
Application Program Interface Document

Diameter Base Protocol API Specification

Version 1.0

Document Information

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Changes are periodically made to this document. Changes, technical inaccuracies, and typographic errors will be corrected in subsequent versions.

Objective

Document Scope

<Brief and quick information explaining the document's scope >

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1) Initialization and Configuration

1.1. Initialization Structures

1.1.1. DiaStackInitData

typedef struct DiaStackInitData

```
{
    DiameterString          DiamAPILogFileFullNameWithPath;
    unsigned int            DiamAPILogLevel;
    DAPI-DList*            pListOfListenAddresses;
    DAPI-DList*            pListOfStaticPeers;
    DAPI-DList*            pListOfRealmEntries;
    unsigned int            tcTimer;
} DiaStackInitData_t;
```

Structure Explanation

This structure contains all the data required for the initialization of the diameter base protocol stack .This structure needs to be passed to the InitDiameterStack function.

Fields:

DiamAPILogFileFullNameWithPath

This string will contain the full path name of the log file to be used for logging by the diameter base protocol stack

DiamAPILogLevel

This field contains the logging level to be used during logging by the diameter base protocol stack

pListOfListenAddresses

This field is the head node of a list. Each node of the list is of the type of DiameterTransportObject_t , and contains the transport and network information required for listening.

pListOfStaticPeers

This field is the head node of a list. Each node of the list is of the type of staticPeerEntry_t, and contains the information about peer table entry.

pListOfRealmEntries

This field is the head node of a list. Each node of the list is of the type of RealmRtTableEntry_t and contains information about the realm entry.

tcTimer

This specifies the value of the Tc timer in second .The default value used by the diameter protocol stack is 30 seconds as per RFC 3588.

1.1.2. staticPeerEntry

```
typedef struct staticPeerEntry
{
    DiameterIdentity                ServerID;
    DiameterTransportObject_t      TransportObject;
    bool                            bIsTLSEnabled;
    TLSData_t                       optionalTLSdata;
} staticPeerEntry_t;
```

Structure Explanation

This structure contains all the information that is needed for the static configuration of peers at initialization time.

Fields:ServerID

This fields contains the FQDN of the peer in the peer table

TransportObject

This field contains the transport object that contains all the transport level details of the peer.

bIsTLSEnabled

If this field is set then the Transport connection will be TLS enabled.

optionalTLSdata

If TLS is enabled then this field will contain the data required by TLS connection.

1.2. Initialization and Configuration APIs**1.2.1. InitDiameterStack**

```
DiamAPIReturnVal InitDiameterStack ( DiameterBaseAPIContext_t* pDiameterContext
, DiaStackInitData_t* pDiaStackInitParams );
```

Purpose

The purpose of this API is to initialize and configure the Diameter base protocol stack.

Parameters

| Name | Type | In/out | Description |
|---------------------|---------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| pDiaStackInitParams | DiaStackInitData_t* | Out | This structure contains all the initialization and configuration parameters for the diameter base stack. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIRetVal enumeration.

1.2.2. InitAVPDictionary

DiamAPIRetVal InitAVPDictionary(DiameterBaseAPIContext_t pDiameterContext , DiameterString strXMLDictionaryFilePath);*

Purpose

This function is used to initialize the AVP dictionary.

Parameters

| Name | Type | In/out | Description |
|--------------------------|---------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| strXMLDictionaryFilePath | DiameterString | In | This parameter is the full path name of the XML dictionary file. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIRetVal enumeration.

1.2.3. CleanupDiameterStack

DiamAPIRetVal CleanupDiameterStack(DiameterBaseAPIContext_t pDiameterContext);*

Purpose

This function cleans the local state of the diameter base API stack.

Parameters

| Name | Type | In/out | Description |
|------------------|---------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIReturnVal enumeration.

2) Message Processing**2.1. Message Structure****2.1.1. DiameterHeader**

```
typedef struct DiameterHeader
{
    unsigned char Version ;
    unsigned char MessageLength[3];
    unsigned char Flags;
    unsigned char CommandCode[3] ;
    unsigned int ApplicationID;
    unsigned int HopByHopID;
    unsigned int EndToEndID;
} DiameterHeader_t;
```

Structure Explanation

This structure represents the Diameter Header

Fields:Version

This field contains the version of Diameter Protocol.

MessageLength[3]

This field specifies the length of the diameter message in bytes. This is in Big endian form.

Flags

This field contains diameter flags.

CommandCode[3]

This field contains diameter command code. This is in Big endian form.

ApplicationID

This field contains the application ID

HopByHopID

This field contains the hop by hop identifier for the current diameter message

EndToEndID

This field contains the end to end identifier for the current diameter message

2.1.2. DiameterMessage

```
typedef struct DiameterMessage
{
    DiameterHeader_t    DiaHeader;
    DAPI-DList*        pListOfAVPs;
} DiameterMessage_t;
```

Structure Explanation

This structure specifies the diameter message.

Fields:DiaHeader

This field is a structure containing the diameter header

pListOfAVPs

This is the pointer to the list of AVPs. Each node of the list is of the type AVP_t

2.1.3. AVPHeader

```
typedef AVPHeader
{
    unsigned int    AVPCode;
    unsigned char  Flags;
    unsigned char  AVPLength[3];
} AVPHeader_t;
```

Structure Explanation

This structure represents the AVP header.

Fields:AVPCode

This field contains the AVP code that defines the current AVP.

Flags

This field contains the AVP flags

AVPLength[3]

This field specifies the length of the AVP packet in bytes. This is in Big endian form.

2.1.4. AVP

typedef struct AVP

```
{
    AVPHeader_t      AVPHeaderInst;
    DAPI-DList*     pListOfData;
} AVP_t;
```

Structure Explanation

This structure represents an AVP packet.

Fields:AVPHeaderInst

This structure represents the diameter header

pListOfData

This is a pointer to list containing the payload for the AVP packet.

