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Via header field parameter to indicate received realm draft-holmberg-dispatch-received-realm-01.txt

Abstract

This specification defines a new Session Initiation Protocol (SIP) Via header field parameter, "received-realm", which allows a SIP entity acting as an entry point to a transit network to indicate from which adjacent upstream network a SIP request is received, using a network realm value associated with the adjacent network.

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

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This Internet-Draft will expire on June 9, 2016.

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1. Introduction

1.1. General

When SIP sessions are established between networks belonging to different operators, or between interconnected networks belonging to the same operator (or enterprise), the SIP requests might traverse transit network.

Such transit networks might provide different kind of services. In order to do that, a transit network often needs to know to which operator (or enterprise) the adjacent upstream network, from which the SIP session initiation request is received, belongs.

This specification defines a new Session Initiation Protocol (SIP) Via header field parameter, "received-realm", which allows a SIP entity acting as an entry point to a transit network to indicate from which adjacent upstream network a SIP request is received, using a network realm value associated with the adjacent network.

NOTE: As the adjacent network can be an enterprise network, an Inter Operator Identifier (IOI) cannot be used to identity the network, as IOIs are not defined for enterprise networks.

The following sections describe use-case where the information is needed.

1.2. Use-Case: Transit Network Application Services

The 3rd Generation Partnership Project (3GPP) TS 23.228 specifies how an IP Multimedia Subsystem (IMS) network can be used to provide transit functionality. An operator can use its IMS network to provide transit functionality e.g. to non-IMS customers, to enterprise networks, and to other network operators.

The transit network operator can provide application services to the networks for which it is providing transit functionality. Transit application services are typically not provided per user basis, as the transit network does not have access to the user profiles of the networks for which the application services are provided. Instead, the application services are provided per served network.

When a SIP entity that provides application services (e.g. an Application Server) within a transit network receives a SIP request, in order to apply the correct services it needs to know the adjacent upstream network from which the SIP request is received.

1.3. Use-Case: Transit Network Routing

A transit network operator normally interconnects to many diferent operators, including other transit network operators, and provides transit routing of SIP requests received from one operator network towards the destination. The destination can be within an operator network to which the transit network operator has a direct interconnect, or within an operator network that only can be reached via one or more interconnected transit operators.

For each customer, i.e. interconnected network operator for which, the transit network operator routes SIP requests towards the requested destination a set of transit routing polices are defined. These policies are used to determine how a SIP request shall be routed towards the requested destination to meet the agreement the transit network operator has with its customer.

When a SIP entity that performs the transit routing functionality receives a SIP request, in order to apply the correct set of transit routing policies, it needs to know from which of its customers, i.e. adjacent upstream network, the SIP request is received.

2. Applicability

The mechanism defined in this specification MUST only be used by SIP entities that are able to verify from which adjacent upstream network a SIP request is received.

The mechanism for verifying from which adjacent upstream network a SIP request is received is outside the scope of this specification.

3. Conventions

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 BCP 14, RFC 2119 [RFC2119].

4. Definitions

SIP entity: SIP User Agent (UA), or SIP proxy, as defined in RFC 3261.

Adjacent upstream SIP network: The adjacent SIP network in the direction from which a SIP request is received.

Network entry point: A SIP entity on the border of network, which receives SIP requests from adjacent upstream networks.

Inter Operator Identifier (IOI): A globally unique identifier to correlate billing information generated within the IP Multimedia Subsystem (IMS).

5. User Agent and Proxy behavior

5.1. General

This section describes how a SIP entity, acting as an entry point to a network, uses the "received-realm" Via header field parameter.

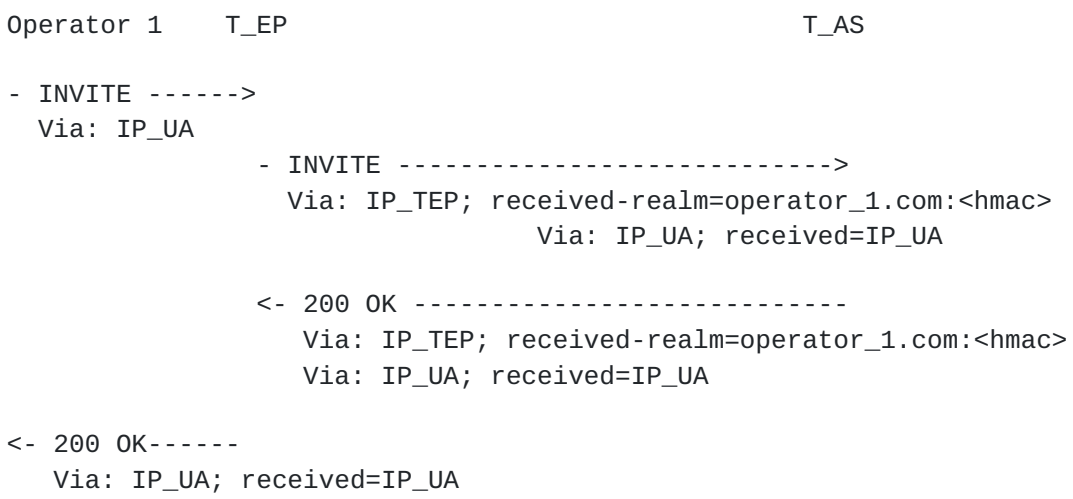
5.2. Behavior of a SIP entity acting as a network entry point

