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# Port Server RADIUS Support
# (RFC 2865, 2866)

**Version 1.0**

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# Overview

For account management and billing, the port server supports a flexible architecture for retrieving database objects and saving CDRs (Call Detail Records), by performing all database operations through an external module that it loads during startup. The core port server functionality of reliably sending and receiving real-time fax over HTTP remains unaffected by the type of external database module that is used.

For example, when the port server authenticates a client that is logging in, the account name and password that the client provided are passed to the external database module, where the necessary action to validate the account (such as an SQL query) takes place. The response from the external database module determines if the port server accepts or rejects the client login.

To support RADIUS (RFC 2865, 2866), the port server is configured to use an external database module, included with the port server, that implements the client side of the RADIUS specification. This module exchanges packets with a RADIUS server, for the purpose of retrieving database objects and saving CDRs on behalf of the port server. In this way, the port server can use RADIUS to integrate with existing account management and billing systems.
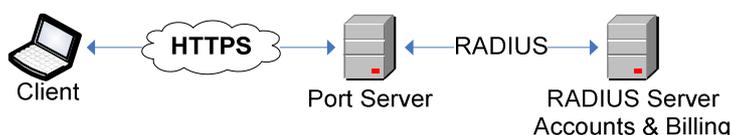


The port server uses RADIUS to:

- Authenticate the account name and password provided by port server clients
- Find an account associated with a DID (inbound routing)
- Find an account associated with an e-mail address (authenticate SMTP sender)
- Retrieve extended account attributes for a specified account
- Save CDRs following fax sessions (RADIUS Accounting)

To provide all of the functionality that the port server can expect of a RADIUS server, a RADIUS server must be capable of extending its functionality beyond what is strictly defined in the RADIUS specification. For example, the RADIUS server must be capable of parsing Access-Request packets and recognizing the FaxBack vendor-specific Command attribute. The commands that the port server sends require retrieving information for an account and returning that information in a RADIUS response packet.

A RADIUS server needs to respond quickly to request packets, to ensure fast initiation of sessions. Ideally, the round-trip duration for a RADIUS packet exchange, from the time the port server sends the packet until it receives a response, would be less than 100 milliseconds.

The port server divides RADIUS support into two categories: **Access-Requests** (account management), and **Accounting-Requests** (updating the state of a session and saving CDRs). Either or both category can be enabled on a port server, each with an independent configuration.

To support "Access-Requests", a RADIUS server needs to be extensible, so that it can perform simple queries that arrive in Access-Request packets that the port server sends to retrieve account information. In most cases, the RADIUS server can get by with providing very limited information in response to these requests. However, the more detail that the RADIUS server provides in an Access-Accept packet, in the form of FaxBack vendor-specific attributes, the more port server features that can be enabled.

To support "Accounting-Requests", a RADIUS server must properly save and/or process the FaxBack vendor-specific attributes contained in RADIUS Accounting-Request packets. The port server sends Accounting Start, Alive (Interim Update), and Stop packets for every session.

The text file "Port Server RADIUS Dictionary.txt" contains the RADIUS definition for all FaxBack vendor-specific attributes used by the port server.

# Account Management

From the perspective of the port server, an account is merely a collection of properties (a database record of some form) that includes at a minimum a unique name (unique among all other accounts) and a password. The RADIUS server must recognize account names in a case-insensitive manner (i.e., "Abc" is equivalent to "aBC"), and keep the length between 1 and 16 bytes (to exceed the 16 byte limitation, see **UUID Mode** on page 53). Accounts uniquely identify port server clients that login to the port server. The account name is included in CDRs that are saved following fax sessions, in order to identify clients for billing purposes.

With the account name and password provided by the client, the port server uses RADIUS to make the logical connection between the client and an account that is managed by an external system. The port server uses RADIUS to obtain only the account information that it requires in order to authorize clients for sending faxes, and for routing inbound faxes to clients.



Client          Port Server          RADIUS Server

Clients use accounts managed outside of the Port Server.
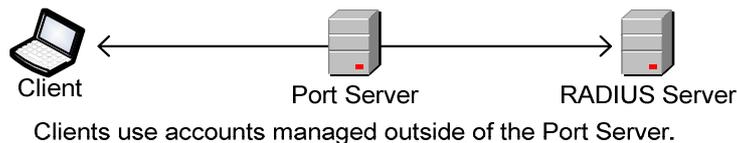
Account records managed by another system almost certainly include information that is beyond the scope of the port server. Furthermore, the maintenance of this database, including the provisioning of new accounts for new users is outside of the scope of the port server.

A port server client must be configured with an account name and password in order to login to the port server. Clients are typically the Fax SDK that has been configured to send and receive faxes through a port server, or a fax ATA that supports HTTPS fax integration. There are many types of applications that use the Fax SDK, ranging from single-user clients (e.g., Microsoft Fax/Windows Fax and Scan), to multi-user fax servers (e.g., NET SatisFAXtion or the Windows Fax Service), and high-density broadcast clients.

To route an inbound fax to a port server client, the port server uses RADIUS to retrieve account information for the account associated with a DID. This process takes place when the port server detects an inbound call, but before it has been answered. Accounts can have any number of DIDs mapped to them. Similar to the way that accounts are managed by an external system, the port server uses RADIUS to lookup an account using a DID as the search criteria, but how DIDs are physically managed is beyond the scope of the port server.

When a fax is received on the client, the application that uses the Fax SDK (e.g., a fax server) can examine the DID associated with the received fax, should it need to perform some action based on the DID.

# Configuration

To enable RADIUS support on a port server, run the port server "Fax Hardware Setup" application. The port server will be temporarily unloaded when RADIUS configuration changes are made.

RADIUS is an optional interface type that can be enabled for some of the databases that the port server uses. RADIUS can only be enabled for the AccountsDb (account database), RcvRoutingDb (inbound routing DID database), and BillingDb (billing database).
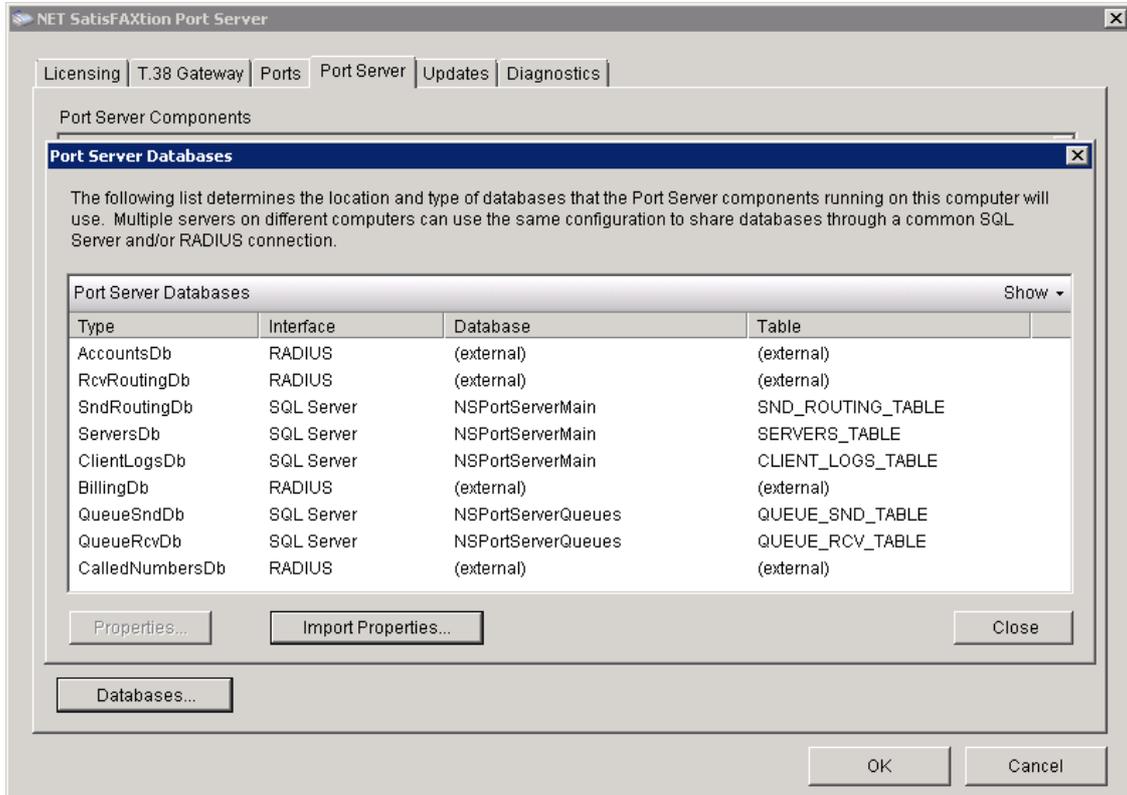


To enable RADIUS support after the port server has been installed, run the "Fax Hardware Setup" application and select the "Databases…" button in the "Port Server" tab. A window will appear that lists all of the port server database types. RADIUS support can be enabled during installation by selecting the "Databases…" button when the port server installation-wizard page is displayed.

To enable "Access-Request" support, for account and DID management through RADIUS, select both "AccountsDb" and "RcvRoutingDb", then select "Properties…", then select "RADIUS" as the Interface, and finally enter information that tells the port server about which RADIUS servers to use and how it should use them.

To enable "Accounting-Request" support, for updating session status and saving CDRs through RADIUS, select "BillingDb" by itself, then select "Properties…", then select "RADIUS" as the Interface, and finally enter information that tells the port server about which RADIUS servers to use and how it should use them.

A list of RADIUS servers can be entered that will be used in the order that they appear. If there is no response from the first server, then the second server will be used, and so on.

For diagnostic purposes, the port server can be configured to save all sent and received RADIUS packets, formatted for readability, to the port server log file. This option was used to create the example RADIUS packets shown in this document.

# Fax ATA Call-Ahead

Call-ahead support in the RADIUS server is optional. If the port server call-ahead feature is intentionally disabled, or the CalledNumbersDb database is configured to use SQL, or if only real-time fax clients will be using the port server, then the RADIUS server does not need to implement support for call-ahead.

## *Background*

The port server fax ATA supports the ability to make a VoIP call directly to a fax number through a SIP media gateway in order to verify the accuracy of the fax number. Due to the limitations of the T.38 protocol, the fax ATA never sends a fax directly in this manner; the direct VoIP call from the ATA is only used to verify that a fax device is answering calls made to the fax number. The process of calling the fax number directly from the ATA, before the fax is uploaded to the port server is referred to as "call-ahead". In order to perform this behavior, the ATA must have call-ahead support enabled, and be configured with the IP address of the SIP media gateway to use for the direct VoIP call.