2.1.5. Macros

AVP code macros with the numeric value as defined by RFC 3588

| | | |
|----------------------|---|-----|
| <code>#define</code> | <code>AVP-ACCT-INTERIM-INTERVAL</code> | 85 |
| <code>#define</code> | <code>AVP-ACCOUNTING-REALTIME-REQUIRED</code> | 483 |
| <code>#define</code> | <code>AVP-ACCT-MULTI-SESSION-ID</code> | 50 |
| <code>#define</code> | <code>AVP-ACCOUNTING-RECORD-NUMBER</code> | 485 |
| <code>#define</code> | <code>AVP-ACCOUNTING-RECORD-TYPE</code> | 480 |
| <code>#define</code> | <code>AVP-ACCOUNTING-SESSION-ID</code> | 44 |
| <code>#define</code> | <code>AVP-ACCOUNTING-SUB-SESSION-ID</code> | 287 |
| <code>#define</code> | <code>AVP-ACCT-APPLICATION-ID</code> | 259 |
| <code>#define</code> | <code>AVP-AUTH-APPLICATION-ID</code> | 258 |
| <code>#define</code> | <code>AVP-AUTH-REQUEST-TYPE</code> | 274 |
| <code>#define</code> | <code>AVP-AUTHORIZATION-LIFETIME</code> | 291 |
| <code>#define</code> | <code>AVP-AUTH-GRACE-PERIOD</code> | 276 |
| <code>#define</code> | <code>AVP-AUTH-SESSION-STATE</code> | 277 |
| <code>#define</code> | <code>AVP-RE-AUTH-REQUEST-TYPE</code> | 285 |
| <code>#define</code> | <code>AVP-CLASS</code> | 25 |
| <code>#define</code> | <code>AVP-DESTINATION-HOST</code> | 293 |
| <code>#define</code> | <code>AVP-DESTINATION-REALM</code> | 283 |
| <code>#define</code> | <code>AVP-DISCONNECT-CAUSE</code> | 273 |

| | | |
|---------|------------------------------------|-----|
| #define | AVP-E2E-SEQUENCE | 300 |
| #define | AVP-ERROR-MESSAGE | 281 |
| #define | AVP-ERROR-REPORTING-HOST | 294 |
| #define | AVP-EVENT-TIMESTAMP | 55 |
| #define | AVP-EXPERIMENTAL-RESULT | 297 |
| #define | AVP-EXPERIMENTATION-RESULT-CODE | 298 |
| #define | AVP-FAILED-AVP | 279 |
| #define | AVP-FIRMWARE-REVISION | 267 |
| #define | AVP-HOST-IP-ADDRESS | 257 |
| #define | AVP-INBAND-SECURITY-ID | 299 |
| #define | AVP-MULTI-ROUND-TIME-OUT | 272 |
| #define | AVP-ORIGIN-HOST | 264 |
| #define | AVP-ORIGIN-REALM | 296 |
| #define | AVP-ORIGIN-STATE-ID | 278 |
| #define | AVP-PRODUCT-NAME | 269 |
| #define | AVP-PROXY-HOST | 280 |
| #define | AVP-PROXY-INFO | 284 |
| #define | AVP-PROXY-STATE | 33 |
| #define | AVP-REDIRECT-HOST | 292 |
| #define | AVP-REDIRECT-HOST-USAGE | 261 |
| #define | AVP-REDIRECT-MAX-CACHE-TIME | 262 |
| #define | AVP-RESULT-CODE | 268 |
| #define | AVP-ROUTE-RECORD | 282 |
| #define | AVP-SESSION-ID | 263 |
| #define | AVP-SESSION-TIMEOUT | 27 |
| #define | AVP-SESSION-BINDING | 270 |
| #define | AVP-SESSION-SERVER-FAILOVER | 271 |
| #define | AVP-SUPPORTED-VENDOR-ID | 265 |
| #define | AVP-TERMINATION-CAUSE | 295 |
| #define | AVP-USER-NAME | 1 |
| #define | AVP-VENDOR-ID | 266 |
| #define | AVP-VENDOR-SPECIFIC-APPLICATION-ID | 260 |

Getter macros for diameter header

| | |
|---------|----------------------------------|
| #define | GET-VERSION-FROM-DIA-HEADER |
| #define | GET-MSG-LENGTH-FROM-DIA-HEADER |
| #define | GET-COMMAND-CODE-FROM-DIA-HEADER |
| #define | GET-APPID-FROM-DIA-HEADER |
| #define | GET-HOPBYHOP-ID-FROM-DIA-HEADER |
| #define | GET-ENDTOEND-ID-FROM-DIA-HEADER |
| #define | GET-R-FLAG-FROM-DIA-HEADER |
| #define | GET-P-FLAG-FROM-DIA-HEADER |
| #define | GET-E-FLAG-FROM-DIA-HEADER |
| #define | GET-T-FLAG-FROM-DIA-HEADER |

Setter macros for diameter header

```
#define SET-VERSION-IN-DIA-HEADER
#define SET-MSG-LENGTH-IN-DIA-HEADER
#define SET-COMMAND-CODE-IN-DIA-HEADER
#define SET-APPID-IN-DIA-HEADER
#define SET-HOPBYHOP-ID-IN-DIA-HEADER
#define SET-ENDTOEND-ID-IN-DIA-HEADER
#define SET-R-FLAG-IN-DIA-HEADER
#define SET-P-FLAG-IN-DIA-HEADER
#define SET-E-FLAG-IN-DIA-HEADER
#define SET-T-FLAG-IN-DIA-HEADER
```

Getter macros for AVP header

```
#define GET-AVP-CODE-FROM-AVP-HEADER
#define GET-AVP-LENGTH-FROM-AVP-HEADER
#define GET-VENDOR-ID-FROM-AVP-HEADER
#define GET-V-FLAG-FROM-AVP-HEADER
#define GET-M-FLAG-FROM-AVP-HEADER
#define GET-P-FLAG-FROM-AVP-HEADER
```

Setter macros for AVP header

```
#define SET-AVP-CODE-IN-AVP-HEADER
#define SET-AVP-LENGTH-IN-AVP-HEADER
#define SET-VENDOR-ID-IN-AVP-HEADER
#define SET-V-FLAG-IN-AVP-HEADER
#define SET-M-FLAG-IN-AVP-HEADER
#define SET-P-FLAG-IN-AVP-HEADER
```

2.1.7. Type Definitions

```
typedef AVP_t* DAPI-HANDLE-AVP;
typedef DiameterMessage_t* DAPI-HANDLE-DIAM-MSG;
```

2.2. Message Processing APIs

2.2.1. CreateAVP

```
DiamAPIRetVal CreateAVP(DiameterBaseAPIContext_t* pDiameterContext ,
    DAPI-HANDLE-AVP* pAVPHandle , unsigned int AVPCode ,void* pAVPData
);
```

Purpose

This function creates a new AVP.

Parameters

| Name | Type | In/out | Description |
|------------------|---------------------------|--------|---|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| pAVPHandle | DAPI-HANDLE-AVP* | Out | This is a pointer to DAPI-HANDLE-AVP ,which is a handle of the newly created AVP. |
| AVPCode | unsigned int | In | This contains the code for the AVP being created. |
| pAVPData | void* | In | This contains the value of the current AVP. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIRetVal enumeration.

2.2.2 CreateGroupedAVP

```
DiamAPIRetVal CreateGroupedAVP (
    DiameterBaseAPIContext_t*pDiameterContext , DAPI-HANDLE-AVP*
    pGroupedAVPHandle )
```

Purpose

This function creates a grouped AVP structure.

Parameters

| Name | Type | In/out | Description |
|-------------------|---------------------------|--------|---|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| pGroupedAVPHandle | DAPI-HANDLE-AVP* | Out | This is a pointer to DAPI-HANDLE-AVP ,which is a handle of the newly created grouped AVP. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIRetVal enumeration.

