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T. Mistretta  
Juniper Networks

I. Goyret  
Lucent Technologies

N. McGill  
M. Townsley  
cisco Systems

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## **L2TP Call Information Messages**

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### Abstract

This document defines additional L2TP AVPs to communicate informational ASCII text messages between the tunnel endpoints during call establishment. The message contents are not interpreted by the receiving endpoint in any way but can be used for logging or

debugging purposes.

## Contents

Status of this Memo .....	<a href="#">1</a>
Abstract .....	<a href="#">1</a>
<a href="#">1</a> . Introduction .....	<a href="#">2</a>
<a href="#">1.1</a> Specification of Requirements .....	<a href="#">3</a>
<a href="#">2</a> . L2TP AVPs .....	<a href="#">3</a>
<a href="#">2.1</a> Common AVP Properties .....	<a href="#">3</a>
<a href="#">2.2</a> Call-Information AVP .....	<a href="#">4</a>
<a href="#">2.3</a> Platform-Information AVP .....	<a href="#">4</a>
<a href="#">2.4</a> Software Information AVP .....	<a href="#">4</a>
<a href="#">2.5</a> Vendor-Information AVP .....	<a href="#">5</a>
<a href="#">3</a> . RADIUS attributes .....	<a href="#">5</a>
<a href="#">3.1</a> Call-Information RADIUS attribute .....	<a href="#">5</a>
<a href="#">3.2</a> Platform-Information RADIUS attribute .....	<a href="#">6</a>
<a href="#">3.3</a> Software-Information RADIUS attribute .....	<a href="#">7</a>
<a href="#">3.4</a> Vendor-Information RADIUS attribute .....	<a href="#">8</a>
<a href="#">4</a> . Security Considerations .....	<a href="#">9</a>
<a href="#">5</a> . References .....	<a href="#">9</a>
<a href="#">6</a> . IANA Considerations .....	<a href="#">10</a>
<a href="#">7</a> . Authors' Addresses .....	<a href="#">10</a>
<a href="#">8</a> . Full Copyright Statement .....	<a href="#">11</a>
<a href="#">9</a> . Expiration Date .....	<a href="#">12</a>

## [1](#). Introduction

It is often desirable to send adjunct information from the LAC to the LNS during call setup. Some such information can be circuit oriented, describing the attributes of the circuit interface. Other information could describe the peer itself. In either case, the information is typically used for for logging or debugging. L2TP [[RFC2661](#)] already has a Physical Channel ID AVP that provides a limited logging capability during call setup. It is limited in that its length is only 4 octets. This draft defines extensions whereby



human-readable ASCII strings are sent during call setup. The strings are typed, but uninterpreted by L2TP. Their sole purposes are to enhance logging and debugging capabilities in L2TP.

### **1.1 Specification of Requirements**

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](#)].

## **2. L2TP AVPs**

### **2.1 Common AVP Properties**

All of the AVPs share the following traits:

The AVPs are not mandatory (the M bit MUST be set to 0). The AVP SHOULD NOT be hidden (the H-bit SHOULD be set to 0).

The information strings themselves MUST be human readable, they SHOULD contain UTF-8 encoded 10646 [[RFC2279](#)] characters using the Default Language [[BCP18](#)].

The strings are not null-terminated. Valid lengths are between 1 and 253 octets, so it can fit on a RADIUS attribute.

The format of the information strings are purposely not defined. The contents of the string MUST NOT be parsed nor interpreted by the receiving L2TP endpoint.

As mentioned previously, possible uses of the strings are output to a console or logging to a server. If the strings were to be used in RADIUS accounting or authentication requests, it SHOULD be mapped into corresponding RADIUS attributes defined in [section 3](#).

The treatment of these AVPs through a L2TP tunnel switch follows the "stacking" model introduced in the draft RFC [[SESINFO](#)]. This model allows propagation of information from earlier L2TP nodes while at the same time providing a capability to append new information at each hop. A "list" format is defined for the AVPs, where the last entry corresponds to the most recent sending node, and all preceding values are for previous nodes. In the event that an AVP is received where there is no local value to append, an "empty" entry (one whose string length is zero) MUST be appended. Interim L2TP tunnel switches can only append to existing AVPs that are being passed through. They MUST NOT initiate a new AVP if one does not already exist. This is done so that



information across the AVPs can be correlated and reflected accurately at the final location.