When a fax is sent from a fax machine that is connected to the ATA, the ATA uses the dialed number to make a direct VoIP call to determine if a fax device answers. If a fax device answers, then the call with the dialed fax device is terminated, and the connection with the fax machine continues until the fax is uploaded to the port server. Later, the uploaded fax will be delivered. If a fax device does not answer the direct VoIP call, then audio from the VoIP call is relayed to the fax machine, where the fax machine operator can listen to, and possibly interact with the call.

Although the call-ahead to the fax number is performed locally on the fax ATA, the port server determines whether the call-ahead should be made. When a send session is started, the fax ATA contacts the port server to ensure that the ATA will be allowed to send a fax to the server. In response, the port server returns a flag that tells the ATA whether or not it should perform the call-ahead. The port server can be configured to instruct all ATAs to *Never* or *Always* call-ahead, or it can be configured to query a database of called fax numbers to determine whether the fax number had previously been used to successfully contact a fax device. If the port server finds the fax number in the called numbers database, it can return the flag that instructs the ATA to not perform an unnecessary call-ahead.

## *Implementation*

To provide call-ahead support to the port server, the RADIUS server must do the following:

1. Return the FB-Call-Ahead-Mode attribute when a send session is starting for a Queue transfer (FB-Transfer-Type of 2). The value of FB-Call-Ahead-Mode should be obtained from querying a database of previously called fax numbers that will determine if the fax number has been used previously to successfully contact a fax device. See "Get-Call-Ahead-Mode / Pre-Send-Session" on page 20 for when the RADIUS server is expected to return this attribute.

2. Maintain a database of fax numbers that are provided to the RADIUS server in Accounting Stop requests in the FB-Dial-Number attribute. To simplify this process, the port server includes an FB-Called-Number-Result attribute only in Accounting Stop requests where the RADIUS server should take some action to maintain the Called Numbers database. When present, the value of the FB-Called-Number-Result attribute identifies the dial number as being verified as a fax number (even if the fax session began and later failed), or a voice number (the fax failed due to a voice answering the call).

   - For a verified fax number, future queries of the called numbers database should return 0 (false) to avoid an unnecessary call-ahead.

- For a fax number that resulted in a voice error, future queries of the called numbers database should return 1 (true) to flag the ATA to call-ahead directly to the fax number. Because the fax number might be a shared voice/fax line that will later be used to send a fax, it is suggested that the database records the fact that a voice error had occurred, so that future queries to the database can detect that a voice might answer the call and thus return 1 (true) to always flag the ATA to call-ahead.

# Access-Requests

When the port server accounts and inbound routing databases (AccountsDb and RcvRoutingDb) are configured to use the RADIUS interface, the port server sends RADIUS Access-Request packets to authorize port server client access, and to retrieve account information prior to initiating send and receive fax sessions.

Every Access-Request packet that the port server sends includes at least two FaxBack vendor-specific attributes: FB-Command and FB-Context. The FB-Command is what the RADIUS server needs to do, and the FB-Context is why the command is being requested.

All Access-Request FB-Command/ FB-Context combinations:

| FB-Command | FB-Context |
|---|---|
| Get-Account | Account-Login<br>Account-Validate<br>Pre-Send-Session<br>Pre-Receive-Session<br>For-External-Module |
| Get-Account-From-DID | Pre-Receive-Session<br>For-External-Module |
| Get-Account-From-MAC-Address | For-External-Module |
| Get-Account-From-Sender-Email-Address | For-External-Module |
| Get-Account-From-Serial-Number | For-External-Module |
| Get-Call-Ahead-Mode | Pre-Send-Session |
| Get-DID | Pre-Send-Session<br>For-External-Module |
| Get-DIDs-For-Account | For-External-Module |
| Get-Load-Balance-Group-Members | Pre-Receive-Session |

The RADIUS server must return an Access-Accept or Access-Reject packet that includes all required response attributes as defined for each Command/Context, however, there is no harm in providing extraneous or unused attributes in a response packet. The RADIUS server can return all account information for every "Get-Account…" command request, even if returning all account information is deemed unnecessary based on the context.

## *Session Diagrams*

## Send Fax

Outbound faxes require one RADIUS packet exchange for real-time fax clients to retrieve information for the sending account.  For fax ATAs, one or two additional calls are made to retrieve more information.  The caller-id from the fax session from an ATA is used to query for a matching DID, allowing for information to be retrieved that is regarded as specific to sending line on the ATA.  If a matching DID is not found, the session still proceeds without any error.

```
┌─────────────────────────────────────────┐
│  Get recent configuration for account,   │
│            by calling                     │
│    Get-Account / Pre-Send-Session        │
└─────────────────────────────────────────┘
                     │
                     ▼
        ◇ Account/Client can  ◇ ──N──▶ ( Refuse Send Session )
        ◇    send fax?        ◇
                     │
                     Y
                     │
        ◇ Session is from     ◇ ──N──▶ ( Start Send Session )
        ◇   a Fax ATA?        ◇
                     │
                     Y
                     │
┌─────────────────────────────────────────┐
│ Get FB-Queue-Profile and FB-Snd-ANI by   │
│           calling                         │
│      Get-DID / Pre-Send-Session,          │
│ If necessary, get FB-Call-Ahead-Mode by   │
│           calling                         │
│  Get-Call-Ahead-Mode / Pre-Send-Session   │
└─────────────────────────────────────────┘
```
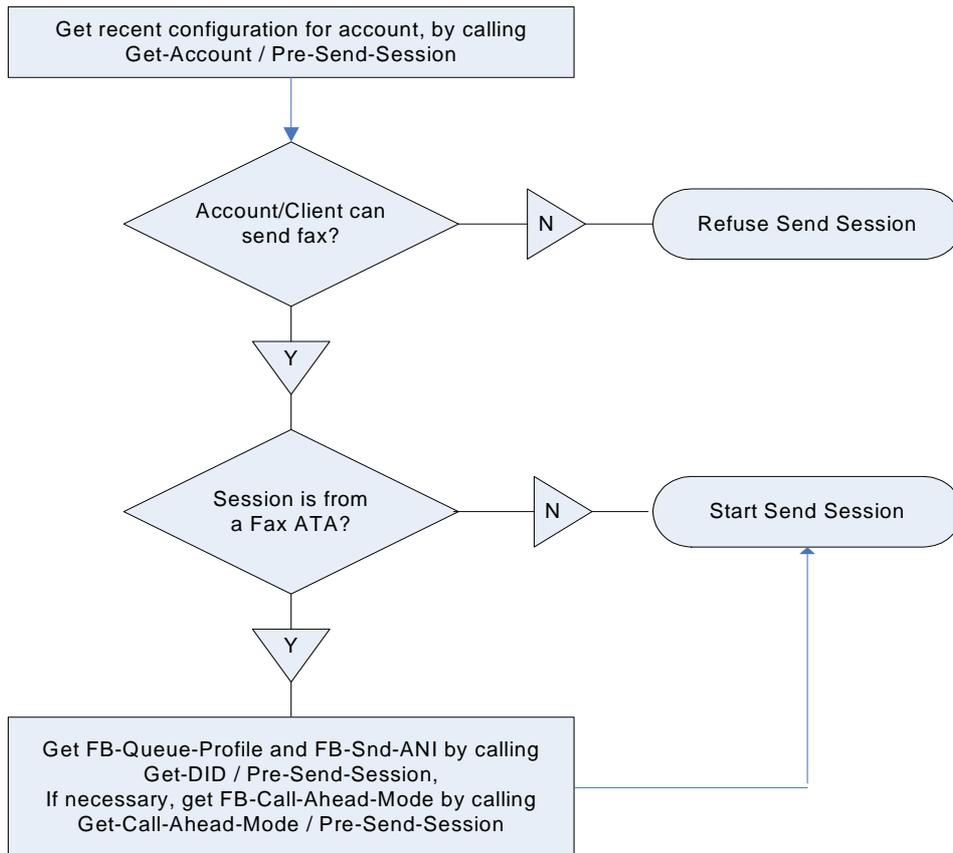
# Receive Fax

Inbound faxes are routed using two RADIUS packets exchanges, the first of which identifies the account associated with a DID, and the second retrieves information for that account.

```
┌─────────────────────────────────────┐
│  Route DID to an account, by calling │
│  Get-Account-From-DID / Pre-Receive- │
│               Session                │
└─────────────────────────────────────┘
                   │
                   ▼
            ◇ Found account? ◇ ──── N ────┐
                   │                       │
                   Y                       │
                   ▼                       │
┌─────────────────────────────────────┐   │
│  Get recent configuration for        │◄──┤
│  account, by calling                 │   │
│  Get-Account / Pre-Receive-Session   │◄─┐│
└─────────────────────────────────────┘  ││
                   │                       ││
                   ▼                       ││
         ◇ Account is a load-       ┌──────────────────────────────┐
           balance group? ◇ ── Y ──│ If needed, update member cache │
                   │               │ by calling Get-Load-Balance-    │
                   N               │ Group-Members/                  │
                   ▼               │ Pre-Receive-Session             │
         ◇ Account/Client can      │ Select next recipient member    │
           receive fax? ◇          │ account...                      │
                   │               └──────────────────────────────┘
         ── N ──►  ◇ Route to failover
                     receive account? ◇ ── Y
                   │
                   Y                       N
                   ▼                       ▼
         ( Start Receive Session )   ( Refuse Receive Session )
```

## *Example Access Request Packets*

## Get-Account / Account-Login

Sent when a client logs in, or later validates its login credentials which it might do at any time. The port server includes a Client-Info attribute in this packet, which contains a string value from the client software.

The RADIUS server must respond with an Access-Accept packet if the account and password are valid, or an Access-Reject packet if not valid.