2.2.3. AddAVPToGroup

DiamAPIRetVal AddAVPToGroup (DiameterBaseAPIContext_t pDiameterContext , DAPI-HANDLE-AVP hGroupedAVP , DAPI-HANDLE-AVP hAVPToAdd);*

Purpose

This function adds an AVP to a grouped AVP.

Parameters

| Name | Type | In/out | Description |
|------------------|---------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| hGroupedAVP | DAPI-HANDLE-AVP | Out | This is a handle to the grouped AVP. |
| hAVPToAdd | DAPI-HANDLE-AVP | In | This is a handle to the AVP to be added. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIRetVal enumeration.

2.2.4. AppendAVPToList

```
DiamAPIReturnVal AppendAVPToList ( DiameterBaseAPIContext_t*
pDiameterContext , DAPI-DList* pAVPList , DAPI-HANDLE-AVP hAVP );
```

Purpose

This is a utility function that appends an AVP to the AVP list.

Parameters

| Name | Type | In/out | Description |
|------------------|---------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| pAVPList | DAPI-DList* | Out | This is pointer to the list of AVPs in which the new AVP will be appended. |
| hAVP | DAPI-HANDLE-AVP | In | This is the AVP which needs to be appended to the AVP list. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIReturnVal enumeration.

2.2.5. AddAVPListToDiameterMessage

```
DiamAPIReturnVal AddAVPListToDiameterMessage(DiameterBaseAPIContext_t*
pDiameterContext , DAPI-HANDLE-DIAM-MSG hDiaMsg , DAPI-DList*
pAVPList);
```

Purpose

This function adds the AVP list to the diameter message.

Parameters

| Name | Type | In/out | Description |
|------------------|---------------------------|--------|---|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| hDiaMsg | DAPI-HANDLE-DIAM-MSG | Out | This is a handle to the diameter message in which the list will be added. |
| pAVPList | DAPI-DList* | In | This is the list of AVPs that needs to be added to the diameter |

| |
|----------|
| message. |
|----------|

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIReturnVal enumeration.

2.2.6. CreateAVPList

DiamAPIReturnVal CreateAVPList(DiameterBaseAPIContext_t pDiameterContext, DAPI-DList** ppAVPList);*

Purpose

This function creates an empty AVP list.

Parameters

| Name | Type | In/out | Description |
|------------------|---------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| ppAVPList | DAPI-DList** | Out | This is a pointer to the list of AVPs. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIReturnVal enumeration.

2.2.7. ParseDiameterPacket

DiamAPIReturnVal ParseDiameterPacket (DiameterBaseAPIContext_t pDiameterContext, void * pRawDiameterPacket, DAPI-HANDLE-DIAM-MSG * pDiaMsgHandle);*

Purpose

This function parses a diameter packet.

Parameters

| Name | Type | In/out | Description |
|--------------------|---------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API.. |
| pRawDiameterPacket | void * | In | This is the raw diameter packet. |
| pDiaMsgHandle | DAPI-HANDLE-DIAM-MSG * | Out | This is a pointer to diameter message handle in which structured data will |

be returned.

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIReturnVal enumeration.

3) Transport and Peer Management

3.1. Transport and Peer Management Enums & Structures

3.1.1. PeerState

```
typedef enum PeerState
    {
        Closed,
        Wait-Conn-Ack,
        Wait-I-CEA ,
        Wait-Conn-ACK/Elect,
        Wait>Returns,
        R-Open,
        I-Open,
        Closing
    } PeerState_t;
```

Enum Explanation

This is an enumeration that enumerates the different states of a diameter peer.

3.1.2. PeerTable Entry

```
typedef struct PeerTableEntry
    {
        DiameterString                HostIdentity;
        PeerState                    PeerStatus;
        bool                          isStatic;
        DiaTime_t                    ExpiryTime;
        bool                          isTLSEnabled;
        TLSDData_t                  optionalTLSDData;
        DiameterTransportObject_t    TransportObject ;
    } PeerTableEntry_t;
```

Structure Explanation

This structure contains the information that will be present in each entry of the peer table.

Fields:

HostIdentity

This field contains the value of the Host identity

PeerStatus

This field contains the peer status of the current peer, as defined by the peer state machine in RFC 3588

isStatic

This field specifies whether the current peer table entry was statically configured or dynamically discovered and configured.

ExpiryTime

This field contains the expiry time of the current entry if the peer is dynamically discovered.

isTLSEnabled

This field specifies if TLS is enabled in the transport with the peer referred by the current entry.

optionalTLSData

If TLS is enabled, then this field contains the optional data required by TLS.

TransportObject

This field contains the transport object associated with the current peer entry

3.1.3. Type Defines

```
typedef PeerTableEntry_t * DAPIHANDLE-PEERTABLE-ENTRY;
typedef DiameterTransportObject_t* DAPIHANDLE-TRANSPORT- OBJECT;
```

3.1.4. enum IPAddrType

```
typedef enum IPAddrType
{
    IP_v4,
    IP_v6
}IPAddrType_t;
```

Enum Explanation

This enumerates the type of the IP address

Fields

IP_v4,
IP version 4

IP_v6
IP version 6

3.1.5. DiameterTCPTransport

```
typedef struct DiameterTCPTransport
{
    DiameterString strIPAddress;
    DiameterString strFQDN;
    unsigned int port;
    IPAddrType_t IPAddrType;
}DiameterTCPTransport_t;
```

Structure Explanation

This structure contains the basic transport information for a TCP connection

Fields:

strIPAddress

String containing the IP address

strFQDN

String containing the fully qualified domain name

port

Port number

IPAddrType

Enumeration specifying the IP addresses type

3.1.6. DiameterSCTPTransport

```
typedef struct DiameterSCTPTransport
{
    DAPI-DList* pListOfIPAddresses;
    DAPI-Dlist* pListOfFQDNs;
    unsigned int port;
    IPAddrType_t IPAddrType;
}DiameterSCTPTransport_t;
```

Structure Explanation

This structure contains the basic transport information for an SCTP connection

Fields:

pListOfIPAddresses

The pointer to the list of strings where each string contains an IP address

pListOfFQDNs

The pointer to the list of strings where each string contains an FQDN

port

Port number

IPAddrType

Enumeration enumerating the IP address type

3.1.7. DiameterTransportObject

```

Typedef struct DiameterTransportObject
{
    DiamTransport_t    transportType;

    union DiamTransportInfo
    {
        DiameterTCPTransport_t    DiamTCPTransport;
        DiameterSCTPTransport_t    DiamSCTPTransport;
    };
    void*                pDiamAppContext;
    void*                pTransportLevelHandle
} DiameterTransportObject_t;

```

Structure Explanation

This is a structure that specifies the opaque transport object.

