IETF 111 [Virtual]
ALTO
Working Group

Chairs:

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- Online Agenda and Slides: https://datatracker.ietf.org/meeting/111/session/alto
- Data tracker: http://datatracker.ietf.org/wg/alto/
- Tools: http://tools.ietf.org/wg/alto
- Notes: https://codimd.ietf.org/notes-ietf-111-alto

Note Well

This is a reminder of IETF policies in effect on various topics such as patents or code of conduct. It is only meant to point you in the right direction. Exceptions may apply. The IETF's patent policy and the definition of an IETF "contribution" and "participation" are set forth in BCP 79; please read it carefully.

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Definitive information is in the documents listed below and other IETF BCPs. For advice, please talk to WG chairs or ADs:
* BCP 9 (Internet Standards Process)
* BCP 25 (Working Group processes)
* BCP 25 (Anti-Harassment Procedures)
* BCP 54 (Code of Conduct)
* BCP 78 (Copyright)
* BCP 79 (Patents, Participation)
* https://www.ietf.org/privacy-policy/ (Privacy Policy)

Also see: http://www.ietf.org/about/note-well.html:

Administrative

- Meetecho
  - Using meetecho queue control
  - Chat/Jabber available for use
  - Bluesheets
- Note taking
  - https://codimd.ietf.org/notes-ietf-111-alto
  - Please help with minute taking
(only discussion needs to be captured)
- Online Agenda and Slides at:

    https://datatracker.ietf.org/meeting/111/session/alto
- Data tracker: http://datatracker.ietf.org/wg/alto/
- Jabber: xmpp:alto@jabber.ietf.org?join
- Tools: http://tools.ietf.org/wg/alto

Agenda

- Session Intro & WG Status   Chairs (8 minutes)
- AD guidance on the next charter and future of the group   Martin Duke (5 minutes)
- ALTO and PANRG   PANRG chairs (15 minutes)
- **Discussion of Working Group Charter (30 min)**
  - **Chairs to introduce   10 minutes**
  - **New Charter Open Discussion 20 minutes**
- Wrap up: (2 minutes)

Document Updates – RFCs, IESG Processing, WGLC, New Adoption

- New RFCs
  - None
- IETF LC

  [draft-ietf-alto-performance-metrics-1](#)6   (updated)   Shepherd: Jan Seedorf
- Post WGLC (IESG Review Requested (token with AD))
  - [draft-ietf-alto-cdni-request-routing-alto](#)-16   (updated)   Shepherd: Vijay Gurbani
  - [draft-ietf-alto-path-vector-14](#)   (updated)   Shepherd: Vijay Gurbani
  - [draft-ietf-alto-unified-props-new](#)-17 (updated)   Shepherd: Vijay Gurbani
- One Question for WG/Authors
  - Is [draft-ietf-alto-unified-props-new](#)-17 ready for AD followup
    - Since the current status is AD Evaluation::Revised I-D Needed?

Recap

- Rechartering discussion started from IETF 108, IETF 109, a drafted long term recharter proposal was brought up to the list and discussion in IETF 110 (https://trac.ietf.org/trac/alto/wiki/v0.2-recharter) and covers a set of new topics which can be break down into 2 categories:
    - Extension to existing work
        - Operation Automation
        - Multi-Domain Setting
        - ATLO data model
        - ALTO deployment enhancement
    - New work built on top of ALTO protocol and Architecture
        - MOWIE (Mobile and Wireless Information Exposure)
        - Other Cellular Information Exposure

Concerns

- Too many use cases were proposed for discussion and the WG needs more discussion and understanding to work out which use cases are high priority and which are more research-based.
- It should be noted that there are a lot of activity on some topics
  - Operation automation
  - Multi-domain setting
  - MOWIE
    - MOWIE crosses many area and lacks a good collaboration with 3GPP
- Further protocol work needs to be based on strong deployment needs.

Proposed Charter Update since IETF 110

- The Short-term recharter is (https://trac.ietf.org/trac/alto/wiki/v0.5-recharter)proposed to
  - allow us to work on immediate issues (protocol maintenance, operational support)
  - while we discuss and investigate the best uses cases for further work.