── SENT FROM PORT SERVER ──▶

| Attribute | Value |
|---|---|
| FB-Command | Get-Account (1) |
| FB-Context | Account-Login (1) |
| User-Name | As provided by the port server client |
| User-Password | As provided by the port server client |
| FB-Client-Info | As provided by the port server client, plus an IP address added by the port server. |

**Request Packet**

```
Code=Access-Request(1)
Packet identifier=131
Length=108
Authenticator
  6C 42 2A 8A FA 76 65 42 A6 78 B8 2F 8D B0 10 4F
Attributes:
Len=18, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-Command(1)
    Value=Get-Account(1)
  Len=6, Type=FB-Context(2)
    Value=Account-Login(1)
Len=9, Type=User-Name(1)
  Value=account
Len=18, Type=User-Password(2)
  Value=01 1B A6 4D 5F 20 B2 3E 6E 52 D3 A0 60 C4 F5 BA
Len=43, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=37, Type= FB-Client-Info(45)
    Value=;FV=1.0.0.0;MN=NICKDUO;IP=10.0.0.84
End
```

◀── RESPONSE TO PORT SERVER ──

| Required | Purpose |
|---|---|
| RADIUS Code | Access-Accept or Access-Reject |
| **Optional** | **Purpose** |
| Account-Type | Determines if the account is type "Private Send/Receive" or "Shared Send-Only", which affects how the client behaves. Also determines if |

| | |
|---|---|
| | the account is a real-time fax account, or fax ATA account. |
| | **If the port server will host fax ATA accounts, then this attribute is required in the response packet.** |
| Account-Login-Group | Specifies the group of Connection Servers that the client should consider for failover.  If no group is specified, the client will be considered a member of the "Default Account-login Group". |

**Response Packet**

```
Code=Access-Accept(2)
Packet identifier=9
Length=32
Authenticator
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Attributes:
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-Account-Type(10)
    Value=4
End
```

## Get-Account / Account-Validate

Sent from the port server to validate an account and password.  Two examples of when the port server sends this request are when a configuration program requests to validate the user input of an account and password, and when a fax ATA uploads diagnostic log files to a Connection Server.

The RADIUS server must respond with an Access-Accept packet if the account and password are valid, or an Access-Reject packet if not valid.

—— SENT FROM PORT SERVER ——▶

| Attribute | Value |
|---|---|
| FB-Command | Get-Account (1) |
| FB-Context | Account-Validate (2) |
| User-Name | As provided by the port server client |
| User-Password | As provided by the port server client |

**Request Packet**

```
Code=Access-Request(1)
Packet identifier=87
Length=107
Authenticator
  5A 91 F7 14 E1 63 E8 49 B7 55 3C 98 6C E8 BE C8
Attributes:
Len=18, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-Command(1)
    Value=Get-Account(1)
  Len=6, Type=FB-Context(2)
    Value=Account-Validate(2)
Len=9, Type=User-Name(1)
  Value=account
```

```
Len=18, Type=User-Password(2)
  Value=4D FA EA C5 A0 1A 6B FF D6 95 5E A3 FA 4A EF D9
End
```

◄── RESPONSE TO PORT SERVER ──

| Required | Purpose |
|---|---|
| RADIUS Code | Access-Accept or Access-Reject |
| Optional | Purpose |
| Account-Type | Determines if the account is type "Private Send/Receive" or "Shared Send-Only", which affects how the client behaves.  Also determines if the account is a real-time fax account, or fax ATA account.<br><br>**If the port server will host fax ATA accounts, then this attribute is required in the response packet.** |

**Response Packet**
```
Code=Access-Accept(2)
Packet identifier=9
Length=32
Authenticator
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Attributes:
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-Account-Type(10)
    Value=4
End
```

## Get-Account / Pre-Send-Session

Sent when the port server is about to send a fax, and needs to retrieve the most recent information for an account.

The RADIUS server must respond with an Access-Accept packet if the account is valid, or an Access-Reject packet if not valid.  If the account is known, but sending is disabled for the account for some reason, instead of returning an Access-Reject packet the RADIUS server can return an Access-Accept packet that includes the "FB-Snd-From-Account" attribute with a value of 0.

── SENT FROM PORT SERVER ──►

| Attribute | Value |
|---|---|
| FB-Command | Get-Account (1) |
| FB-Context | Pre-Send-Session (3) |
| User-Name | The account requesting to send a fax. |
| Acct-Session-Id | The session id of the new send fax session. |
| FB-Dial-Number | The fax number to send to.<br><br>Note that the fax number has not yet been processed by Send Routing rules. |

**Request Packet**
```
Code=Access-Request(1)
Packet identifier=2
```

```
Length=113
Authenticator
  B3 7E 5D 1C 63 6E 96 4C A3 0B E8 3D 40 61 7B 42
Attributes:
Len=18, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-Command(1)
    Value=Get-Account(1)
  Len=6, Type=FB-Context(2)
    Value=Pre-Send-Session(3)
Len=9, Type=User-Name(1)
  Value=account
Len=34, Type=Acct-Session-Id(44)
  Value=ea7a820446d54db8a98f42be08e65b23
Len=20, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=14, Type=FB-Dial-Number(34)
    Value=5551112345
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-Transfer-Type(58)
    Value=1
End
```

◄── RESPONSE TO PORT SERVER ──

| Required | Purpose |
|---|---|
| RADIUS code | Access-Accept or Access-Reject |
| **Optional** | **Purpose** |
| FB-Snd-On-Behalf-Of | Specifies whether the account is allowed to send faxes on behalf of other accounts.  This attribute is required for clients that send faxes on behalf of fax ATA accounts.<br><br>If set to 1, the client can include the name of the billing account to send on-behalf-of in the fax number, for example, `otheraccount;5551231234`.  In such a case, the CDR at the end of the fax will show `otheraccount` in the User-Name attribute, and the account for the sending client will be included in the FB-Client-Account-ID attribute.<br><br>If this attribute is not specified in a response to the port server, the default is 0 (cannot send on-behalf-of another account). |
| FB-Call-Ahead-Mode | Specifies whether the fax ATA that initiated the send request should call-ahead directly from the ATA to validate the fax number, prior to the fax being uploaded to the port server.<br><br>The RADIUS server can maintain a "Called Numbers" database, allowing it to know if a fax number is valid by querying the database to see if the fax number was used successfully in a previous fax send.<br><br>The FB-Call-Ahead-Mode attribute only needs to be returned if the FB-Transfer-Type attribute in the request is 2 (Queue). |
| FB-Snd-From-Account | Specifies whether the account is allowed to send. |
| FB-Snd-Time-Expired | Specifies whether the account has send time remaining.  If set to 1, the client sees a "No send time remaining" error. |
| FB-CDR-Info, FB-Customer, FB-Source | Information from the account that will be saved in the CDR at the end of the session. |

| | |
|---|---|
| FB-Save-CDR | Determines if a CDR will be saved for this session. |
| FB-Snd-ANI | Specifies an ANI to use for the telephony session. |
| FB-Snd-TSID | Specifies a TSID to use for the T.30 session. |
| FB-Rule-Group | Specifies the rule group that will be used by Send Routing processing that will be performed by the port server when the RADIUS request returns.   If no group is specified, the account will be considered a member of the "Default Rule Group". |

**Response Packet**

```
Code=Access-Accept(2)
Packet identifier=118
Length=20
Authenticator
  5A 91 F7 14 E1 63 E8 49 B7 55 3C 98 6C E8 BE C8
End
```

## Get-Account / Pre-Receive-Session

Sent when the port server is about to receive a fax, and needs to retrieve the most recent information for the account that is designated to receive the fax.  The specified account might be the account mapped to a DID, or if that account is unable to receive a fax, then the specified account might be that of a "failover receive account".

The RADIUS server must respond with an Access-Accept packet if the account is valid, or an Access-Reject packet if not valid.  If the account is known, but receiving is disabled for the account for some reason, instead of returning an Access-Reject packet the RADIUS server can return an Access-Accept packet that includes the "FB-Rcv-To-Account" attribute with a value of 0.

—— SENT FROM PORT SERVER ——▶

| Attribute | Value |
|---|---|
| FB-Command | Get-Account (1) |
| FB-Context | Pre-Receive-Session (4) |
| User-Name | The account requesting to receive a fax. |
| Acct-Session-Id | The session id of the new receive fax session. |

**Request Packet**

```
Code=Access-Request(1)
Packet identifier=2
Length=111
Authenticator
  B3 7E 5D 1C 63 6E 96 4C A3 0B E8 3D 40 61 7B 42
Attributes:
Len=18, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-Command(1)
    Value=Get-Account(1)
  Len=6, Type=FB-Context(2)
    Value=Pre-Receive-Session(4)
Len=9, Type=User-Name(1)
  Value=account
```

```
Len=34, Type=Acct-Session-Id(44)
  Value=03bb96b4af2d41f08dd0e46c250c274f
Len=18, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=12, Type=FB-Dial-Number(34)
    Value=5551112345
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-Transfer-Type(58)
    Value=1
End
```

◄─── RESPONSE TO PORT SERVER ───

| Required | Purpose |
|---|---|
| RADIUS code | Access-Accept or Access-Reject |
| Optional | Purpose |
| FB-Rcv-To-Account | Determines if the known/valid account is allowed to receive. |
| FB-CDR-Info, FB-Customer, FB-Source | Information from the account that will be saved in the CDR at the end of the session. |
| FB-Save-CDR | Determines if a CDR will be saved for this session. |
| FB-Rcv-CSID | Specifies a CSID to use for the T.30 session. |
| FB-Rcv-Failover-Account-Id | Specifies an alternate account to receive the fax in case the account is unavailable. |
| FB-Rcv-Failover-Mode | Determines if the account specified by the "FB-Rcv-Failover-Account-Id" attribute should only receive faxes if the primary account is busy or unavailable, or if it should always receive faxes that were routed to the primary account. |
| FB-Last-Modified-Time | For an account that is a load-balance group, the value of this attribute is used to tell the port server if the group membership has changed since the last time the port server dealt with the group. |

**Response Packet**
```
Code=Access-Accept(2)
Packet identifier=34
Length=20
Authenticator
  5A 91 F7 14 E1 63 E8 49 B7 55 3C 98 6C E8 BE C8
End
```

## Get-Account / For-External-Module

Sent when an external component requests information about an account.

