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DIAMETER  
Device Configuration Extensions  
<[draft-greene-diameter-devconf-00.txt](#)>

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Abstract

This DIAMETER Extension defines commands and AVPs that are used by two peers to exchange DIAMETER configuration information. The intent of this draft is to minimize configuration of devices prior to deployment.

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**1.0 Introduction**

This DIAMETER Extension defines commands and AVPs that are used by two peers to exchange DIAMETER configuration information. The intent of this draft is to minimize configuration of devices prior to deployment.

**1.1 Definitions**

In this document, several words are used to signify the requirements of the specification. These words are often capitalized.

**MUST** This word, or the adjective "required", means that the definition is an absolute requirement of the specification.

**MUST NOT** This phrase means that the definition is an absolute prohibition of the specification.

**SHOULD** This word, or the adjective "recommended", means that there may exist valid reasons in particular circumstances to ignore this item, but the full implications must be understood and carefully weighed before choosing a different course.

**MAY** This word, or the adjective "optional", means that this item is one of an allowed set of alternatives. An

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implementation which does not include this option MUST be prepared to interoperate with another implementation which does include the option.

## 2.0 Command Codes

This document defines the following DIAMETER Commands. All DIAMETER implementations supporting this extension MUST support all of the following commands:

Command Name	Command Code
Device-Config-Request	304
Device-Config-Answer	305

### 2.1 Device-Config-Request (DCR)

### Description

The Device-Config-Request message is sent by a DIAMETER device to provide configuration information to peers under administrative control of the sender. Peers receiving this information SHOULD use it when communicating with the originator of this message. The peer MUST respond to the message with a Device-Config-Answer.

This message MAY contain vendor specific AVPs which MAY be ignored by the receiver.

## Message Format

```
<Device-Config-Request> ::= <DIAMETER Header>
    <Device-Config-Request Command AVP>
    <Session-Id AVP>
    [<Message-Timer>]
    [<MessageInProgress-Timer>]
    [<Message-Retry-Count>]
    [<Maximum-Forward-Count>]
    [<Extension-Id>]
    [<Version-Number>]
    [<Vendor-Name>]
    [<Vendor-Specific AVPs>]
    <Timestamp AVP>
    <Initialization-Vector AVP>
    {<Integrity-Check-Vector AVP> ||
        <Digital-Signature AVP> }
```

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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																		
+--+--+--+--+--+--+--+--+--+										+--+--+--+--+--+--+--+--+--+										+--+--+--+--+--+--+--+--+--+										+--+--+--+--+--+--+--+--+--+																			
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+--+--+--+--+--+--+--+--+--+										+--+--+--+--+--+--+--+--+--+										+--+--+--+--+--+--+--+--+--+										+--+--+--+--+--+--+--+--+--+																			
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## 256 DIAMETER Command

The length of this attribute MUST be 12.

The 'M' bit MUST be set. The 'H' and 'E' MAY be set depending upon the security model used. The 'V', 'T' and the 'P' bits MUST NOT be set.

The Command Code field MUST be set to 304 (Device-Config-Request).

### Description

The Device-Config-Answer message MUST contain the Result-Code AVP to indicate whether the configuration was accepted. The Result-Code MAY be used to indicate refusal of any of the AVPs in the request.

The Device-Config-Answer message MAY contain configuration AVPs and if they are present it is understood that the receiver has no way to refuse them.

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## Message Format

```

<Device-Config-Answer> ::= <DIAMETER Header>
                           <Device-Config-Answer Command AVP>
                           <Session-Id AVP>
                           <Result-Code AVP>
                           [<Error-Code AVP>]
                           [<Message-Timer AVP>]
                           [<MessageInProgress-Timer AVP>]
                           [<Message-Retry-Count AVP>]
                           [<Maximum-Forward-Count AVP>]
                           [<Extension-Id AVP>]
                           [<Version-Number AVP>]
                           [<Vendor-Name AVP>]
                           [<Vendor-Specific AVPs>]
                           <Timestamp AVP>
                           <Initialization-Vector AVP>
                           {<Integrity-Check-Vector AVP> ||
                           <Digital-Signature AVP> }

```

## AVP Format

```

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
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|                               AVP Code                               |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|          AVP Length          |      Reserved      |U|T|V|E|H|M|
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|                               Command Code                               |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+

```

## AVP Code

256        DIAMETER Command

## AVP Length

The length of this attribute MUST be 12.

## AVP Flags

The 'M' bit MUST be set. The 'H' and 'E' MAY be set depending upon the security model used. The 'V', 'T' and the 'P' bits MUST NOT be set.