Fields:transportType

An enumeration enumerating the type of transport connection.

union DiamTransportInfo

```

{
    DiameterTCPTransport_t    DiamTCPTransport;
    //Union member to be used if the transport type is TCP
    DiameterSCTPTransport_t    DiamSCTPTransport;
    //Union member to be used if the transport type is SCTP.
};

```

pDiamAppContext

A void pointer field to be used as application context.

pTransportLevelHandle

This Void pointer contains the transport handle received from the underlying framework

3.1.8. DiamTransport

```
typedef enum DiamTransport
{
    TCP,
    SCTP
} DiamTransport_t;
```

3.1.9. TLSData

```
typedef struct TLSData
{

} TLSData_t;
```

Structure Explanation

This will contain all the relevant data required for TLS initialization and configuration

3.2. Transport and Peer Management API**3.2.1. OpenTransportConnection**

```
DiamAPIRetVal OpenTransportConnection(DiameterBaseAPIContext_t*
pDiameterContext , DAPIHANDLE-TRANSPORT-OBJECT hTransObj );
```

Purpose

This function opens a transport connection.

Parameters

| Name | Type | In/out | Description |
|------------------|-----------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| hTransObj | DAPIHANDLE-TRANSPORT-OBJECT | In | This is the handle to the transport object. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIRetVal enumeration.

3.2.2. ListenForTransportConnections

DiamAPIRetVal ListenForTransportConnections(DiameterBaseAPIContext_t pDiameterContext , DAPIHANDLE-TRANSPORT-OBJECT hTransObj);*

Purpose

This function starts listening on a transport connection.

Parameters

| Name | Type | In/out | Description |
|------------------|-----------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| hTransObj | DAPIHANDLE-TRANSPORT-OBJECT | In | This is the handle to the transport object. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIRetVal enumeration.

3.2.3. SendMessageOnTransportConnection

DiamAPIRetVal SendMessageOnTransportConnection(DiameterBaseAPIContext_t pDiameterContext , DAPIHANDLE-DIAM-MSG hDiaMsg, DAPIHANDLE-TRANSPORT-OBJECT hTransport);*

Purpose

This function sends a diameter message on a transport connection.

Parameters

| Name | Type | In/out | Description |
|------------------|-----------------------------|--------|---|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| hDiaMsg | DAPIHANDLE-DIAM-MSG | In | This is the handle to the diameter message that needs to be sent. |
| hTransport | DAPIHANDLE-TRANSPORT-OBJECT | In | This is the handle to the transport object on which the message needs to be sent. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIRetVal enumeration.

3.2.4. CloseTransportConnection

DiamAPIRetVal CloseTransportConnection (DiameterBaseAPIContext_t pDiameterContext , DAPIHANDLE-TRANSPORT-OBJECT hTransportObj);*

Purpose

This message closes the transport connection.

Parameters

| Name | Type | In/out | Description |
|------------------|-----------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| hTransObj | DAPIHANDLE-TRANSPORT-OBJECT | In | This is the handle to the transport object which needs to be closed. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIRetVal enumeration.

3.2.5. SetMessageReceptionFromTransport

DiamAPIRetVal SetMessageReceptionFromTransport(DiameterBaseAPIContext_t pDiameterContext , DAPIHANDLE-TRANSPORT-OBJECT hTransObj);*

Purpose

This sets the message reception to initiate and continue from the transport object.

Parameters

| Name | Type | In/out | Description |
|------------------|-----------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| hTransObj | DAPIHANDLE-TRANSPORT-OBJECT | In | This is the handle to the transport object on which the message reception needs to be set and initiated. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIReturnVal enumeration.

3.2.6. CreatePeerTableEntry

```
DiamAPIReturnVal CreatePeerTableEntry ( DiameterBaseAPIContext_t*
pDiameterContext , DAPIHANDLE-PEERTABLE-ENTRY* phPeerTableEntry );
```

Purpose

This function creates a peer table entry.

Parameters

| Name | Type | In/out | Description |
|------------------|----------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| phPeerTableEntry | DAPIHANDLE-PEERTABLE-ENTRY | Out | This is a pointer to the handle to peer table entry. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIReturnVal enumeration.

3.2.7. LookupPeerTableEntry

```
DiamAPIReturnVal LookupPeerTableEntry ( DiameterBaseAPIContext_t*
pDiameterContext , DAPIHANDLE-PEERTABLE-ENTRY* phPeerTableEntry,
DiameterString strHostname);
```

Purpose

This function looks up a peer table entry in the peer table.

Parameters

| Name | Type | In/out | Description |
|------------------|-----------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| phPeerTableEntry | DAPIHANDLE-PEERTABLE-ENTRY* | Out | This is a pointer to the handle to peer table entry. |
| strHostname | DiameterString | In | This is the hostname against which a look |

up will be made in the peer table.

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIReturnVal enumeration.

3.2.8. InsertEntryIntoPeerTable

DiamAPIReturnVal InsertEntryIntoPeerTable(DiameterBaseAPIContext_t pDiameterContext, DAPIHANDLE-PEERTABLE-ENTRY hPeerEntry);*

Purpose

This function inserts an entry into the Peer table.

Parameters

| Name | Type | In/out | Description |
|------------------|----------------------------|--------|---|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| hPeerEntry | DAPIHANDLE-PEERTABLE-ENTRY | In | This is the handle to the entry which needs to be inserted in the peer table. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIReturnVal enumeration.

3.2.9. GetHostIdentityFromPeerTableEntry

DiamAPIReturnVal GetHostIdentityFromPeerTableEntry (DiameterBaseAPIContext_t pDiameterContext, DAPIHANDLE-PEERTABLE-ENTRY hPeerEntry, DiameterString* pHostIdentity);*

Purpose

This function gets the host identity string associated with a Peer table entry.

Parameters

| Name | Type | In/out | Description |
|------------------|---------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| hPeerEntry | DAPIHANDLE- | In | This is the handle to |

| | | | |
|---------------|-----------------|-----|--|
| | PEERTABLE-ENTRY | | the peer table entry. |
| pHostIdentity | DiameterString* | Out | This is a pointer to a string in which the host identity will be returned. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIRetVal enumeration.

3.2.10. GetStaticStatusFromPeerTableEntry

```
DiamAPIRetVal GetStaticStatusFromPeerTableEntry ( DiameterBaseContext_t*
pDiameterContext , DAPIHANDLE-PEERTABLE-ENTRY hPeerEntry ,BOOL*
pIsStatic );
```

Purpose

This function retrieves the value of Static field from a given peer table entry.

Parameters

| Name | Type | In/out | Description |
|------------------|----------------------------|--------|--|
| pDiameterContext | DiameterBaseContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| hPeerEntry | DAPIHANDLE-PEERTABLE-ENTRY | In | This is the handle to the peer table entry. |
| pIsStatic | BOOL* | Out | This is a pointer to the BOOL in which static field is returned. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIRetVal enumeration.