─── SENT FROM PORT SERVER ───►

| Attribute | Value |
|---|---|
| FB-Command | Get-Account (1) |
| FB-Context | For-External-Module (5) |

| User-Name | The account requesting to receive a fax. |
|-----------|------------------------------------------|

**Request Packet**

```
Code=Access-Request(1)
Packet identifier=37
Length=47
Authenticator
  5A 91 F7 14 E1 63 E8 49 B7 55 3C 98 6C E8 BE C8
Attributes:
Len=18, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-Command(1)
    Value=Get-Account(1)
  Len=6, Type=FB-Context(2)
    Value=For-External-Module(5)
Len=9, Type=User-Name(1)
  Value=account
End
```

◄─── RESPONSE TO PORT SERVER ───

| Required | Purpose |
|----------|---------|
| RADIUS code | Access-Accept or Access-Reject |
| **Optional** | **Purpose** |
| FB-Account-Type | Specifies the type of account. |
| FB-Last-Modified-Time | For an account that is a load-balance group, the value of this attribute is used to tell the port server if the group membership has changed since the last time the port server dealt with the group. |
| FB-Rcv-Email | Account's receive e-mail address |
| FB-Rcv-Format | Determines the image type of the fax attachment. |

**Response Packet**

```
Code=Access-Accept(2)
Packet identifier=37
Length=20
Authenticator
  5A 91 F7 14 E1 63 E8 49 B7 55 3C 98 6C E8 BE C8
End
```

## Get-Account-From-DID / Pre-Receive-Session

Sent when the port server needs to know which account is mapped to a DID for inbound routing.

The RADIUS server must respond with an Access-Accept packet that includes an account name in the "User-Name" attribute as the account that should receive the fax, or an Access-Reject packet if routing to that DID is not possible.  If the DID is known, but receiving is disabled for the DID for some reason, instead of returning an Access-Reject packet the RADIUS server can return an Access-Accept packet that includes the "FB-DID-Enabled" attribute with a value of 0.

─── SENT FROM PORT SERVER ──►

| Attribute | Value |
|-----------|-------|

| | |
|---|---|
| FB-Command | Get-Account-From-DID (2) |
| FB-Context | Pre-Receive-Session (4) |
| User-Name | The DID to match to an account |
| Acct-Session-Id | The session id of the new receive fax session. |

**Request Packet**
```
Code=Access-Request(1)
Packet identifier=2
Length=76
Authenticator
  3C 24 7E 06 C0 9D 4D 42 BE 1E 01 35 DB B7 6C FC
Attributes:
Len=18, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-Command(1)
    Value=Get-Account-From-DID(2)
  Len=6, Type=FB-Context(2)
    Value=Pre-Receive-Session(4)
Len=12, Type=User-Name(1)
  Value=5551231234
Len=26, Type=Acct-Session-Id(44)
  Value=1_jGYVe4sNmF9sEp[eEdKoiA
End
```

◄── RESPONSE TO PORT SERVER ──

| Required | Purpose |
|---|---|
| RADIUS code | Access-Accept or Access-Reject |
| User-Name | Account |
| Optional | Purpose |
| FB-DID-Enabled | Determines if the known/valid DID is enabled for receive. |

**Response Packet**
```
Code=Access-Accept(2)
Packet identifier=2
Length=29
Authenticator
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Attributes:
Len=9, Type=User-Name(1)
  Value=account
End
```

## Get-Account-From-DID / For-External-Module

Sent when the e-mail gateway component needs to retrieve the e-mail address for an account that is mapped to a specific DID.  The e-mail gateway will send an e-mail message to that address with a fax as an attachment.

The RADIUS server must respond with an Access-Accept packet that includes an e-mail address in the "FB-Rcv-Email" attribute for the recipient of the e-mail message, or an Access-Reject packet if routing to the DID was not possible.

──── SENT FROM PORT SERVER ────►

| Attribute | Value |
|---|---|
| FB-Command | Get-Account-From-DID (2) |
| FB-Context | For-External-Module (5) |
| User-Name | The DID to match to an account |

**Request Packet**

```
Code=Access-Request(1)
Packet identifier=77
Length=76
Authenticator
  3C 24 7E 06 C0 9D 4D 42 BE 1E 01 35 DB B7 6C FC
Attributes:
Len=18, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-Command(1)
    Value=Get-Account-From-DID(2)
  Len=6, Type=FB-Context(2)
    Value=For-External-Module(5)
Len=12, Type=User-Name(1)
  Value=5551231234
End
```

◄──── RESPONSE TO PORT SERVER ────

| Required | Purpose |
|---|---|
| RADIUS code | Access-Accept or Access-Reject |
| User-Name | Account that matched the input DID |
| Optional | Purpose |
| FB-DID-Enabled | Determines if the known/valid DID is enabled for receive. |

**Response Packet**

```
Code=Access-Accept(2)
Packet identifier=77
Length=53
Authenticator
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Attributes:
Len=9, Type=User-Name(1)
  Value=account
Len=24, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=18, Type=FB-Rcv-Email(14)
    Value=email@domain.com
End
```

## Get-Account-From-MAC-Address / For-External-Module

Sent in response to an external component, such as a fax ATA provisioning server, requesting information about an account where only the MAC address associated with the account is known.

The response from the RADIUS server can provide information that will be used to create a configuration for a fax ATA during the provisioning process.

—— SENT FROM PORT SERVER ——▶

| Attribute | Value |
|-----------|-------|
| FB-Command | Get-Account-From-MAC-Address (7) |
| FB-Context | For-External-Module (5) |
| User-Name | The MAC address. |
| FB-Fax-ATA-Type | The type of fax ATA that is generating this request. |

**Request Packet**
```
Code=Access-Request(1)
Packet identifier=11
Length=64
Authenticator
  38 F7 9B 70 09 9A AB 4D B1 7C 1F 48 09 FF DC A8
Attributes:
Len=18, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-Command(1)
    Value=Get-Account-From-MAC-Address(7)
  Len=6, Type=FB-Context(2)
    Value=For-External-Module(5)
Len=14, Type=User-Name(1)
  Value=00908F1D37F0
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-Fax-ATA-Type(66)
    Value=0
End
```

◀—— RESPONSE TO PORT SERVER ——

| Required | Purpose |
|----------|---------|
| RADIUS code | Access-Accept or Access-Reject |
| User-Name | Account that matched the input DID |
| Optional | Purpose |
| FB-Provisioning-Arg | Provides additional information to the provisioning server. |
| FB-Queue-Profile | The Queue Profile includes localization information about an account that can be useful for provisioning. |

**Response Packet**
```
Code=Access-Accept(2)
Packet identifier=11
Length=105
Authenticator
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Attributes:
Len=9, Type=User-Name(1)
```

```
   Value=account
Len=76, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=70, Type=FB-Queue-Profile(57)
    Value=<QPXml Rf="0" Dn="1" Ndn="1" Ea="" Ef="" Ln="en-US" Tz="Pacific*" />
End
```

## Get-Account-From-Serial-Number / For-External-Module

Sent in response to an external component, such as a fax ATA provisioning server, requesting information about an account where only the serial number associated with the account is known.

The response from the RADIUS server can provide information that will be used to create a configuration for a fax ATA during the provisioning process.

──── SENT FROM PORT SERVER ───►

| Attribute | Value |
|---|---|
| FB-Command | Get-Account-From-Serial-Number (6) |
| FB-Context | For-External-Module (5) |
| User-Name | Serial number. |
| FB-Fax-ATA-Type | The type of fax ATA that is generating this request. |

**Request Packet**
```
Code=Access-Request(1)
Packet identifier=11
Length=60
Authenticator
  38 F7 9B 70 09 9A AB 4D B1 7C 1F 48 09 FF DC A8
Attributes:
Len=18, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-Command(1)
    Value=Get-Account-From-Serial-Number(6)
  Len=6, Type=FB-Context(2)
    Value=For-External-Module(5)
Len=14, Type=User-Name(1)
  Value=27482734
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-Fax-ATA-Type(66)
    Value=0
End
```

◄──── RESPONSE TO PORT SERVER ────

| Required | Purpose |
|---|---|
| RADIUS code | Access-Accept or Access-Reject |
| User-Name | Account that matched the input DID |
| Optional | Purpose |
| FB-Provisioning-Arg | Provides additional information to the provisioning server. |
| FB-Queue-Profile | The Queue Profile includes localization information about an account that can be useful for provisioning. |

**Response Packet**

```
Code=Access-Accept(2)
Packet identifier=11
Length=105
Authenticator
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Attributes:
Len=9, Type=User-Name(1)
  Value=account
Len=76, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=70, Type=FB-Queue-Profile(57)
    Value=<QPXml Rf="0" Dn="1" Ndn="1" Ea="" Ef="" Ln="en-US" Tz="Pacific*" />
End
```

## Get-Call-Ahead-Mode / Pre-Send-Session

Sent at the beginning of a Send session, when all of the following criteria are met:

- The FB-Transfer-Type for the session is 2 (Queue).

- The Port Server is globally configured to determine the call-ahead mode for each account.

- The account is configured to determine the call-ahead mode for each call.

- The Port Server RADIUS configuration specifies that the call-ahead mode is obtained in a separate request with the RADIUS server, as opposed to being obtained at the same time as the initial Get-Account/Pre-Send-Session request.

When the Get-Call-Ahead-Mode request is sent as a separate request, the dial number will have been processed by Send Routing. The Send Routing rules may have modified the fax number, or rejected it which would have prevented the session from being processed any further. It is, however, slightly less efficient to make a second RADIUS request just to obtain the FB-Call-Ahead-Mode.

When the FB-Call-Ahead-Mode is determined at the same time as the initial Get-Account/Pre-Send-Session request, the dial number (in the FB-Dial-Number attribute) is from the fax ATA before it has been processed by Send Routing. It is, however, slightly more efficient to obtain the FB-Call-Ahead-Mode in one RADIUS request.

—— SENT FROM PORT SERVER ——▶

| Attribute | Value |
|---|---|
| FB-Command | Get-Call-Ahead-Mode (5) |
| FB-Context | Pre-Send-Session (3) |
| User-Name | The dial number, post-Send Routing, that the fax ATA is attempting to send to. |

**Request Packet**

```
Code=Access-Request(1)
Packet identifier=1
Length=68
Authenticator
  45 92 32 67 8D D1 85 46 B0 52 B4 48 64 FB D3 BD
```

```
Attributes:
Len=18, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-Command(1)
    Value=Get-Call-Ahead-Mode(5)
  Len=6, Type=FB-Context(2)
    Value=Pre-Send-Session(3)
Len=12, Type=User-Name(1)
  Value=5551231234
Len=18, Type=Acct-Session-Id(44)
  Value=1249336279265000
End
```

◄── RESPONSE TO PORT SERVER ──

| Required | Purpose |
|---|---|
| RADIUS code | Access-Accept or Access-Reject |
| Optional | Purpose |
| FB-Call-Ahead-Mode | Specifies whether the fax ATA should call-ahead to verify the fax number, or whether it should immediately begin to receive the fax from the connected fax machine. A value of 0 means do not call-ahead.  Any non-zero value means do call-ahead. If the FB-Call-Ahead-Mode attribute is missing from the response, or there is no response, then the Port Server will flag the fax ATA to call-ahead. |

**Response Packet**

```
Code=Access-Accept(2)
Packet identifier=15
Length=32
Authenticator
  45 92 32 67 8D D1 85 46 B0 52 B4 48 64 FB D3 BD
Attributes:
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-Call-Ahead-Mode(61)
    Value=0
End
```

## Get-Account-From-Sender-Email-Address / For-External-Module

Sent when the e-mail gateway component needs to verify that the "From" e-mail address for an outbound fax is associated with a known account.  The account information that is returned can be used to further authorize the sender.