For incoming calls, the AVPs are valid either on ICRQ or ICCN. If sent on both, the ICCN AVPs override the ICRQ values. For outgoing calls, the AVPs are valid on OCRP and OCCN, with similar override behavior.

All AVPs has the following format, the only difference being that the attribute type is particular to the specific AVP being used.

```

      0               1               2               3
      0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
|M|H| rsvd  |      Length      |      Vendor Id [IETF]      |
+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
|      Attribute Type [TBD]      |
+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
| Length 0      | Information String 0 (1-253 octets) ...      |
+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
| Length 1      | Information String 1 (1-253 octets) ...      |
+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
|
|                               ...
+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
| Length N      | Information String N (1-253 octets) ...      |
+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+

```

## 2.2 Call-Information AVP

The Call Information AVP, Attribute type TBD, allows a UTF-8 string to be sent with a human readable description of the call. Examples could include "Atlanta POP", or "Neptune-304x using frame2 module".

## 2.3 Platform-Information AVP

The Platform Information AVP, Attribute type TBD, allows a UTF-8 string to be sent with a human readable description of the platform. Examples could be "Model 457", or "TPX-1700".

## 2.4 Software Information AVP

The Software Information AVP, Attribute type TBD, allows a UTF-8 string to be sent with a human readable description of the software running on the platform. Examples could be "Version 4-0.12(c)-2" or "Rev 10.4.2-beta".



## 2.5 Vendor-Information AVP

The Vendor Information AVP, Attribute type TBD, allows a UTF-8 string to be sent with a human readable description of the vendor of the platform. Examples: "Hudson Computer Systems", or "Lightning Networks".

## 3. RADIUS attributes

### 3.1 Call-Information RADIUS attribute

#### Description

This Attribute indicates text which MAY be supplied to the RADIUS [RFC2865] server during authentication (Access-Request), accounting (Accounting-Request) or tunnel-link accounting [RFC2867] for the purposes of logging only. The message MUST NOT be parsed and as such termination action MUST NOT be based on the contents of this attribute.

In contrast to RADIUS Connect-Info [RFC2869], Call-Information indicates where a call terminated, not what it terminated as. For example, Call-Information MAY be used to report NAS module, slot, port in a vendor specific format. Connect-Info MAY be used to specify negotiated compression, connection protocol etc...

Multiple Call-Information's MAY be included and if any are displayed, they MUST be displayed in the same order as they appear in the packet.

A summary of the Call-Information Attribute format is shown below. The fields are transmitted from left to right.

```

      0               1               2
      0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|      Type      |      Length      |      Text ...
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+

```

#### Type

TBD for Call-Information.

#### Length

>= 3





## Text

The Text field is one or more octets, and its contents are implementation dependent. It is intended to be human readable, and MUST NOT affect operation of the protocol. It is recommended that the message contain UTF-8 encoded 10646 [RFC2279] characters using the Default Language [BCP18]. The string is not null-terminated.

For L2TP calls, this attribute SHOULD be used to log information obtained via Call-Information AVPs. See [section 2](#).

### 3.2 Platform-Information RADIUS attribute

## Description

This Attribute indicates text which MAY be supplied to the RADIUS [RFC2865] server during authentication (Access-Request), accounting (Accounting-Request) or tunnel accounting [RFC2867] for the purposes of logging only. The message MUST NOT be parsed and as such termination action MUST NOT be based on the contents of this attribute.

Multiple Platform-Information's MAY be included and if any are displayed, they MUST be displayed in the same order as they appear in the packet.

A summary of the Platform-Information Attribute format is shown below. The fields are transmitted from left to right.

```

      0                               1                               2
      0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|      Type      |      Length      |      Text ...
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+

```

## Type

TBD for Platform-Information.

## Length

>= 2

## Text

The Text field is one or more octets, and its contents are implementation dependent. It is intended to be human readable, and MUST NOT affect operation of the protocol. It is recommended



that the message contain UTF-8 encoded 10646 [RFC2279] characters using the Default Language [BCP18]. The string is not null-terminated.