3.2.11. GetExpiryTimeFromPeerTableEntry

```
DiamAPIRetVal GetExpiryTimeFromPeerTableEntry ( DiameterBaseContext_t*
pDiameterContext , DAPIHANDLE-PEERTABLE-ENTRY hPeerEntry
,DiaTime_t *pExpiryTime );
```

Purpose

This function gets the expiry time associated with a given Peer table entry.

Parameters

| Name | Type | In/out | Description |
|------------------|----------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| hPeerEntry | DAPIHANDLE-PEERTABLE-ENTRY | In | This is the handle to the peer table entry. |
| pExpiryTime | DiaTime_t * | Out | This is a pointer to a DiaTime_t structure in which the expiry time is returned. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIReturnVal enumeration.

3.2.12. GetTLSEnableStatusFromPeerTableEntry

DiamAPIReturnVal GetTLSEnableStatusFromPeerTableEntry (DiameterBaseAPIContext_t pDiameterContext , DAPIHANDLE-PEERTABLE-ENTRY hPeerEntry , BOOL* pIsTLSEnabled);*

Purpose

This function retrieves the value of the IsTLSEnabled field from the peer table.

Parameters

| Name | Type | In/out | Description |
|------------------|----------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| hPeerEntry | DAPIHANDLE-PEERTABLE-ENTRY | In | This is the handle to the peer table entry. |
| pIsTLSEnabled | BOOL* | Out | This is a pointer to a boolean variable in which the status of the IsTLSEnabled field is returned. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIReturnVal enumeration.

3.2.13. GetOptionalTLSDataFromPeerTableEntry

```
DiamAPIReturnVal GetOptionalTLSDataFromPeerTableEntry (
    DiameterBaseAPIContext_t* pDiameterContext , DAPIHANDLE-
    PEERTABLE-ENTRY hPeerEntry ,TLSData_t* pOptTLSData );
```

Purpose

This function retrieves the **optionalTLSdata** from a given peer table entry.

Parameters

| Name | Type | In/out | Description |
|------------------|----------------------------|--------|---|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| hPeerEntry | DAPIHANDLE-PEERTABLE-ENTRY | In | This is the handle to the peer table entry. |
| pOptTLSData | TLSData_t* | Out | This is a pointer which points to the variable in which the optional TLS data associated with the given peer table entry will be retrieved. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIReturnVal enumeration.

3.2.14. GetTransportObjectFromPeerTableEntry

```
DiamAPIReturnVal GetTransportObjectFromPeerTableEntry (
    DiameterBaseAPIContext_t* pDiameterContext , DAPIHANDLE-PEERTABLE-
    ENTRY hPeerEntry ,DiameterTransportObject_t* pTransportObject );
```

Purpose

This function retrieves the Transport Object associated with a given peer table entry.

Parameters

| Name | Type | In/out | Description |
|------------------|----------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| hPeerEntry | DAPIHANDLE-PEERTABLE-ENTRY | In | This is the handle to the peer table entry. |

| | | | |
|------------------|----------------------------|-----|--|
| pTransportObject | DiameterTransportObject_t* | Out | This is a pointer which points to a variable in which the transport Object will be filled. |
|------------------|----------------------------|-----|--|

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIReturnVal enumeration.

3.2.15. SetHostIdentityInPeerTableEntry

```
DiamAPIReturnVal SetHostIdentityInPeerTableEntry ( DiameterBaseAPIContext_t*
pDiameterContext , DAPIHANDLE-PEERTABLE-ENTRY hPeerEntry
,DiameterString strHostIdentity);
```

Purpose

This function sets the value of the host identity string in a given peer table entry.

Parameters

| Name | Type | In/out | Description |
|------------------|----------------------------|--------|---|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| hPeerEntry | DAPIHANDLE-PEERTABLE-ENTRY | In | This is the handle to the peer table entry. |
| strHostIdentity | DiameterString | In | This contains the host identity string to be set in the peer table entry. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIReturnVal enumeration.

3.2.16. SetStaticStatusInPeerTableEntry

```
DiamAPIReturnVal SetStaticStatusInPeerTableEntry ( DiameterBaseAPIContext_t*
pDiameterContext , DAPIHANDLE-PEERTABLE-ENTRY hPeerEntry ,BOOL
IsStatic );
```

Purpose

This function sets the value of the static status field in the given peer table entry.

Parameters

| Name | Type | In/out | Description |
|------------------|---------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the |

| | | | |
|------------|----------------------------|----|--|
| | | | diameter base protocol API. |
| hPeerEntry | DAPIHANDLE-PEERTABLE-ENTRY | In | This is the handle to the peer table entry. |
| IsStatic | BOOL | In | This contains the value of the isStatic field to be set in the peer table entry. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIRetVal enumeration.

3.2.17. SetExpiryTimeInPeerTableEntry

DiamAPIRetVal SetExpiryTimeInPeerTableEntry (DiameterBaseAPIContext_t pDiameterContext , DAPIHANDLE-PEERTABLE-ENTRY hPeerEntry ,DiaTime_t ExpiryTime);*

Purpose

This function sets the value of the Expiry Time field in the peer table entry.

Parameters

| Name | Type | In/out | Description |
|------------------|----------------------------|--------|---|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| hPeerEntry | DAPIHANDLE-PEERTABLE-ENTRY | In | This is the handle to the peer table entry. |
| ExpiryTime | DiaTime_t | In | This is the expiry time value that needs to be set in the given peer table entry. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIRetVal enumeration.

3.2.18. SetTLSEnableStatusInPeerTableEntry

DiamAPIRetVal SetTLSEnableStatusInPeerTableEntry (DiameterBaseAPIContext_t pDiameterContext ,DAPIHANDLE-PEERTABLE-ENTRY hPeerEntry , BOOL IsTLSEnabled);*

Purpose

This function sets the value of the TLSEnableStatus field in the given peer table entry.

Parameters

| Name | Type | In/out | Description |
|------------------|----------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| hPeerEntry | DAPIHANDLE-PEERTABLE-ENTRY | In | This is the handle to the peer table entry. |
| IsTLSEnabled | BOOL | In | This is the value of the TLSEnabled field to be set in the given peer table entry. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIReturnVal enumeration.

3.2.19. SetOptionalTLSDataInPeerTableEntry

DiamAPIReturnVal SetOptionalTLSDataInPeerTableEntry (DiameterBaseAPIContext_t pDiameterContext , DAPIHANDLE-PEERTABLE-ENTRY hPeerEntry , TLSData_t OptTLSData);*

Purpose

This function sets the optional TLS data in the given peer table entry.

Parameters

| Name | Type | In/out | Description |
|------------------|----------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| hPeerEntry | DAPIHANDLE-PEERTABLE-ENTRY | In | This is the handle to the peer table entry. |
| OptTLSData | TLSData_t | In | This is the optional TLS data to be set in the given peer table entry. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIReturnVal enumeration.