- This short term recharter proposal has been circulated among chairs, ALTO design team and AD and posted to the list on April 24 to solicit more feedback

Recharter Status Update

Application-Layer Traffic Optimization
charter-ietf-alto-04-00

Status	IESG review	IESG writeups	Email expansions	History

Versions	03	03-00	03-01	03-02	03-03	03-04	03-05	03-06	04	04-00

charter-ietf-alto 01 02 03 charter-ietf-alto

Nov 2008   Aug 2009   Oct 2010   May 2014

The information below is for a proposed recharter. The current approved charter is version 04

Document	Proposed charter	Application-Layer Traffic Optimization WG (alto)
	Title	Application-Layer Traffic Optimization
	Last updated	2021-07-20
	State	Start Chartering/Rechartering (Internal Steering Group/IAB Review) **Rechartering**
WG	State	Active
IESG	Responsible AD	Martin Duke
	Charter Edit AD	Martin Duke
	Telechat date	On agenda of 2021-08-12 IESG telechat *Needs a YES.*

Current Charter

To support the emerging new uses of ALTO, certain extensions are being sought. These extensions can be classified as follows:

o Protocol extensions for reducing the volume of on-the-wire data exchange required to align the ALTO server and clients. Extensions under consideration are mechanisms for delivering server-initiated notifications and partial updates of maps. Efforts developed in other working groups such as Websockets and JSON-patch will be considered, as well as bespoke mechanisms specific to the ALTO protocol.

o One or more alternatives to the base ALTO server discovery mechanism (RFC-to-be) to accommodate environments where (1) timely deployment of existing mechanisms, including the base ALTO server discovery mechanism, is unlikely, and/or (2) it is desirable for an ALTO client to be able to discover an ALTO server outside its own domain. The WG will consider mechanisms that are in use or defined by other WGs. If such discovery mechanisms can be reused, the WG will produce one or more documents to specify how they may be adopted as additional or alternative ALTO server discovery mechanisms. In the absence of such existing work, the WG will develop one or more ALTO-specific server discovery mechanisms. However, developing a general-purpose service discovery mechanism is not in scope.

o Protocol extensions to convey a richer set of attributes to allow applications to determine not only "where" to connect but also "when" to connect. Such additional information will be related both to endpoints (e.g. conveying server load and cache geo-location information for CDN use cases) and to endpoint-to-endpoint costs (e.g. bandwidth calendaring to represent time-averaged cost values in datacenter networks).

The working group will specify such extension in coordination with other working groups that have a focus on the related use cases. The scope of extensions is not limited to those identified by the WGs, but is limited by the criteria set out below.

o A document specifying how a graph representation format (originating, say, from a YANG data model) can be used in ALTO and optionally be exported by an ALTO server in addition to network and cost maps. The graph representation will be based on existing ALTO abstraction (e.g., PIDs) and complement existing path-based ALTO cost map representation. Together, they provide a more complete, potentially more compact, but still abstract representation of networks for informed traffic optimization among endpoints. In settings with multiple application source-destination pairs with shared links, such a representation will help avoid bottleneck (or failed) links. The WG will not consider, nor will it model, topology internals not affecting endpoints (e.g., routing protocol internals or RIB data).

When the WG considers standardizing information that the ALTO server could provide, the following criteria are important to ensure real feasibility:

- Can the ALTO service realistically discover that information?

- Is the distribution of that information allowed by the operators of that service?

- Can a client get that information without excessive privacy and information leakage concerns? Extensions defining new endpoint properties should focus on exposing attributes of endpoints that are related to the goals of ALTO -- optimization of application-layer traffic -- as opposed to more general properties of endpoints. privacy and information leakage aspects of new endpoint properties will in any case be evaluated to the guidelines provided in the IANA considerations and Security Considerations of the ALTO protocol specification (RFC-to-be, sections 14.3 and 15.4 at IESG review time).

- Is it information that a client cannot find easily some other way?

After these criteria are met, the importance of the data will be considered for prioritizing standardization work, for example the number of operators and clients that are likely to be able to provide or use that particular data. In any case, this WG will not propose standards on how congestion is signaled, remediated, or avoided, and will not deal with information representing instantaneous network state.