The RADIUS server must respond with an Access-Accept packet that includes at a minimum an account name in the "User-Name" attribute, or an Access-Reject packet if the sender e-mail address is not associated with any account.  If the e-mail address maps to a known account, but sending is disabled for the account for some reason, instead of returning an Access-Reject packet the RADIUS server can return an Access-Accept packet that includes the "FB-Snd-From-Account" attribute with a value of 0.

── SENT FROM PORT SERVER ──►

| Attribute | Value |
|---|---|
| FB-Command | Get-Account-From-Sender-Email-Address (3) |
| FB-Context | For-External-Module (5) |
| User-Name | The sender e-mail address to match to an account |

**Request Packet**

```
Code=Access-Request(1)
Packet identifier=49
Length=63
Authenticator
  E6 64 28 E2 03 8D 36 41 8A 2B 8F E1 79 51 08 79
Attributes:
Len=18, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-Command(1)
    Value=Get-Account-From-Sender-Email-Address(3)
  Len=6, Type=FB-Context(2)
    Value=For-External-Module(5)
Len=25, Type=User-Name(1)
  Value=emailaddress@domain.com
End
```

◄── RESPONSE TO PORT SERVER ──

| Required | Purpose |
|---|---|
| RADIUS code | Access-Accept or Access-Reject |
| User-Name | Account that matched the input sender e-mail address |
| Optional | Purpose |
| FB-Snd-From-Account | Determines if the known/valid account is enabled for send. |

**Response Packet**

```
Code=Access-Accept(2)
Packet identifier=49
Length=29
Authenticator
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Attributes:
Len=9, Type=User-Name(1)
  Value=account
End
```

## Get-DID / Pre-Send-Session

Sent from the port server when a fax ATA is sending a fax (uploading via HTTPS), to retrieve settings that are associated with the line on the ATA.  The request from the port server will include the ANI (caller Id) of the send call in the User-Name attribute, which can be used by the RADIUS server to query for a matching DID or line record.  The RADIUS server can return FB-Queue-Profile and/or FB-Snd-ANI attributes that will be used by the port server for the remainder of the fax session.

Support for this feature at the RADIUS server is optional.

A response that includes additional account information is not required. To prevent the port server from detecting this situation as an error, the RADIUS server must return an Access-Accept packet that has no attributes, so that the port server can quickly advance the send session to the next stage. If the RADIUS server returns an Access-Reject packet, the port server will terminate fax session.

To provide per-line settings in response to the Get-DID request, the RADIUS server must include a User-Name attribute with a value of the account name that the DID mapped to (if UUID mode is enabled, then the response must also include an FB-Account-UUID attribute). The port server will compare the response User-Name to the account that is attempting to send the fax, and will reject the fax if the two values do not match.

—— SENT FROM PORT SERVER ——▶

| Attribute | Value |
|---|---|
| FB-Command | Get-DID (8) |
| FB-Context | Pre-Send-Session (3) |
| User-Name | The ANI (caller Id) for the send call. |
| Acct-Session-Id | The session id of the new send fax session. |

**Request Packet**
```
Code=Access-Request(1)
Packet identifier=1
Length=82
Authenticator
  4C BF 52 6E 51 18 D9 4E 88 35 19 B9 93 D5 11 33
Attributes:
Len=18, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-Command(1)
    Value=Get-DID(8)
  Len=6, Type=FB-Context(2)
    Value=Pre-Send-Session(3)
Len=6, Type=User-Name(1)
  Value=2222
Len=38, Type=Acct-Session-Id(44)
  Value=b5884d75-ad74-4164-b4dd-aab8f5de542a
End
```

◀—— RESPONSE TO PORT SERVER ——

| Required | Purpose |
|---|---|
| RADIUS code | Access-Accept or Access-Reject |
| Optional | Purpose |
| User-Name | Specifies the name of the account that the input ANI (caller Id) from the request packet mapped to. |
| FB-Queue-Profile | An optional Queue Profile to be used for later processing of the send fax. The returned queue profile XML must include the attribute Op="1", to cause the DID-level queue profile to override the account-level queue profile. For example, <br><br>`<QPXml Op="1" Rf="0" Dn="1" Ndn="1" Ea="" Ef="" />` |

| | |
|---|---|
| | Language and time zone information do not need to be included, as these values are specified at the account level.  If there are included in the XML returned from a Get-DID request, they will be ignored. |
| FB-Snd-ANI | An optional override of the ANI (caller Id) for later processing of the send fax. |

**Response Packet**
```
Code=Access-Accept(2)
Packet identifier=8
Length=47
Authenticator
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Attributes:
Len=9, Type=User-Name(1)
  Value=testata
Len=18, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=12, Type=FB-Snd-ANI(19)
    Value=5551119999
End
```

# Get-DID / For-External-Module

Sent from the port server when an external component, such as a fax ATA provisioning server, requires configuration information specific to a DID.

Support for this command is optional at the RADIUS server.  The only time the port server requests this information is for provisioning of fax ATAs.

──── SENT FROM PORT SERVER ──►

| Attribute | Value |
|---|---|
| FB-Command | Get-DID (8) |
| FB-Context | Pre-Send-Session (3) |
| User-Name | The DID to lookup. |

**Request Packet**
```
Code=Access-Request(1)
Packet identifier=1
Length=62
Authenticator
  4C BF 52 6E 51 18 D9 4E 88 35 19 B9 93 D5 11 33
Attributes:
Len=18, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-Command(1)
    Value=Get-DID(8)
  Len=6, Type=FB-Context(2)
    Value=Pre-Send-Session(3)
Len=6, Type=User-Name(1)
  Value=2222
End
```

◄── RESPONSE TO PORT SERVER ──

| Required | Purpose |
|---|---|
| RADIUS code | Access-Accept or Access-Reject |
| **Optional** | **Purpose** |
| User-Name | Specifies the name of the account that the input ANI (caller Id) from the request packet mapped to. |
| FB-Queue-Profile | An optional Queue Profile to be used for later processing of the send fax.  The returned queue profile XML must include the attribute Op="1", to cause the DID-level queue profile to override the account-level queue profile.  For example,<br><br>`<QPXml Op="1" Rf="0" Dn="1" Ndn="1" Ea="" Ef="" />`<br><br>Language and time zone information do not need to be included, as these values are specified at the account level.  If there are included in the XML returned from a Get-DID request, they will be ignored. |
| FB-Snd-ANI | An optional override of the ANI (caller Id) for later processing of the send fax. |
| FB-Line-Num | Physical line number that maps to the DID. |
| FB-Line-Id | A name or description to associated with the DID or fax ATA line. |

**Response Packet**

```
Code=Access-Accept(2)
Packet identifier=8
Length=47
Authenticator
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Attributes:
Len=9, Type=User-Name(1)
  Value=testata
Len=18, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=12, Type=FB-Snd-ANI(19)
    Value=5551119999
End
```

## Get-DIDs-For-Account / For-External-Module

Sent from the port server when an external component, such as a fax ATA provisioning server, requires the list of all DIDs associated with an account.

Support for this command is optional at the RADIUS server.  The only time the port server requests this information is for provisioning of fax ATAs.

── SENT FROM PORT SERVER ──►

| Attribute | Value |
|---|---|
| FB-Command | Get-DID (8) |
| FB-Context | For-Extermal-Module (5) |
| User-Name | Locate all DIDs mapped to this account. |

**Request Packet**

```
Code=Access-Request(1)
Packet identifier=3
Length=44
Authenticator
  C9 EC 4F 8D AA 6D 6B 43 A2 54 E3 AE 5E B9 E6 0A
Attributes:
Len=18, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-Command(1)
    Value=Get-DIDs-For-Account(9)
  Len=6, Type=FB-Context(2)
    Value=For-External-Module(5)
Len=6, Type=User-Name(1)
  Value=TEST
End
```

◄─── RESPONSE TO PORT SERVER ───

| Required | Purpose |
|---|---|
| RADIUS code | Access-Accept or Access-Reject |
| FB-DID | One FB-DID attribute for each DID mapped to the requested account. |
|  | If there are no DIDs mapped to the account, return an Access-Accept packet with no attributes. |

**Response Packet**

```
Code=Access-Accept(2)
Packet identifier=2
Length=44
Authenticator
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Attributes:
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-DID(75)
    Value=1111
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-DID(75)
    Value=2222
End
```

## Get-Load-Balance-Group-Members / Pre-Receive-Session

Sent when the port server is attempting to route an inbound fax to a load-balance group, and the port server needs to know the accounts that are in the group.

─── SENT FROM PORT SERVER ──►

| Attribute | Value |
|---|---|
| FB-Command | Get-Load-Balance-Group-Members (4) |
| FB-Context | Pre-Send-Session (4) |

| User-Name | Load-balance group account |
|---|---|
| Acct-Session-Id | The session id of the new receive fax session. |

**Request Packet**

```
Code=Access-Request(1)
Packet identifier=2
Length=69
Authenticator
  94 46 99 4F 24 EA 6A 45 B1 F7 10 BE FD F5 6B BE
Attributes:
Len=18, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-Command(1)
    Value=Get-Load-Balance-Group-Members(4)
  Len=6, Type=FB-Context(2)
    Value=Pre-Receive-Session(4)
Len=5, Type=User-Name(1)
  Value=lbg
Len=26, Type=Acct-Session-Id(44)
  Value=3_z4Xwe5oprfKSdh4vxlpUlb
End
```

◄── RESPONSE TO PORT SERVER ──

| Required | Purpose |
|---|---|
| RADIUS code | Access-Accept or Access-Reject |
| **Optional** | **Purpose** |
| User-Name | Include this attribute as many times as needed to provide all member account names.  If there are no members in the group, then omit this attribute. |

**Response Packet**

```
Code=Access-Accept(2)
Packet identifier=2
Length=29
Authenticator
  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Attributes:
Len=9, Type=User-Name(1)
  Value=Account
End
```

## Access-Request Attributes

The following attributes appear in Accounting-Request and Accounting-Response packets.