3.2.20. SetTransportObjectInPeerTableEntry

```
DiamAPIReturnVal SetTransportObjectInPeerTableEntry ( DiameterBaseAPIContext_t*
pDiameterContext , DAPIHANDLE-PEERTABLE-ENTRY hPeerEntry
,DiameterTransportObject_t* pTransportObject );
```

Purpose

This function sets the value of the Transport Object in the given peer table entry.

Parameters

| Name | Type | In/out | Description |
|------------------|----------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| hPeerEntry | DAPIHANDLE-PEERTABLE-ENTRY | In | This is the handle to the peer table entry. |
| pTransportObject | DiameterTransportObject_t* | In | This is a pointer to the diameter transport object that needs to be set in the given peer table entry. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIReturnVal enumeration.

4) Session Management API

4.1. Session Management Structures

4.1.1. DiameterSessionInfo

```
Typedef struct DiameterSessionInfo
{
    DAPIHANDLE-TRANSPORT-OBJECT    hFirstTransLeg;
    DAPIHANDLE-TRANSPORT-OBJECT    hSecondTransLeg;
    DiameterString                  Session-ID;
} DiameterSessionInfo_t;
```

Structure Explanation

This structure contains the information related to a diameter session.

Fields:

hFirstTransLeg

This field is the transport object that contains the transport related information for the first leg of the session.

hSecondTransLeg

This field is the transport object that contains the transport related information for the second leg of the session.

Session-ID

This contains the actual string that is the session-ID for the current session object

4.1.2. Type Definitions

```
typedef    DiameterSessionInfo_t*    DAPIHANDLE-SESSION-OBJECT;
```

4.2. Session Management API

4.2.1. CreateNewSession

```
DiamAPIReturnVal CreateNewSession ( DiameterBaseAPIContext_t*
pDiameterContext , DAPIHANDLE-SESSION-OBJECT * pDiaSessObject );
```

Purpose

This function creates a new session.

Parameters

| Name | Type | In/out | Description |
|------------------|-----------------------------|--------|---|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| pDiaSessObject | DAPIHANDLE-SESSION-OBJECT * | Out | This is pointer to the session handle in which the new session object will be returned. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIReturnVal enumeration.

4.2.2. GetTransportHandleFromSession

```
DiamAPIReturnVal GetTransportHandleFromSession ( DiameterBaseAPIContext_t*
pDiameterContext , DAPIHANDLE-SESSION-OBJECT hSessObj ,
DAPIHANDLE-TRANSPORT-OBJECT* pTransHandle , BOOL
bIsFirstTransLeg );
```

Purpose

This function returns the transport handle associated with the current session object.

Parameters

| Name | Type | In/out | Description |
|------------------|--------------------------------|--------|---|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure the context of the diameter base protocol API. |
| hSessObj | DAPIHANDLE-SESSION-OBJECT | In | This contains the handle to the session object. |
| pTransHandle | , DAPIHANDLE-TRANSPORT-OBJECT* | Out | This is a pointer to the transport handle in |

| | | | |
|------------------|------|----|--|
| | | | which the function will return the transport object. |
| bIsFirstTransLeg | BOOL | In | if this is true , the handle of first leg transport will be returned , otherwise that of the second transport leg. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIRetVal enumeration.

4.2.3. GetSessionIDStringFromSessionObject

```
DiamAPIRetVal GetSessionIDStringFromSessionObject (
    DiameterBaseAPIContext_t* pDiameterContext , DAPIHANDLE-SESSION-
    OBJECT hSessObj , DiameterString* pstrSessID );
```

Purpose

This function returns the SessionID string associated with a session object.

Parameters

| Name | Type | In/out | Description |
|------------------|---------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| hSessObj | DAPIHANDLE-SESSION-OBJECT | In | This contains the handle to the session object. |
| pstrSessID | DiameterString* | Out | This is a pointer to a diameter string in which the sessionID string will be filled. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIRetVal enumeration.

4.2.4. AddTransportToSession

DiamAPIReturnVal AddTransportToSession (DiameterBaseAPIContext_t pDiameterContext , DAPIHANDLE-SESSION-OBJECT hSessObj , DAPIHANDLE-TRANSPORT-OBJECT hTransHandle , BOOL bIsFirstTransLeg) ;*

Purpose

This function associates the handle of a transport object with the session object.

Parameters

| Name | Type | In/out | Description |
|------------------|-----------------------------|--------|---|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| hSessObj | DAPIHANDLE-SESSION-OBJECT | out | This is the handle to the session object. |
| hTransHandle | DAPIHANDLE-TRANSPORT-OBJECT | in | This is the handle of the transport object that needs to be associated with the session object. |
| bisFirstTransLeg | BOOL | in | If true , then the association is for the first leg otherwise for second leg. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIReturnVal enumeration.

4.2.5. TerminateSession

DiamAPIReturnVal TerminateSession (DiameterBaseAPIContext_t pDiameterContext , DAPIHANDLE-SESSION-OBJECT hSessObject);*

Purpose

This function terminates a diameter session.

Parameters

| Name | Type | In/out | Description |
|------------------|---------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |

| | | | |
|----------|-------------------------------|----|--|
| hSessObj | DAPIHANDLE-SESSION- OBJECT | In | This is the handle to the session object which needs to be terminated. |
|----------|-------------------------------|----|--|

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIReturnVal enumeration.

5) Realm Table Management

5.1. Realm Table Structures

5.1.1. ApplicationIdentifier

```
typedef struct ApplicationIdentifier  
{  
    unsigned int AppID;  
    unsigned int vendorID;  
}ApplicationIdentifier_t;
```

Structure Explanation

This structure defines the Application Identifier

Fields:

AppID The Application ID
vendorID The vendor ID

5.1.2. LocalAction

```
typedef enum LocalAction  
{  
    LOCAL,  
    RELAY,  
    PROXY,  
    REDIRECT  
} LocalAction_t;
```

Enum Explanation

This enumerates message forwarding role played by the diameter node.

5.1.3. RealmRtTableEntry

```
typedef struct RealmRtTableEntry
{
    DiameterString      RealmName;
    ApplicationIdentifier AppIdent;
    LocalAction         LocAct;
    DAPI-Dlist*        ServerIDList;
    bool               isStatic;
    DiaTime_t          ExpirationTime;
} RealmRtTableEntry_t;
```

Structure Explanation

This structure contains the information present in each entry of the realm based routing table.

Fields:

RealmName

String containing the Realm Name

AppIdent

Structure containing the Application identifier

LocAct

This enumerates message forwarding role played by the diameter node.

ServerIDList

The pointer to the list of server Ids . Each node of the list is of the type DiameterIdentity.

isStatic

This field specifies whether this entry was statically configured or dynamically discovered.

ExpirationTime

If the current entry was dynamically discovered, then this field contains the time after which the current connection will expire.

5.1.4. Type Defines

```
typedef RealmRtTableEntry_t* DAPIHANDLE-REALMTABLE-ENTRY;
```

5.2. Realm Table Management API

5.2.1. CreateRealmRoutingTableEntry

```
DiamAPIReturnVal CreateRealmRoutingTableEntry ( DiameterBaseAPIContext_t*
pDiameterContext , DAPIHANDLE-REALMTABLE-ENTRY* phRealmTabEntry
);
```

Purpose

This function creates an entry for the realm based routing table.