Issues related to the specific content exchanged in systems that make use of ALTO are also excluded from the WG's scope, as is the issue dealing with enforcing the legality of the content.

Goals and Milestones:
  Jul 2020 - Submit network graph format document
  Jul 2020 - Submit endpoint property extension document
  Jul 2020 - Submit cost property extension document
  Jul 2020 - Submit alto service for CDNI FCI objects
  Nov 2020 - Recharter or dissolve working group

New Charter Proposal (page 1 of 2)

The ALTO working group was established in 2008 to devise a request/response protocol to allow a host to benefit from a server that is more cognizant of the network infrastructure than the host is.

The working group has developed an HTTP-based protocol and recent work has reported proof-of-concepts of ALTO based solutions supporting applications such as content distribution networks (CDN).

To support current and future deployments of ALTO, the working group is now chartered for the following activities:

- Provide a place to collect implementation deployment and experience. It is hoped that ALTO practioners will report their experiences on the mailing list, and the working group will track implementation and deployment reports on a wiki or in an Internet-Draft.

- Perform protocol maintenance for the existing published protocol. It is anticipated that questions and issues will arise concerning the existing protocol specifications: The working group will develop and publish updates as necessary to resolve any interoperability, performance, operational, or security, or privacy problems that arise. The working group will also help resolve any errata reports that are raised. This work item might be addressed by discussions and reviews, or might require additional RFCs.

- Develop operational support tools for the ALTO protocol. Based on experience from deployments, the advice in RFC 7971, and considering the latest opinions and techniques from the Operations and Management Area, the working group will develop tools to configure, operate, and manage the ALTO protocol and networks that use ALTO. This may include YANG models and OAM mechanisms. The working group may also update RFC 7971 in the light of new experience and protocol features that were added to ALTO after that RFC was published.

- Support for modern transport protocols. When work on ALTO began, the protocol was supported using HTTP version 1. Since then, the IETF has developed HTTP/2 and HTTP/3. The working group will develop any necessary protocol extensions and guidance to support the use of ALTO over HTTP/2 and HTTP/3.

- Future use cases. The working group will provide a forum to discuss possible future use cases. The objective of this discussion will be to determine a small set of use cases that have strong support and a realistic chance of implementation and deployment. The working group will not develop protocol extensions for these use cases until it has been re-chartered specifically for that purpose.

New Charter Proposal (page 2 of 2)

At the conclusion of the OAM and HTTP2/3 deliverables, plus completion of any adopted drafts emerging from the other work items, the working group will close or recharter.

Milestones and Deliverables:

- Conduct a survey of working group participants and the wider community to discover ALTO implementation and deployment experience. Record the results in a publicly visible wiki.

- Develop and standardize at least one OAM mechanism to support ALTO, including a YANG model for configuration and management of ALTO servers.

- Analyze ALTO over HTTP/2 and HTTP/3 and publish a support document. Develop any necessary protocol modifications.

- Report to the Area Director any use cases that have strong support and a realistic chance of implementation and deployment.

New work item documents

Work item	Documents
Survey on ALTO implementation and deployment experience	https://trac.ietf.org/trac/alto/wiki/Impl Any progress or open issues?
OAM mechanisms to support ALTO	draft-zhang-alto-oam-yang-00.txt Questions to WG/authors: Any progress or open issues?
Analysis on ALTO over HTTP/2 and HTTP/3	draft-yang-alto-http2-transport-00.txt Questions to WG/authors: Any progress or Open issues
Use cases with strong support and a realistic chance of implementation and deployment	**New Use Cases:** Compute aware network Use Case draft-liu-alto-can-usecase-00 draft-contreras-alto-service-edge-03 Network Topology Exposure Use Case draft-hzx-alto-network-topo-00 LMAP measurement Exposure Use Case draft-xie-alto-lmap-00 **Updated Use cases:** Multi-domain Use Case draft-lachos-alto-multi-domain-use-cases-02 Mowie and Celluar related Use Case: draft-huang-alto-mowie-for-network-aware-app-03 draft-li-alto-cellular-use-cases-00