For L2TP tunnels, this attribute MUST be used to log information obtained via Platform-Information AVPs. See [section 2](#). To cater for L2TP multihop environments, if no Platform-Information is available, then this attribute MUST be used with Length set to 2. Such attributes indicate that no Platform-Information was available for a particular node within the L2TP tunnel path. The sequence of RADIUS Platform-Information attributes MUST follow that of any L2TP Platform-Information AVPS received.

### 3.3 Software-Information RADIUS attribute

#### Description

This Attribute indicates text which MAY be supplied to the RADIUS [RFC2865] server during authentication (Access-Request), accounting (Accounting-Request) or tunnel accounting [RFC2867] for the purposes of logging only. The message MUST NOT be parsed and as such termination action MUST NOT be based on the contents of this attribute.

Multiple Software-Information's MAY be included and if any are displayed, they MUST be displayed in the same order as they appear in the packet.

A summary of the Software-Information Attribute format is shown below. The fields are transmitted from left to right.

```

      0               1               2
      0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
      +---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
      |      Type      |      Length      |      Text ...
      +---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+

```

#### Type

TBD for Software-Information.

#### Length

>= 2

#### Text

The Text field is one or more octets, and its contents are implementation dependent. It is intended to be human readable,



and MUST NOT affect operation of the protocol. It is recommended that the message contain UTF-8 encoded 10646 [RFC2279] characters using the Default Language [BCP18]. The string is not null-terminated.

For L2TP tunnels, this attribute MUST be used to log information obtained via Software-Information AVPs. See [section 2](#). To cater for L2TP multihop environments, if no Software-Information is available, then this attribute MUST be used with Length set to 2. Such attributes indicate that no Software-Information was available for a particular node within the L2TP tunnel path. The sequence of RADIUS Software-Information attributes MUST follow that of any L2TP Software-Information AVPS received.

### **3.4 Vendor-Information RADIUS attribute**

#### **Description**

This Attribute indicates text which MAY be supplied to the RADIUS [RFC2865] server during authentication (Access-Request), accounting (Accounting-Request) or tunnel accounting [RFC2867] for the purposes of logging only. The message MUST NOT be parsed and as such termination action MUST NOT be based on the contents of this attribute.

Multiple Vendor-Information's MAY be included and if any are displayed, they MUST be displayed in the same order as they appear in the packet.

A summary of the Vendor-Information Attribute format is shown below. The fields are transmitted from left to right.

```

      0                               1                               2
      0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|   Type   |   Length   |   Text ...
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+

```

#### **Type**

TBD for Vendor-Information.

#### **Length**

>= 2

#### **Text**

The Text field is one or more octets, and its contents are



implementation dependent. It is intended to be human readable, and MUST NOT affect operation of the protocol. It is recommended that the message contain UTF-8 encoded 10646 [[RFC2279](#)] characters using the Default Language [[BCP18](#)]. The string is not null-terminated.

For L2TP tunnels, this attribute MUST be used to log information obtained via Vendor-Information AVPs. See [section 2](#). To cater for L2TP multihop environments, if no Vendor-Information is available, then this attribute MUST be used with Length set to 2. Such attributes indicate that no Vendor-Information was available for a particular node within the L2TP tunnel path. The sequence of RADIUS Vendor-Information attributes MUST follow that of any L2TP Vendor-Information AVPS received.

#### [4. Security Considerations](#)

This document describes mechanisms where arbitrary, human-readable information can be sent between L2TP peers. User of these AVPs should have the understanding that any information sent is completely insecure. If the information sent could be used for malicious purposes, the use of the features described in this document increases the possibility of that information being compromised. In particular, since the text message AVP SHOULD NOT be hidden, even that security feature cannot be employed.

#### [5. References](#)

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## **6. IANA Considerations**

The "Call Information", "Platform Information", "Software Information", and "Vendor Information" AVPs needs to be assigned an IETF "Attribute Type" from the "Control Message Attribute Value Pairs" maintained by IANA for L2TP.

## **7. Authors' Addresses**

Tom Mistretta  
Juniper Networks  
10 Technology Park Drive  
Westford, MA 01886

Email: [tmistretta@juniper.net](mailto:tmistretta@juniper.net)

Ignacio Goyret  
Lucent Technologies  
1701 Harbor Bay Parkway  
Alameda, CA 94502

Email: [igoyret@lucent.com](mailto:igoyret@lucent.com)