Parameters

| Name | Type | In/out | Description |
|------------------|------------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| phRealmTabEntry | DAPIHANDLE-REALMTABLE-ENTRY* | Out | This is a pointer to the realm table entry handle that will be filled. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIReturnVal enumeration.

5.2.2. LookupRealmRoutingTableEntry

```
DiamAPIReturnVal LookupRealmRoutingTableEntry (DiameterBaseAPIContext_t*
pDiameterContext , DiameterString RealmName , ApplicationIdentifier AppIdent
,DAPIHANDLE-REALMTABLE-ENTRY* phRealmTabEntry);
```

Purpose

This function looks up a Realm Routing Table Entry based on the criteria of matching RealmName and Application Identifier

Parameters

| Name | Type | In/out | Description |
|------------------|---------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| RealmName | DiameterString | In | This is a string containing the realm |

| | | | |
|-----------------|----------------------------------|-----|---|
| | | | name, and is part of the criteria for lookup. |
| AppIdent | ApplicationIdentifier | In | This is the application identifier and is part of the criteria for lookup. |
| phRealmTabEntry | DAPIHANDLE- REALMTABLE-ENTRY* | Out | This is a pointer to the handle of the realm routing table entry which matches the search criteria. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIRetVal enumeration.

5.2.3. GetRealmNameFromRealmTableEntry

```
DiamAPIRetVal GetRealmNameFromRealmTableEntry (
    DiameterBaseAPIContext_t* pDiameterContext ,DAPIHANDLE-
    REALMTABLE-ENTRY hRealmTabEntry , DiameterString* pstrRealmName);
```

Purpose

This function retrieves the value of the realm name associated with a given realm table object .

Parameters

| Name | Type | In/out | Description |
|------------------|---------------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| hRealmTabEntry | DAPIHANDLE- REALMTABLE-ENTRY | In | This is the handle to the realm table entry object. |
| pstrRealmName | DiameterString* | Out | This is a pointer to the string in which the matching realm name will be returned. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIRetVal enumeration.

5.4. GetAppIDFromRealmTableEntry

```
DiamAPIReturnVal GetAppIDFromRealmTableEntry ( DiameterBaseAPIContext_t*
pDiameterContext , DAPIHANDLE-REALMTABLE-ENTRY hRealmTabEntry ,
ApplicationIdentifier* pAppIdent );
```

Purpose

This function retrieves the value of the ApplicationID associated with a given real table object.

Parameters

| Name | Type | In/out | Description |
|------------------|-----------------------------|--------|---|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure the context of the diameter base protocol API. |
| hRealmTabEntry | DAPIHANDLE-REALMTABLE-ENTRY | In | This is the handle to the realm table entry object. |
| pAppIdent | Application Identifier* | Out | This is a pointer to the variable in which the matching applicationid will be returned. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIReturnVal enumeration.

5.2.5. GetLocalActionFromRealmTableEntry

```
DiamAPIReturnVal GetLocalActionFromRealmTableEntry (
DiameterBaseAPIContext_t* pDiameterContext , DAPIHANDLE-
REALMTABLE-ENTRY hRealmTabEntry ,LocalAction* pLocAct);
```

Purpose

This function retrieves the value of the local action field from a given real routing table entry

Parameters

| Name | Type | In/out | Description |
|------------------|-----------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| hRealmTabEntry | DAPIHANDLE-REALMTABLE-ENTRY | In | This is the handle to the realm table entry object. |
| pLocAct | LocalAction* | Out | This is a pointer to the variable in which the matching local action |

| |
|-------------------------|
| field will be returned. |
|-------------------------|

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIReturnVal enumeration.

5.6. GetServerListFromRealmTableEntry

DiamAPIReturnVal GetServerListFromRealmTableEntry (DiameterBaseAPIContext_t pDiameterContext , DAPIHANDLE-REALMTABLE-ENTRY hRealmTabEntry ,DAPI-Dlist** ppServerList);*

Purpose

This function retrieves the value of the server list associated with the given realm table entry.

Parameters

| Name | Type | In/out | Description |
|------------------|-----------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| hRealmTabEntry | DAPIHANDLE-REALMTABLE-ENTRY | In | This is the handle to the realm table entry object. |
| ppServerList | DAPI-Dlist** | Out | This is the pointer to the list which will be filled by the server list. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIReturnVal enumeration.

5.7. GetStaticStatusFromRealmTableEntry

```
DiamAPIReturnVal GetStaticStatusFromRealmTableEntry (
    DiameterBaseAPIContext_t* pDiameterContext, DAPIHANDLE-
    REALMTABLE-ENTRY hRealmTabEntry, BOOL* bIsStatic);
```

Purpose

This function retrieves the value of the static status field from a given realm routing table entry.

Parameters

| Name | Type | In/out | Description |
|------------------|-----------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| hRealmTabEntry | DAPIHANDLE-REALMTABLE-ENTRY | In | This is the handle to the realm table entry object. |
| bIsStatic | BOOL* | Out | This is a pointer to a variable in which the static status field will be returned. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIReturnVal enumeration.

5.8. GetExpirationTimeFromRealmTableEntry

```
DiamAPIReturnVal GetExpirationTimeFromRealmTableEntry (
    DiameterBaseAPIContext_t* pDiameterContext, DAPIHANDLE-
    REALMTABLE-ENTRY hRealmTabEntry, DiaTime_t* pExpiryTime );
```

Purpose

This function retrieves the value of the expiration time associated with the given realm routing table entry.

Parameters

| Name | Type | In/out | Description |
|------------------|-----------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| hRealmTabEntry | DAPIHANDLE-REALMTABLE-ENTRY | In | This is the handle to the realm table entry object. |

| | | | |
|-------------|------------|-----|--|
| pExpiryTime | DiaTime_t* | Out | This is a pointer to the variable in which expiry time value will be returned. |
|-------------|------------|-----|--|

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIRetVal enumeration.

5.2.9. SetRealmNameInRealmTableEntry

DiamAPIRetVal SetRealmNameInRealmTableEntry (DiameterBaseContext_t pDiameterContext , DAPIHANDLE-REALMTABLE-ENTRY hRealmTabEntry , DiameterString strRealmName);*

Purpose

This function sets the value of the realm name for a realm routing table entry

Parameters

| Name | Type | In/out | Description |
|------------------|-----------------------------|--------|--|
| pDiameterContext | DiameterBaseContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| hRealmTabEntry | DAPIHANDLE-REALMTABLE-ENTRY | In | This is the handle to the realm table entry object. |
| strRealmName | DiameterString | In | This is the realm name to be associated with the routing table entry. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIRetVal enumeration.