### Acct-Session-Id

| Attribute Type | Data Type | Length |
|---|---|---|
| RADIUS defined | String (ASCII) | 0-32 chars |

The port server will include the Acct-Session-Id attribute in Get-Account commands that precede the start of send or receive sessions. Sessions Ids are unique ASCII strings. Session Id comparisons are case-sensitive, i.e., a Session Id of "abc" is different from "ABC". An example Session Id string: 0_yhYH4nK3]dtTFspcBkJQMA.

### FB-Account-Login-Group

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | String (ASCII) | 0-64 chars |

Optional response to the Get-Account command in the Account-Login context. This value specifies the group of Connection Servers to which an account belongs.

A Connection Server will use this value to produce a list of Connection Servers Urls that are returned to the client, to be used as failover Urls in case the client loses contact with the Connection Server that it has logged into.

| Value | Meaning |
|---|---|
| Empty -or- * | The account is a member of the "Default Account-login Group". The client can login to any Connection Server in the "Default Account-login Group". |
| NAME | The account is a member of the specified group name. For example, if the value was "PRIORITY", then the client can login to any Connection Server in the group "PRIORITY". Group names must use upper-case letters, and cannot include the asterisk (*), colon (:), semi-colon (;), or comma (,) characters. |
| *NAME | The account is a member of both the "Default Account-login Group" and the specified group name that follows "*". The client can login to Connection Servers that are in either group. |

When this attribute is omitted in a RADIUS response packet, the default value is an empty string.

### FB-Account-Type

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | Integer | 4 bytes |

Optional response to the Get-Account command in the Account-Login context. This value determines the type of account, and how the client will be treated upon a successful login.

| Value | Meaning |
|---|---|
| 0 | The account is type "Private Send/Receive", with the expectation that no other client will login with the same account/password. A future login to this account from another client will force any currently logged-in client to be logged-out. The client is send and receive capable, and will receive faxes based on DIDs that are routed to the account. |

| 1 | The account is "Shared Send-Only", allowing other clients to login using the same account/password.  Unlimited clients can login using this account, with clients being completely independent of each other.  Clients can only send faxes. |
|---|---|
| 4 | The account is type "Private Send/Receive", with the same behavior as value 0 listed above, but for a client that uses the queue transfer protocol, such as a fax ATA. |
| 5 | The account is type "Shared Send-Only", with the same behavior as value 1 listed above, but for a client that uses the queue transfer protocol, such as a fax ATA. |
| 8 | The account is a "Load-balance Group", with an "Alternating" delivery style to member accounts. |
| 9 | The account is a "Load-balance Group", with a "Most Free Receive Sessions" delivery style to member accounts. |
| 10 | The account is a "Load-balance Group", with a "Random" delivery style to member accounts. |

When this attribute is omitted in a RADIUS response packet, the default value is 0.

## FB-Call-Ahead-Mode

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | Integer | 4 bytes |

Optional response to the Get-Account command in the Account-Login and Pre-Send-Session contexts.  For the Account-Login context, this value specifies how the account is configured regarding the call-ahead behavior of an ATA client.  For the Pre-Send-Session context, this value is treated as a yes/no flag, and returned to the fax ATA where directly.

| Tag | Value |
|---|---|
| 0 | Never |
| 1 | Dynamic |
| 2 | Always |

When this attribute is omitted in a RADIUS response packet, the default value is 1.  In the Account-Login context a value of 1 means that the account is configured for the Dynamic mode. In the Pre-Send-Session context a value of 1 means that the fax ATA will perform the call-ahead behavior.

## FB-CDR-Info

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | String (UTF-8) | 0-64 chars |

Optional response to Get-Account commands that precede the start of send or receive sessions. If provided, the port server will include this value in the "FB-CDR-Info" attribute of the CDR that is saved at the end of the session.

This value is intended provide information about the account that gets saved in the CDR.

When this attribute is omitted in a RADIUS response packet, the "FB-CDR-Info" attribute of the CDR is empty.

## FB-Client-Info

| Attribute Type | Data Type | Length |
|---|---|---|

| FaxBack vendor-specific | String (UTF-8) | 0-128 chars |
|---|---|---|

The port server will include the FB-Client-Info attribute in the Get-Account command for the Account-Login context.  The string value is created by the client, and contains information that might help identify the type of client.

The string is formatted as ";<tag>=<value>;<tag>=<value>;" to simplify parsing individual values, for example, ";FV=1.0.0.0;MN=NICKDUO;IP=10.0.0.84".  The following tags are defined:

| Tag | Value |
|---|---|
| FV | The file version of the IPFS client |
| MN | The machine name where the client is running. |
| IP | This value is added to the FB-Client-Info string by the port server, not the client.  It is set to the client address as seen by the port server.  If the client contacts the port server through a gateway, then this IP address will be the IP address at the gateway (not the address of the client on the LAN). |
| UN | The value from the <UserName> node in the IPFS client Xml configuration.  By default, this value is empty and the ;UN= tag is not included. |

## FB-Customer

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | String (UTF-8) | 0-64 chars |

Optional response to Get-Account commands that precede the start of send or receive sessions.  If provided, the port server will include this value in the "Customer" attribute of the CDR that is saved at the end of the session.

This value is intended to describe the account owner, however, there is no harm is ascribing any other meaning to this value.  In theory, multiple accounts could be owned by the same customer, and thus this field might have the same value in all of those accounts.

When this attribute is omitted in a RADIUS response packet, the "Customer" attribute of the CDR is empty.

## FB-DID

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | String (UTF-8) | 64 bytes |

If the RADIUS server implementation supports the Get-DIDs-From-Account command (in the For-External-Module context), then for each DID that maps to the specified account, one FB-DID attribute must be included in the response packet with the attribute value set to the DID string.

## FB-DID-Enabled

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | Integer | 4 bytes |

Optional response to the Get-Account-From-DID command.  If provided, with a value of 0, the port server can log a more meaningful error when routing to a DID is disabled (the alternative would be an Access-Reject response that the port server would interpret as "DID not found").

| Value | Meaning |
|---|---|
| 1 | The DID is enabled for routing |

| 0 | The DID is disabled for routing. |
|---|---|

When this attribute is omitted in a RADIUS response packet, the default value is 1.

## FB-Last-Modified-Time

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | Integer | 4 bytes |

Optional response to the Get-Account command, in both the Pre-Receive-Session and For-External-Module contexts, for accounts that are load-balance groups.  The port server uses this value to detect changes in group membership that require it to call Get-Load-Balance-Group-Members in order to update the current understanding of the group membership.

## FB-Line-Id

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | String (ASCII) | 64 bytes |

Optional response to the Get-DID command in the For-External-Module context, that specifies a name or description that is associated with a DID or as they case may be, physical line on a fax ATA.  An external component to the port server, such as a fax ATA provisioning server, might request this information from the port server during provisioning of a new fax ATA.

## FB-Line-Num

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | Integer | 4 bytes |

Optional response to the Get-DID command in the For-External-Module context, that specifies the physical line on a fax ATA.  An external component to the port server, such as a fax ATA provisioning server, might request this information from the port server during provisioning of a new fax ATA.

## FB-Provisioning-Arg

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | String (UTF-8) | 0-300 bytes |

Optional response to the Get-Account-From-MAC-Address and Get-Account-From-Serial-Number commands, where a provisioning server requests account information that will be used to construct a configuration for a fax ATA during the provisioning process.  The format for this string depends on the provisioning server that is used.

Example value: `basecfg=remote-admin.ini`.

## FB-Queue-Profile

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | Xml  String (ASCII) | 0-300 chars |

Optional response to the Get-Account command in the Pre-Send-Session and Pre-Receive-Session contexts, and the Get-DID command in the Pre-Send-Session context.  The value of this attribute should be well-formed Xml, that specifies special handling instructions for the processing of a fax that belongs to a fax ATA account.  If provided, the port server will pass along the value of this attribute to the queue processing component that performs send/receive processing on behalf of the fax ATA account.

<QPXml Rf="0" Dn="1" Ndn="1" Ea="" Ef="" Ln="en-US" Tz="Pacific*" />

When this attribute is omitted in a RADIUS response packet, the default value is an empty queue profile, <QPXml />. An empty queue profile triggers default behavior, which includes sending fax notifications to a sender, using the local time zone and default language of the port server.

| Time Zone Name | Time Zone Name Abbreviation (substitute "*" for " Standard Time") |
|---|---|
| Dateline Standard Time | Dateline* |
| Samoa Standard Time | Samoa* |
| Hawaiian Standard Time | Hawaiian* |
| Alaskan Standard Time | Alaskan* |
| Pacific Standard Time | Pacific* |
| Pacific Standard Time (Mexico) | Pacific* (Mexico) |
| US Mountain Standard Time | US Mountain* |
| Mountain Standard Time (Mexico) | Mountain* (Mexico) |
| Mexico Standard Time 2 | Mexico* 2 |
| Mountain Standard Time | Mountain* |
| Central America Standard Time | Central America* |
| Central Standard Time | Central* |
| Central Standard Time (Mexico) | Central* (Mexico) |
| Mexico Standard Time | Mexico* |
| Canada Central Standard Time | Canada Central* |
| SA Pacific Standard Time | SA Pacific* |
| Eastern Standard Time | Eastern* |
| US Eastern Standard Time | US Eastern* |
| Venezuela Standard Time | Venezuela* |
| Atlantic Standard Time | Atlantic* |
| SA Western Standard Time | SA Western* |
| Central Brazilian Standard Time | Central Brazilian* |
| Pacific SA Standard Time | Pacific SA* |
| Newfoundland Standard Time | Newfoundland* |
| E. South America Standard Time | E. South America* |
| Argentina Standard Time | Argentina* |
| SA Eastern Standard Time | SA Eastern* |
| Greenland Standard Time | Greenland* |
| Montevideo Standard Time | Montevideo* |
| Mid-Atlantic Standard Time | Mid-Atlantic* |
| Azores Standard Time | Azores* |
| Cape Verde Standard Time | Cape Verde* |
| Morocco Standard Time | Morocco* |
| GMT Standard Time | GMT* |
| Greenwich Standard Time | Greenwich* |
| W. Europe Standard Time | W. Europe* |
| Central Europe Standard Time | Central Europe* |
| Romance Standard Time | Romance* |
| Central European Standard Time | Central European* |
| W. Central Africa Standard Time | W. Central Africa* |
| Jordan Standard Time | Jordan* |
| GTB Standard Time | GTB* |
| Middle East Standard Time | Middle East* |
| Egypt Standard Time | Egypt* |
| South Africa Standard Time | South Africa* |
| FLE Standard Time | FLE* |
| Israel Standard Time | Israel* |
| E. Europe Standard Time | E. Europe* |
| Namibia Standard Time | Namibia* |
| Arabic Standard Time | Arabic* |
| Arab Standard Time | Arab* |
| Russian Standard Time | Russian* |

