

ALTO working group
Internet-Draft
Intended status: Standards Track
Expires: July 31, 2014

Q. Wu
Huawei
Z. Cao
China Mobile
January 27, 2014

Endpoint and PID Property Extension for virtualized endpoint and
infrastructure
draft-wu-alto-endpoint-pid-properties-00

Abstract

This document extends the Application-Layer Traffic Optimization (ALTO) protocol [I-D.ietf-alto-protocol] and Proposes additional new Endpoint properties and PID properties for virtualized endpoint and infrastructure.

Status of this Memo

This Internet-Draft is submitted in full conformance with the provisions of [BCP 78](#) and [BCP 79](#).

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF). Note that other groups may also distribute working documents as Internet-Drafts. The list of current Internet-Drafts is at <http://datatracker.ietf.org/drafts/current/>.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

This Internet-Draft will expire on July 31, 2014.

Copyright Notice

Copyright (c) 2014 IETF Trust and the persons identified as the document authors. All rights reserved.

This document is subject to [BCP 78](#) and the IETF Trust's Legal Provisions Relating to IETF Documents (<http://trustee.ietf.org/license-info>) in effect on the date of publication of this document. Please review these documents carefully, as they describe your rights and restrictions with respect to this document. Code Components extracted from this document must include Simplified BSD License text as described in Section 4.e of the Trust Legal Provisions and are provided without warranty as

Internet-Draft

EP and PID properties

January 2014

described in the Simplified BSD License.

Table of Contents

1.	Introduction	3
2.	Conventions used in this document	4
3.	PID properties	5
3.1.	PID Property Type: resourcetype	5
3.2.	PID Property Type: servingload	5
3.3.	PID Property Type: supportedcapacity	5
3.4.	PID Property Type: availcapacity	5
4.	Endpoint Properties Extension	6
4.1.	Endpoint Property Type: nodetype	6
4.2.	Endpoint Property Type: servicetype	6
4.3.	Endpoint Property Type: forwarding class	6
4.4.	Endpoint Property Type: Packetrateutilization	6
4.5.	Endpoint Property Type: bandwidthutilization	6
4.6.	Endpoint Property Type: memoryutilization	7
4.7.	Endpoint Property Type: availablememory	7
4.8.	Endpoint Property Type: ributilization	7
4.9.	Endpoint Property Type: fibutilization	7
4.10.	Endpoint Property Type: cpuutilization	7
4.11.	Endpoint Property Type: availablestorage	7
4.12.	Endpoint Property Type: supportedaclnum	7
4.13.	Endpoint Property Type: virtualcontextnum	8
4.14.	Endpoint Property Type: supportedpacketrate	8
5.	Security Considerations	9
6.	IANA Considerations	10
7.	References	11
7.1.	Normative References	11
7.2.	Informative References	11
	Authors' Addresses	12

[1.](#) Introduction

As stated in [I-D.ietf-alto-protocol], an Endpoint is an application or host that is capable of communicating (sending and/or receiving messages) on a network. An Endpoint is typically either a Resource Provider or Resource Consumer.

With the growth of network virtualization technology, steering traffic through specific services nodes at different layers or bypassing them completely becomes important. A service node may be running in its own virtualized system space or physically separated across hosting systems. The information provided about these service nodes includes service network location (for topology creation), service type (e.g. firewall, load balancer, etc.) and, optionally, administrative information about the service functions such as load, capacity and operating status. To facilitate alto service discovery for these service node information, the endpoint properties and cost needs to be extended.

As stated in [I-D.ietf-alto-protocol], Provider-defined Identifiers (PIDs) is introduced to provide an indirect and network-agnostic way to specify an aggregation of network endpoints that may be treated similarly, based on network topology, type, or other properties. When network endpoints are aggregated at Data Center level, the information provided by a data center include administrative information such as load, capacity, operating status.

This document proposes extending the property concept by allowing PIDs to have properties.

2. Conventions used in this document

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC2119](#) [[RFC2119](#)].

[3.](#) PID properties

The ALTO base protocol defines endpoint property in the form of (name, value) pair associated with the selected endpoint address, e.g., pid. But it doesn't define any property for PID. However it can be useful to report an data center's load, capacity, operating status when network endpoints are aggregated at Data Center level. This document define x new PID properties for virtualized infrastructure to support service topologies creation and service node discovery.

[3.1.](#) PID Property Type: resourcetype

An ALTO Server MAY define the 'resourcetype' Endpoint Property Type for each Network Map that it provides.

[3.2.](#) PID Property Type: servingload

An ALTO Server MAY define the 'servingload' Endpoint Property Type for each Network Map that it provides.

[3.3.](#) PID Property Type: supportedcapacity

An ALTO Server MAY define the 'supportedcapacity' Endpoint Property Type for each Network Map that it provides.

[3.4.](#) PID Property Type: availcapacity

An ALTO Server MAY define the 'supportedcapacity' Endpoint Property Type for each Network Map that it provides.

[4.](#) Endpoint Properties Extension

An endpoint may have various different properties. The example property of an Endpoint is network location such as pid or its connectivity type such as ADSL (Asymmetric Digital Subscriber Line), Cable, or FTTH (Fiber To The Home). The endpoint property can be used in both Map service or endpoint property service. The base ALTO protocol [\[ALTO\]](#) has defined three endpoint properties, i.e., pid,priv:,exp: ([Section 7.1.1](#) of ALTO base specification [\[ALTO\]](#)). This document define 14 new endpoint properties for virtualized endpoint to support service topologies creation and service chaining.