5.2.10. SetLocalActionInRealmTableEntry

```
DiamAPIReturnVal SetLocalActionInRealmTableEntry ( DiameterBaseAPIContext_t*
pDiameterContext , DAPIHANDLE-REALMTABLE-ENTRY hRealmTabEntry
,LocalAction LocAct);
```

Purpose

This function sets the Local Action value for a given realm routing table entry

Parameters

| Name | Type | In/out | Description |
|------------------|-----------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| hRealmTabEntry | DAPIHANDLE-REALMTABLE-ENTRY | In | This is the handle to the realm table entry object. |
| LocAct | LocalAction | In | This contains the value of the local action field to be set. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIReturnVal enumeration.

5.2.11. SetServerListInRealmTableEntry

```
DiamAPIReturnVal SetServerListInRealmTableEntry ( DiameterBaseAPIContext_t*
pDiameterContext , DAPIHANDLE-REALMTABLE-ENTRY hRealmTabEntry
,DAPI-Dlist* pServerList );
```

Purpose

This function sets the server list for a given realm routing table entry.

Parameters

| Name | Type | In/out | Description |
|------------------|-----------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| hRealmTabEntry | DAPIHANDLE-REALMTABLE-ENTRY | In | This is the handle to the realm table entry object. |
| pServerList | DAPI-Dlist* | In | This is a pointer to the list containing the server list to be set. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIReturnVal enumeration.

5.2.12. SetStaticStatusInRealmTableEntry

```
DiamAPIReturnVal SetStaticStatusInRealmTableEntry ( DiameterBaseAPIContext_t*
pDiameterContext , DAPIHANDLE-REALMTABLE-ENTRY hRealmTabEntry
,BOOL IsStatic);
```

Purpose

This function sets the value of the static status field for a given realm routing table entry.

Parameters

| Name | Type | In/out | Description |
|------------------|-----------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| hRealmTabEntry | DAPIHANDLE-REALMTABLE-ENTRY | In | This is the handle to the realm table entry object. |
| IsStatic | BOOL | In | This is the value of the IsStatic field to be set. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIReturnVal enumeration.

5.2.13. Set SetExpirationTimeInRealmTableEntry

```
DiamAPIReturnVal SetExpirationTimeInRealmTableEntry (
    DiameterBaseAPIContext_t* pDiameterContext , DAPIHANDLE-
    REALMTABLE-ENTRY hRealmTabEntry ,DiaTime_t
    ExpiryTime );
```

Purpose

This function sets the value of the Expiration Time field in the given realm based routing table entry.

Parameters

| Name | Type | In/out | Description |
|------------------|-----------------------------|--------|---|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| hRealmTabEntry | DAPIHANDLE-REALMTABLE-ENTRY | In | This is the handle to the realm table entry object. |
| ExpiryTime | DiaTime_t | In | This is the value of the Expiration time that needs to be set in the realm table entry. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIReturnVal enumeration.

5.2.14. InsertEntryIntoRealmRoutingTable

```
DiamAPIReturnVal InsertEntryIntoRealmRoutingTable ( DiameterBaseAPIContext_t*
    pDiameterContext , DAPIHANDLE-REALMTABLE-ENTRY hRealmTabEntry );
```

Purpose

This function inserts the given realm routing table entry into the actual realm routing table.

Parameters

| Name | Type | In/out | Description |
|------------------|-----------------------------|--------|---|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure the context of the diameter base protocol API. |
| hRealmTabEntry | DAPIHANDLE-REALMTABLE-ENTRY | In | This is the handle to the realm table entry object. |

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIReturnVal enumeration.

6) Utility APIs

6.1. Global Utility Structures

6.1.1. DiamAPIVersion

```
typedef struct DiamAPIVersion
    {
        unsigned int majVersion;
        unsigned int minVersion;
    } DiamAPIVersion_t;
```

Structure Explanation

This structure contains the version information for the diameter base protocol stack

Fields:

majVersion

The major version

minVersion

The minor version.

6.1.2. DiaTime

```
typedef struct DiaTime
    {
        unsigned int hours;
        unsigned int mins;
        unsigned int seconds;
        unsigned int millisecs;
    } DiaTime_t;
```

Structure Explanation

This structure represents the value of time

Fields

hours

Integer representing the number of hours

mins

Integer representing the number of minutes

seconds

Integer representing the number of seconds

millisecs

Integer representing the number of milliseconds

6.1.3. strStruct

```
typedef struct strStruct
    {
        char*          pBuff;
        unsigned int   strLength;
    } strStruct_t;
```

Structure Explanation

This structure defines a very basic string.

Fields:

pBuff

The actual buffer containing the string data.

strLength

The amount of memory allocated to the string data buffer.

6.1.4. DiamAPIRetVal

```
Typedef enum DiamAPIRetVal
    {
        DAPI-Retval-Success,
        DAPI-Retval-Failure,
        DAPI-Retval-IncorrectParameters,
        DAPI-Retval-MoreInfoRequired,
        DAPI-Retval-AccessDenied,
        DAPI-Retval-UnableToOpenDevice,
        DAPI-Retval-Insufficient-Buffer
    } DiamAPIRetVal_t ;
```

6.1.5. PeerTable

```
typedef struct PeerTable
    {
    } PeerTable_t;
```

Structure Explanation

This structure defines the Peer Table

6.1.6. RealmTable

```
typedef struct RealmTable
{
    }RealmTable_t;
```

Structure Explanation

This structure defines the Ream Based Routing Table

6.1.7. DiameterBaseAPIContext

```
typedef struct DiameterBaseAPIContext
{
    PeerTableObject*          pPeerTable;
    RealmTableObject*        pRealmTable;
    } DiameterBaseAPIContext_t ;
```

Structure Explanation

This structure will serve as the main context used through out the Diameter Base Protocol stack

6.1.8. Type Defines

```
typedef PeerTable_t          PeerTableObject;
typedef RealmTable_t        RealmTableObject;
typedef DiameterString      DiameterIdentity
typedef DAPI-DList          t_AMPSDList ;
typedef strStruct           DiameterString
```

6.2. Utility APIs

6.2.1. GetDiameterAPIVersion

```
DiamAPIReturnVal GetDiameterAPIVersion(DiameterBaseAPIContext_t*
pDiameterContext , DiamAPIVersion_t * pDiaVer );
```

Purpose

This function retrieves the value of the current version of the diameter base protocol stack.

Parameters

| Name | Type | In/out | Description |
|------------------|---------------------------|--------|--|
| pDiameterContext | DiameterBaseAPIContext_t* | In/Out | This structure contains the context of the diameter base protocol API. |
| pDiaVer | DiamAPIVersion_t * | Out | This is a pointer to the |

| |
|--|
| variable that will be filled with the version information. |
|--|

Return value

The function returns DAPI-Retval-Success in case of success and DAPI-Retval-Failure in case of failure. Other possible return types can be seen in the help for DiamAPIReturnVal enumeration.