## Command Code



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The Command Code field MUST be set to 305 (Device-Config-Answer).

3.0 DIAMETER AVPs

This section will define the mandatory AVPs which MUST be supported by all DIAMETER implementations. Note the first 256 AVP numbers are reserved for RADIUS compatibility.

The following AVPs are defined in this document:

Attribute Name	Attribute Code
-----	
Message-Timer	273
Message-In-Progress-Timer	274
Message-Retry-Count	275
Maximum-Forward-Count	276

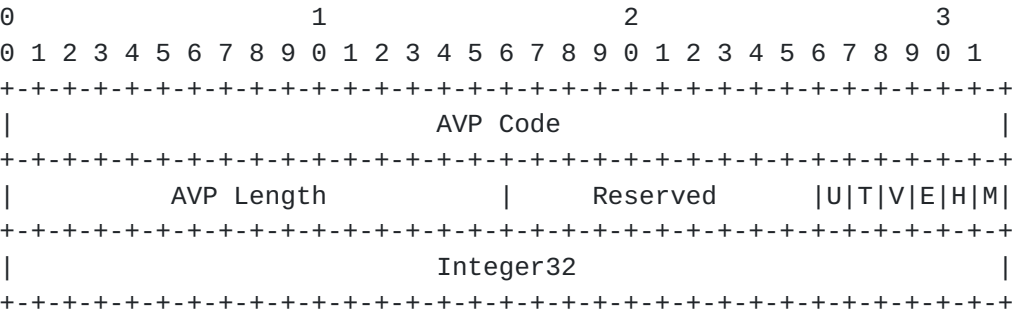
3.1 Message-Timer

Description

This AVP is used by a device to determine how long to wait before trying again to send a message expecting a response or acknowledgement. This timer value overrides any default value a device may have.

Note that a DIAMETER extensions AVP could define another timer that would override this one for a specific message type.

AVP Format



AVP Code

273      Message-Timer

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AVP Length

The length of this attribute MUST be 12.

## AVP Flags

The 'M' bit MUST be set. The 'H' and 'E' MAY be set depending upon the security model used. The 'V', 'T' and the 'P' bits MUST NOT be set.

## Integer32

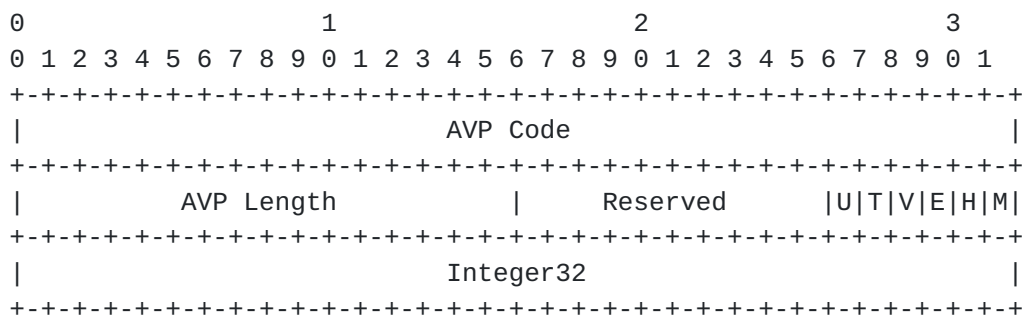
This field contains the value of the timer in milliseconds. A value of 0 for this timer means that the default value for this timer is to be used.

### 3.2 Message-In-Progress-Timer

## Description

This AVP is used by a device's state machine to determine how long to wait before sending a MessageInProgress message that tells the peer device that the message it is expecting a response or acknowledgment for is still in progress.

## AVP Format



## AVP Code

274 Message-In-Progress-Timer

AVP Length

The length of this attribute MUST be 12.

## AVP Flags

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The 'M' bit MUST be set. The 'H' and 'E' MAY be set depending upon the security model used. The 'V', 'T' and the 'P' bits MUST NOT be set.

