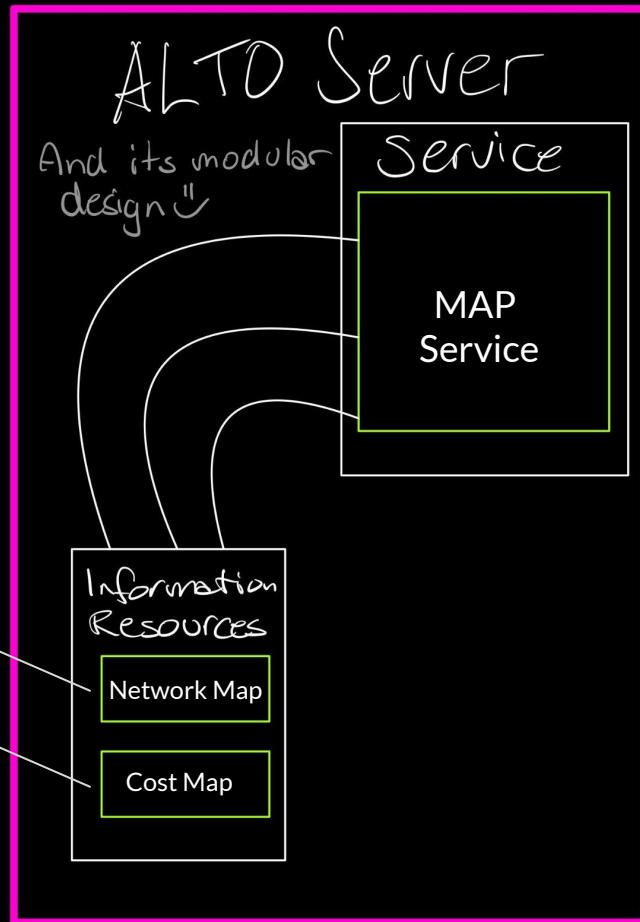
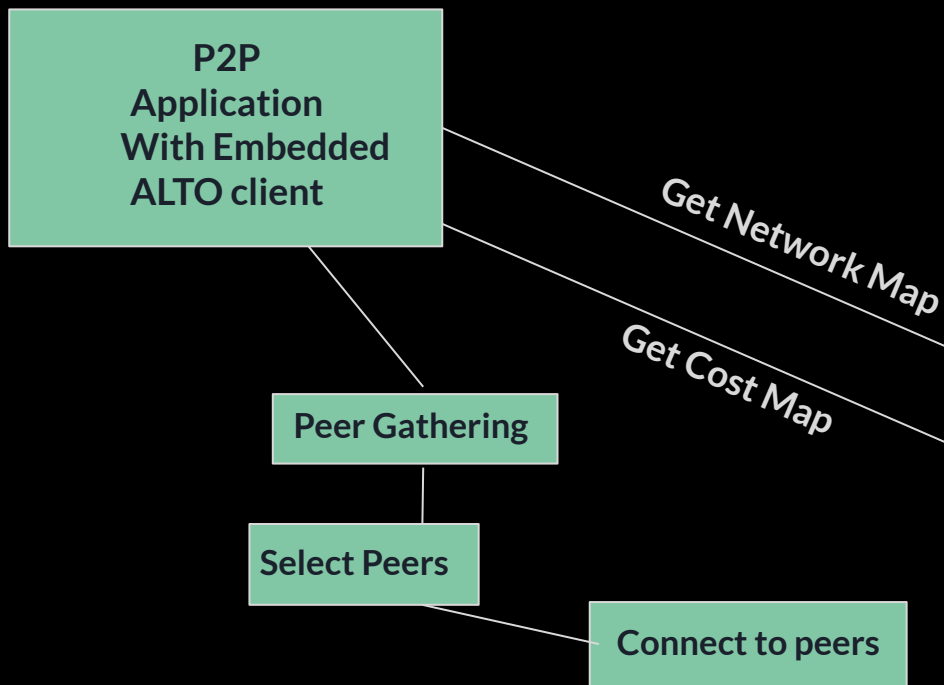
# ALTO Architecture

High level overview of an ALTO deployment at an ISP



# ALTO Protocol

P2P example using ALTO base Protocol (RFC7285)





# ALTO Presentation

That's all, folks!

Thank you! Questions?