When a SIP entity, acting as a network entry point, forwards a SIP request, or initiates a SIP request on its own (e.g. a PSTN gateway), the SIP entity adds a Via header field to the SIP request, according to the procedures in RFC 3261 [RFC3261]. In addition, if the SIP entity is able to assert the adjacent upstream network, and if the SIP entity is aware of a network realm value defined for that network, the SIP entity can add a "received-realm" Via header field

parameter, conveying the network realm value, to the Via header field added to the SIP request.

When the SIP entity adds a "received-realm" Via header field parameter to a SIP request, it MUST also calculate a Hash-based message authentication code (HMAC) [RFC2104] value from the parameter value, using a secret key which is shared between the SIP entity and any SIP entity which will use the parameter value. The HMAC is then added to the parameter.

6. Example



7. Syntax

7.1. General

This section describes the syntax extensions to the ABNF syntax defined in RFC 3261 [RFC3261], by defining a new Via header field parameter, "received-realm". The ABNF defined in this specification is conformant to RFC 5234 [RFC5234]. "EQUAL", "COLON" and "hostname" are defined in RFC 3261 [RFC3261]. "DIGIT" is defined in RFC 5234 [RFC5234]

7.2. ABNF

```
via-params =/ received-realm

received-realm = "received-realm" EQUAL hostname COLON hmac

hmac = TBD
```

8. IANA Considerations

8.1. 'received-realm' Via header field parameter

This specification defines a new Via header field parameter called received-realm in the "Header Field Parameters and Parameter Values" sub-registry as per the registry created by [RFC3968]. The syntax is defined in Section 7. The required information is:

Header Field	Parameter Name	Predefined Values	Reference
Via	received-realm	No	RFCXXXX

9. Security Considerations

As the received-realm Via header field parameter can be used to trigger applications, it is important to ensure that the parameter has not been added to the SIP message by an unauthorized SIP entity.

The operator MUST change the key on a frequent basis. The operator also needs to take great care in ensuring that the key used to calculate the Hash-based message authentication code (HMAC) value is only known by the network entry point adding the received-realm Via header field parameter to a SIP message and the entities that use the parameter value.

A SIP entity MUST NOT use the parameter value it does not match the associated HMAC value. The SIP entity MUST trigger an alarm, or use a similar mechanism, to inform the operator about the mismatch.

A SIP entity MUST use different key values for each parameter value that it recognizes and use to trigger actions.

10. Acknowledgements

TBD

11. Change Log

[RFC EDITOR NOTE: Please remove this section when publishing]

Changes from draft-holmberg-dispatch-received-realm-00

o New version due to expiration of previous version.

Changes from draft-holmberg-received-realm-04

- Changed IETF WG from sipcore do dispatch.
- HMAC value added to the parameter.

Changes from draft-holmberg-received-realm-03

- New version due to expiration.

Changes from draft-holmberg-received-realm-02

- New version due to expiration.

Changes from draft-holmberg-received-realm-01

- New version due to expiration.

Changes from draft-holmberg-received-realm-00

- New version due to expiration.

12. References

12.1. Normative References

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, DOI 10.17487/RFC2119, March 1997, <http://www.rfc-editor.org/info/rfc2119>.

[RFC3261] Rosenberg, J., Schulzrinne, H., Camarillo, G., Johnston, A., Peterson, J., Sparks, R., Handley, M., and E. Schooler, "SIP: Session Initiation Protocol", RFC 3261, DOI 10.17487/RFC3261, June 2002, <http://www.rfc-editor.org/info/rfc3261>.

[RFC5234] Crocker, D., Ed. and P. Overell, "Augmented BNF for Syntax Specifications: ABNF", STD 68, RFC 5234, DOI 10.17487/RFC5234, January 2008, <http://www.rfc-editor.org/info/rfc5234>.

12.2. Informative References

[RFC2104] Krawczyk, H., Bellare, M., and R. Canetti, "HMAC: Keyed-Hashing for Message Authentication", RFC 2104, DOI 10.17487/RFC2104, February 1997, <http://www.rfc-editor.org/info/rfc2104>.

[RFC3968] Camarillo, G., "The Internet Assigned Number Authority (IANA) Header Field Parameter Registry for the Session Initiation Protocol (SIP)", BCP 98, RFC 3968, DOI 10.17487/RFC3968, December 2004, <http://www.rfc-editor.org/info/rfc3968>.

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