## Integer32

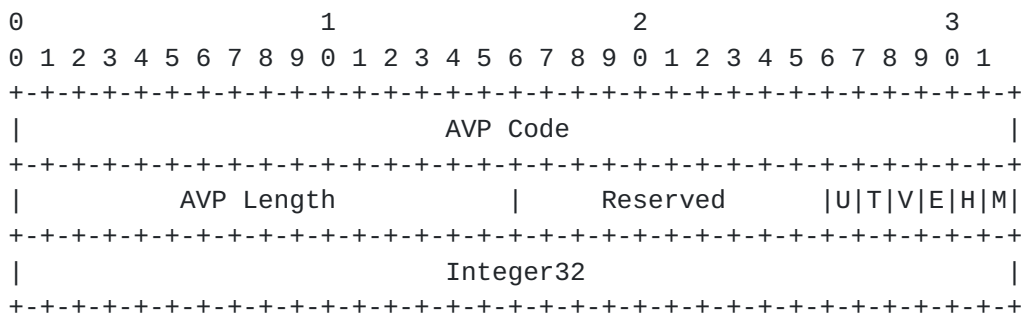
This field contains the value of the timer in milliseconds. A value of 0 indicates that the MessageInProgress-Indication message is not being used.

### 3.3 Message-Retry-Count

## Description

This AVP is used by a device's state machine to determine how many times it is allowed to resend a message that is expecting a response or acknowledgement.

## AVP Format



## AVP Code

275 Message-Retry-Count

## AVP Length

The length of this attribute MUST be 12.

## AVP Flags

The 'M' bit MUST be set. The 'H' and 'E' MAY be set depending upon the security model used. The 'V', 'T' and the 'P' bits MUST NOT be set.

## Integer32

This field contains the value for the counter.

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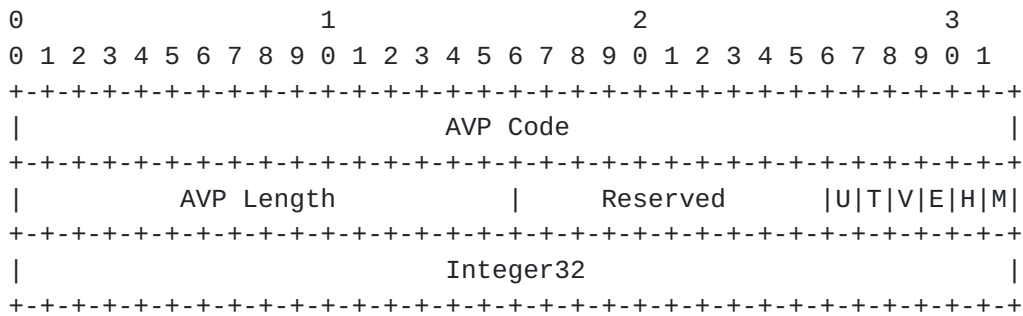
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### 3.4 Maximum-Forward-Count

## Description

This AVP is used by a device to determine if a message should continue to be forwarded. A use for this count would be to limit the number of proxies used to satisfy a request.

## AVP Format



## AVP Code

276 Maximum-Forward-Count

AVP Length

The length of this attribute MUST be 12.

## AVP Flags

The 'M' bit MUST be set. The 'H' and 'E' MAY be set depending upon the security model used. The 'V', 'T' and the 'P' bits MUST NOT be set.

## Integer32

This field contains the value for the counter.

## 4.0 Protocol Definition

This section will describe how the base protocol works (or is at least an attempt to).

### 4.1 Device Configuration

DIAMETER provides two messages that can be used by DIAMETER peers in



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order to exchange certain configuration information, such as retransmission timer values. This message MAY be sent at any time and is not restricted to being sent at boot-up time only.

Upon receipt of the Device-Config-Request, the receiver SHOULD make use of the configuration information provided when communicating with the initiator of the message.

The receiver MUST acknowledge receipt of the message with a Device-Config-Answer which may also contain some configuration information. Note that if such configuration AVPs are present in the Device-Config-Answer the peer cannot reply with a success of failure Result-Code.

A preferable method for two nodes to "negotiate" configuration information would be for both of them to issue Device-Config-Requests. However in some applications minimizing packets over the wire at startup time requires that the Device-Config-Answer carry such information.

Note that both messages have a high probability of containing vendor specific AVP which MAY be ignored. Implementations MUST assume that the receiver does NOT support vendor specific AVPs sent.

## **5.0 References**

- [1] Calhoun, Rubens, "DIAMETER Base Protocol", Internet-Draft, [draft-calhoun-diameter-05.txt](#), May 1998.
- [2] Reynolds, Postel, "Assigned Numbers", [RFC 1700](#), October 1994.
- [3] Calhoun, Zorn, Pan, "DIAMETER Framework", Internet-Draft, [draft-calhoun-diameter-framework-00.txt](#), May 1998

## **6.0 Acknowledgements**

The Authors would like to acknowledge ...

## **7.0 Author's Address**

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