[4.1.](#) Endpoint Property Type: nodetype

An ALTO Server MAY define the 'nodetype' Endpoint Property Type for

each Network Map that it provides. The 'nodetype' Endpoint Property is used to indicate the endpoint type. The endpoint types may include service function enabled node, service function chain ingress node, service function chain egress node.

[4.2.](#) Endpoint Property Type: servicetype

An ALTO Server MAY define the 'servicetype' Endpoint Property Type for each Network Map that it provides. The 'servicetype' Endpoint Property reflect service type the endpoint supports. The service types may include firewall type, DPI type, NAT44 type, Load balancer type.

[4.3.](#) Endpoint Property Type: forwarding class

An ALTO Server MAY define the 'forwardingclass' Endpoint Property Type for each Network Map that it provides. The 'forwardingclass' Endpoint Property reflects forwarding class the endpoint supports. The supported forwarding classes include expedited forwarding, assured forwarding, network control, best effort.

[4.4.](#) Endpoint Property Type: Packetrateutilization

An ALTO Server MAY define the 'packetrateutilization' Endpoint Property Type for each Network Map that it provides. The 'packetrateutilization' Endpoint Property is used to indicate packet rate utilization.

[4.5.](#) Endpoint Property Type: bandwidthutilization

An ALTO Server MAY define the 'bandwidthutilization' Endpoint Property Type for each Network Map that it provides. The 'bandwidthutilization' Endpoint Property is used to indicate packet

rate utilization.

[4.6.](#) Endpoint Property Type: memoryutilization

An ALTO Server MAY define the 'availablememory' Endpoint Property Type for each Network Map that it provides. The 'availablememory' Endpoint Property is used to indicate packet rate utilization.

[4.7.](#) Endpoint Property Type: availablememory

An ALTO Server MAY define the 'availablememory' Endpoint Property Type for each Network Map that it provides. The 'availablememory' Endpoint Property is used to indicate packet rate utilization.

[4.8.](#) Endpoint Property Type: ributilization

An ALTO Server MAY define the 'ributilization' Endpoint Property Type for each Network Map that it provides. The 'ributilization' Endpoint Property is used to indicate packet rate utilization.

[4.9.](#) Endpoint Property Type: fibutilization

An ALTO Server MAY define the 'fibutilization' Endpoint Property Type for each Network Map that it provides. The 'fibutilization' Endpoint Property is used to indicate packet rate utilization.

[4.10.](#) Endpoint Property Type: cpuutilization

An ALTO Server MAY define the 'cpuutilization' Endpoint Property Type for each Network Map that it provides. The 'cpuutilization' Endpoint Property is used to indicate packet rate utilization.

[4.11.](#) Endpoint Property Type: availablestorage

An ALTO Server MAY define the 'availablestorage' Endpoint Property Type for each Network Map that it provides. The 'availablestorage' Endpoint Property is used to indicate packet rate utilization.

[4.12.](#) Endpoint Property Type: supportedaclnum

An ALTO Server MAY define the 'supportedaclnum' Endpoint Property Type for each Network Map that it provides. 'supportedaclnum' Endpoint Property reflects endpoint capability from supported ACL number perspective.

[4.13.](#) Endpoint Property Type: virtualcontextnum

An ALTO Server MAY define the 'virtualcontextnum' Endpoint Property Type for each Network Map that it provides. 'virtualcontextnum' Endpoint Property reflects endpoint capability from supported ACL number perspective.

[4.14.](#) Endpoint Property Type: supportedpacketrates

An ALTO Server MAY define the 'supportedpacketrates' Endpoint Property Type for each Network Map that it provides. 'virtualcontextnum' Endpoint Property reflects endpoint capability from supported ACL number perspective.

[5.](#) Security Considerations

The properties defined in this document present no security considerations beyond those in [Section 14](#) of the base ALTO specification [[ALTO](#)].

Internet-Draft

EP and PID properties

January 2014

[6.](#) IANA Considerations

TBC.

Internet-Draft

EP and PID properties

January 2014

[7.](#) References

[7.1.](#) Normative References

- [ALTO] Alimi, R., "ALTO Protocol",
ID [draft-ietf-alto-protocol-16](#), May 2013.
- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate
Requirement Levels", March 1997.

[7.2.](#) Informative References

- [I.D-bitar-i2rs-service-chaining]
Bitar, N., Heron, G., and L. Fang, "Interface to the
Routing System (I2RS) for Service Chaining: Use Cases and
Requirements", ID [draft-bitar-i2rs-service-chaining-00](#),
July 2013.

Wu & Cao

Expires July 31, 2014

[Page 11]

Internet-Draft

EP and PID properties

January 2014

Authors' Addresses

Qin Wu
Huawei
101 Software Avenue, Yuhua District
Nanjing, Jiangsu 210012
China

Email: bill.wu@huawei.com

Zhen Cao
China Mobile
53A Xibianmennei Ave., Xuanwu District
Beijing, Beijing 100053
P.R. China

Email: zehn.cao@gmail.com