| | |
|---|---|
| E. Africa Standard Time | E. Africa* |
| Georgian Standard Time | Georgian* |
| Iran Standard Time | Iran* |
| Arabian Standard Time | Arabian* |
| Azerbaijan Standard Time | Azerbaijan* |
| Caucasus Standard Time | Caucasus* |
| Mauritius Standard Time | Mauritius* |
| Armenian Standard Time | Armenian* |
| Afghanistan Standard Time | Afghanistan* |
| Ekaterinburg Standard Time | Ekaterinburg* |
| Pakistan Standard Time | Pakistan* |
| West Asia Standard Time | West Asia* |
| India Standard Time | India* |
| Sri Lanka Standard Time | Sri Lanka* |
| Nepal Standard Time | Nepal* |
| N. Central Asia Standard Time | N. Central Asia* |
| Central Asia Standard Time | Central Asia* |
| Myanmar Standard Time | Myanmar* |
| SE Asia Standard Time | SE Asia* |
| North Asia Standard Time | North Asia* |
| China Standard Time | China* |
| North Asia East Standard Time | North Asia East* |
| Singapore Standard Time | Singapore* |
| W. Australia Standard Time | W. Australia* |
| Taipei Standard Time | Taipei* |
| Tokyo Standard Time | Tokyo* |
| Korea Standard Time | Korea* |
| Yakutsk Standard Time | Yakutsk* |
| Cen. Australia Standard Time | Cen. Australia* |
| AUS Central Standard Time | AUS Central* |
| E. Australia Standard Time | E. Australia* |
| AUS Eastern Standard Time | AUS Eastern* |
| West Pacific Standard Time | West Pacific* |
| Tasmania Standard Time | Tasmania* |
| Vladivostok Standard Time | Vladivostok* |
| Central Pacific Standard Time | Central Pacific* |
| New Zealand Standard Time | New Zealand* |
| Fiji Standard Time | Fiji* |
| Tonga Standard Time | Tonga* |

## FB-Rcv-CSID

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | String (ASCII) | 0-20 chars |

Optional response to Get-Account commands that precede the start of a receive session.   If provided, the port server will use the value as the CSI in the pending T.30 fax session.

When this attribute is omitted in a RADIUS response packet, the default behavior is to use the CSI provided by the client, or if no CSI is specified then a default CSI from the port server registry, for the T.30 fax session.

## FB-Rcv-Email

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | String (UTF-8) | 0-128 chars |

Optional response to the Get-Account or Get-Account-From-DID commands, both in the For-External-Module context.  If provided, the value of this attribute must consist of an e-mail address, e.g., contact@domain.org.

The port server e-mail gateway will use the value from the FB-Rcv-Email attribute as the target recipient for an e-mail message that it sends when processing received faxes.

When this attribute is omitted in a RADIUS response packet, the default value is an empty string.

## FB-Rcv-Failover-Account-Id

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | String (UTF-8) | 0-64 chars |

Optional response to Get-Account commands that precede the start of a receive session.   If provided, the port server will attempt to route an inbound fax session to this account if the primary account is unable to receive the fax, or if the primary account has the "FB-Rcv-Failover-Mode" attribute set to 1.  Accounts that receive faxes exclusively by e-mail should return an account used by the port server e-mail gateway for this attribute.

If the fax session is routed to this account, then the CDR will include the primary account name in the "User-Name" attribute, and this account name in the "FB-Rcv-Account-Id" attribute.

When this attribute is omitted in a RADIUS response packet, the default behavior is to route the inbound fax to the account associated with the catch-all DID "*" if the primary account is unable to receive the fax.

## FB-Rcv-Failover-Mode

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | Integer | 4 bytes |

Optional response to Get-Account commands that precede the start of a receive session.   If provided, the port server will use the value to determine when to route the inbound fax session to the account specified in the "FB-Rcv-Failover-Account-Id" attribute.  Accounts that receive faxes exclusively by e-mail should use this attribute, set to 1, to force an inbound fax to be received by the port server e-mail gateway.

| Value | Meaning |
|---|---|
| 0 | Only route to "FB-Rcv-Failover-Account-Id" if primary account is truly unavailable. |
| 1 | Always route to "FB-Rcv-Failover-Account-Id". |
| 2 | The "FB-Rcv-Failover-Account-Id" is a load-balance group that this account is a member of. |

When this attribute is omitted in a RADIUS response packet, the default value is 0.

## FB-Rcv-Format

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | Integer | 4 bytes |

Optional response to Get-Account and Get-Account-From-DID commands, both in the For-External-Module context.  The port server e-mail gateway component will use this value to determine the desired fax image format, when sending received faxes to an account's specified inbound e-mail address (FB-Rcv-Email).

| Value | Meaning |
|---|---|
| 0 | TIF |
| 1 | PDF |

When this attribute is omitted in a RADIUS response packet, the default value is 0.

## FB-Rcv-Time-Expired

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | Integer | 4 bytes |

Optional response to Get-Account commands that precede the start of a receive session. This attribute determines if the account has time remaining for receiving faxes. This attribute provides a way to generate a more concise error at the port server, to better understand why an account should not receive a fax. The client software is unaware of this situation (it simply never receives the fax).

| Value | Meaning |
|---|---|
| 0 | The account is allowed to receive |
| 1 | The account has no remaining time for receive |

When this attribute is omitted in a RADIUS response packet, the default value is 0.

## FB-Rcv-To-Account

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | Integer | 4 bytes |

Optional response to Get-Account commands that precede the start of a receive session. This attribute determines if the account is enabled for receiving faxes. If receive is not enabled, the port server can save a more meaningful reason for the session being rejected in the log. If a session cannot be routed to an account, no CDR will be created.

| Value | Meaning |
|---|---|
| 0 | The account has receive disabled |
| 1 | The account has receive enabled |

When this attribute is omitted in a RADIUS response packet, the default value is 1.

## FB-Rule-Group

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | String (ASCII) | 0-64 chars |

Optional response to the Get-Account command in the Pre-Send-Session context. This value specifies the group of Send Routing rules that should be used when the account sends a fax.

| Value | Meaning |
|---|---|
| Empty -or- * | The account is a member of the "Default Rule Group". Only Send Routing rules in the "Default Rule Group" will be used. |
| NAME | The account is a member of the specified group name. For example, if the value was "PRIORITY", then only Send Routing rules in the "PRIORITY" group will be used.<br><br>Group names must use upper-case letters, and cannot include the asterisk (*), colon (:), semi-colon (;), or comma (,) characters. |
| *NAME | The account is a member of both the "Default Rule Group" and the specified group name that follows "*". Send Routing rules that are in either group will be used. |

When this attribute is omitted in a RADIUS response packet, the default value is an empty string.

## FB-Save-CDR

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | Integer | 4 bytes |

Optional response to Get-Account commands that precede the start of a send or receive session.

| Value | Meaning |
|---|---|
| 1 | Accounting packets are sent when the account sends or receives a fax (if the BillingDb is not configured for RADIUS, then a CDR is saved to the billing database) |
| 0 | No Accounting packets are sent (if the BillingDb is not configured for RADIUS, then no CDR is saved to the billing database) |

When this attribute is omitted in a RADIUS response packet, the default value is 1.

## FB-Snd-ANI

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | String (ASCII) | 0-32 chars |

Optional response to Get-Account commands that precede the start of a send session.   If provided, the port server will use the value as the ANI in the pending telephony session.

When this attribute is omitted in a RADIUS response packet, the default behavior is to use the ANI provided by the client, or if no ANI is specified then a default ANI from the port server registry, for the telephony session.

## FB-Snd-Email

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | String (UTF-8) | 0-128 chars |

The port server includes the FB-Snd-Email attribute for Access-Request packets sent with the Get-Account-From-Sender-Email-Address command in the For-External-Module context.

The port server e-mail gateway will send a fax from an e-mail message that is has received after it has authorized the sender of the e-mail message.  Authorization is performed by verifying that the "From" e-mail address is known to the port server.  If an account is found that matches the e-mail address, additional authorization steps may be performed using other account attributes.

Optionally, the FB-Snd-Email attribute may be included in a response to the Get-Account command  in the For-External-Module context.  If provided, the value of this attribute must consist of an e-mail address, e.g., contact@domain.org.

When this attribute is omitted in a RADIUS response packet, the default value is an empty string.

## FB-Snd-From-Account

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | Integer | 4 bytes |

Optional response to Get-Account commands that precede the start of a send session.  This attribute determines if the account is enabled for sending faxes.  If send is not enabled, the port server can reflect a more precise reason for the session being rejected.  The port server client will

be able to log the send failure as "sending is disabled".  If a session cannot be started, no CDR will be created.

| Value | Meaning |
|---|---|
| 0 | The account has send disabled |
| 1 | The account has send enabled |

When this attribute is omitted in a RADIUS response packet, the default value is 1.

## FB-Snd-Time-Expired

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | Integer | 4 bytes |

Optional response to Get-Account commands that precede the start of a send session.  This attribute determines if the account has time remaining for sending faxes.  When the value of this attribute is 1 (expired), the client receives a more concise "Send time has expired" error.  Beyond that, this attribute works identically to the FB-Snd-From-Account attribute, by allowing or blocking attempts to send.

| Value | Meaning |
|---|---|
| 0 | The account is allowed to send |
| 1 | The account has no remaining send time. |

When this attribute is omitted in a RADIUS response packet, the default value is 0.

## FB-Snd-TSID

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | String (ASCII) | 0-20 chars |

Optional response to Get-Account commands that precede the start of a send session.   If provided, the port server will use the value as the TSI in the pending T.30 fax session.

When this attribute is omitted in a RADIUS response packet, the default behavior is to use the TSI provided by the client, or if no TSI is specified then a default TSI from the port server registry, for the T.30 fax session.

## FB-Source

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | String (UTF-8) | 0-64 chars |

Optional response to Get-Account commands that precede the start of send or receive sessions.  If provided, the port server will include this value in the "Source" attribute of the CDR that is saved at the end of the session.  This value is intended describe the creator of the account, however, there is no harm is ascribing any other meaning to this value.

When this attribute is omitted in a RADIUS response packet, the "Source" attribute of the CDR is empty.

## FB-Transfer-Type

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | Integer | 4 bytes |

The port server will include the FB-Transfer-Type attribute in the Get-Account command for the Pre-Send-Session and Pre-Receive-Session contexts.  This attribute specifies the type of connection, Real-time or Queue, that is being established.

| Value | Meaning |
|-------|---------|
| 1 | Real-time |
| 2 | Queue |

## FB-Upload-Logs

| Attribute Type | Data Type | Length |
|----------------|-----------|--------|
| FaxBack vendor-specific | Integer | 4 bytes |

Optional response to Get-Account commands.  If provided, the port server will relay the value to the client and the client will use the value to determine if diagnostic logs will be uploaded to the Connection Server.  Uploaded logs are saved in the ClientLogsDb, and are accessible from the Port Server Manager through the Connection Server.  This feature should be used sparingly in technical support situations only, as it increases network usage.

| Value | Meaning |
|-------|---------|
| 0 | Never upload logs |
| 1 | Only upload logs after errors |
| 2 | Upload logs after all sessions |

## User-Name

| Attribute Type | Data Type | Length |
|----------------|-----------|--------|
| RADIUS defined | String (UTF-8) | 0-64 chars |

The account to be billed for the sent or received fax.

## User-Password

| Attribute Type | Data Type | Length |
|----------------|-----------|--------|
| RADIUS defined | String (UTF-8) | 0-64 chars |

The account password.

# Accounting-Requests

## *Session Lifecycle*

When the port server billing database (BillingDb) is configured to use the RADIUS interface, the port server will send RADIUS Accounting packets at three significant stages during the lifecycle of a session:

- When a send or receive session for a client is authorized
  (Acct-Status-Type = Start)

- When the client makes first contact with the port session server
  (Acct-Status-Type = Alive-Interim-Update)

- When the session has ended
  (Acct-Status-Type = Stop)

For every session where an Accounting Start packet is sent, the port server will send an Accounting Stop packet.  The Accounting Alive packet is sent only if the client contacts the port session server in a timely manner in the early stage of a session.

The port server expects a response from all Accounting-Requests that it sends, however, the fax session cannot be modified based on a response from the RADIUS server.

Both Start and Alive-Interim-Update requests are considered informative but not critical; if the port server does not receive an Accounting-Response (after exhausting all retries) the fax session will proceed normally nonetheless.

A failure to receive an Accounting-Response for a Stop packet is considered a critical error, and the port server will continue to resend the Stop packet indefinitely until it receives an Accounting-Response.  The port server will continue to accept new send and receive fax sessions even if there are problems saving CDRs.  If CDRs cannot be saved through RADIUS (or any interface), a backlog of CDRs will accumulate as XML files saved to the local hard-drive, but they will not be lost.

The following minimum information is present in all Accounting packets (the Accounting Stop packet contains more information, explained below).  Note that even when "UUID Mode" is enabled to manage some Access-Requests with a UUID instead of a name, Accounting packets always include the account name.

- The account name
  (RADIUS defined attribute User-Name)

- The fax number (fax send) or DID (fax receive)
  (FaxBack vendor-specific attribute FB-Dial-Number)

- A flag that specifies whether the session is Send or Receive
  (FaxBack vendor-specific attribute FB-Is-Send)

- The start date and time of the session
  (FaxBack vendor-specific attribute FB-Start-Time)

- The session id string
  (RADIUS defined attribute Acct-Session-Id)

### Send Fax Stages

An Accounting Start packet (Acct-Status-Type=Start) is sent after a client has been approved to send a fax. This means that the client has sent a "send request" to the connection server, and the connection server has successfully contacted a port session server that accepted the new session. The client is provided with the Url of the port session server, and the client is expected contact this server to perform the fax session.

An Accounting Alive/Interim packet (Acct-Status-Type=Alive-Interim-Update) is sent after the sending client successfully contacts the port session server for the first time. Typically first contact between the client and port session server occurs before the fax session (T.30) has begun.

An Accounting Stop packet (Acct-Status-Type=Stop) is sent after the end of the session.

## Receive Fax Stages

An Accounting Start packet (Acct-Status-Type=Start) is sent after an inbound call has been successfully routed to a client. This means that a port session server has detected an inbound call, sent the DID in an "answer request" to a connection server, and the connection server has determined which client should receive the fax. The User Name in the Start packet (and all subsequent Accounting packets for this session) represents the account that should be billed, however, the client that physically receives the fax may be a client logged in as that account, or a "failover receive account" that the primary account has specified as an alternate. The client is provided with the Url of the port session server, and it is expected to contact this server to perform the fax session.

An Accounting Alive/Interim packet (Acct-Status-Type=Alive-Interim-Update) is sent after the receiving client successfully contacts the port session server for the first time. Typically first contact between the client and port session server occurs before the fax session (T.30) has begun.

An Accounting Stop packet (Acct-Status-Type=Stop) is sent after the end of the session.

## *Example Accounting Packets*

All possible attributes are listed in these examples, even if the string values are empty. By default, the port server will construct packets that include attributes even if the string value is empty.

## Start

—— SENT FROM PORT SERVER ——▶

```
Code=Accounting-Request(4)
Packet identifier=2
Length=113
Authenticator
  1D 9E 3F A4 3A 45 6E 44 BF 91 D8 27 7A 30 EB 20
Attributes:
Len=6, Type=Acct-Status-Type(40)
  Value=Start(1)
Len=9, Type=User-Name(1)
  Value=account
Len=20, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=14, Type=FB-Dial-Number(34)
    Value=555-123-2134
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
```

```
   Len=6, Type=FB-Is-Send(32)
      Value=1
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-Start-Time(33)
      Value=11/19/2008 8:29:28 PM UTC (0x49247728)
Len=34, Type=Acct-Session-Id(44)
  Value=443291238e274109be990cf1ccd3d4b2
End
```

## Alive

―― SENT FROM PORT SERVER ――▶

```
Code=Accounting-Request(4)
Packet identifier=2
Length=113
Authenticator
  1B 31 8E FD DB 6E 0D 64 6F 47 88 B3 38 17 97 AF
Attributes:
Len=6, Type=Acct-Status-Type(40)
  Value=Alive-Interim-Update(3)
Len=9, Type=User-Name(1)
  Value=account
Len=20, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=14, Type=FB-Dial-Number(34)
    Value=555-123-2134
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-Is-Send(32)
    Value=1
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-Start-Time(33)
    Value=11/19/2008 8:29:28 PM UTC (0x49247728)
Len=34, Type=Acct-Session-Id(44)
  Value=443291238e274109be990cf1ccd3d4b2
End
```

## Stop (Receive Fax)

―― SENT FROM PORT SERVER ――▶

```
Code=Accounting-Request(4)
Packet identifier=1
Length=476
Authenticator
  45 60 94 0B 7F 49 89 7B B6 B9 18 7E AB 7C F2 A5
Attributes:
Len=6, Type=Acct-Status-Type(40)
  Value=Stop(2)
Len=9, Type=User-Name(1)
  Value=account
Len=8, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=2, Type=FB-Customer(12)
    Value=
Len=8, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=2, Type=FB-Source(13)
    Value=
Len=8, Type=Vendor-Specific(26), Id=FaxBack(30694)
```

```
   Len=2, Type=FB-CDR-Info(11)
     Value=
Len=8, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=2, Type=FB-Per-Fax-CDR-Info(31)
     Value=
Len=41, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=35, Type=FB-Connection-Server(44)
     Value=Connection Server on NETSATTESTER
Len=15, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=9, Type=FB-Client-Account-Id(30)
     Value=account
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-Is-Send(32)
     Value=0
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-Fax-Error-Code(38)
     Value=0
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-Total-Seconds(39)
     Value=18
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-Page-Count(41)
     Value=1
Len=35, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=29, Type=FB-Port-Server(42)
     Value=Port Server on NETSATTESTER
Len=18, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=12, Type=FB-Dial-Prefix-Used(49)
     Value=10.0.0.159
Len=55, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=49, Type=FB-SIP-Call-Id(50)
     Value=92c9b84c-3470-4662-b3c3-f4547d9ef5a3@10.0.0.159
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-Extended-Error-Code(51)
     Value=0
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-V21-Frame-Error-Count(52)
     Value=0
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-ECM-Frame-Error-Count(53)
     Value=0
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-RTN-Count(54)
     Value=0
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-RTP-Count(55)
     Value=0
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-Fax-Capabilities(63)
     Value=0
Len=21, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=15, Type=FB-Port-Used(43)
     Value=IPF_PORT_0024
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
  Len=6, Type=FB-Connect-BPS(40)
     Value=14400
Len=18, Type=Vendor-Specific(26), Id=FaxBack(30694)
```

```
    Len=12, Type=FB-Dial-Number(34)
       Value=5552223333
Len=10, Type=Vendor-Specific(26), Id=FaxBack(30694)
   Len=4, Type=FB-Local-CSID(36)
       Value=NT
Len=10, Type=Vendor-Specific(26), Id=FaxBack(30694)
   Len=4, Type=FB-Remote-CSID(37)
       Value=NT
Len=8, Type=Vendor-Specific(26), Id=FaxBack(30694)
   Len=2, Type=FB-Caller-Id(35)
       Value=
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
   Len=6, Type=FB-Start-Time(33)
       Value=8/5/2009 10:55:21 AM, 8/5/2009 5:55:21 PM UTC (0x4A79C789)
Len=34, Type=Acct-Session-Id(44)
   Value=7da0c026b11e476c87819b5f26db7ed1
End
```

## Stop (Send Fax)

—— SENT FROM PORT SERVER ——▶

```
Code=Accounting-Request(4)
Packet identifier=1
Length=490
Authenticator
   C0 FE 5E 90 23 24 FC 0C 06 E5 DC 65 6F FF 56 C4
Attributes:
Len=6, Type=Acct-Status-Type(40)
   Value=Stop(2)
Len=9, Type=User-Name(1)
   Value=account
Len=8, Type=Vendor-Specific(26), Id=FaxBack(30694)
   Len=2, Type=FB-Customer(12)
       Value=
Len=8, Type=Vendor-Specific(26), Id=FaxBack(30694)
   Len=2, Type=FB-Source(13)
       Value=
Len=8, Type=Vendor-Specific(26), Id=FaxBack(30694)
   Len=2, Type=FB-CDR-Info(11)
       Value=
Len=8, Type=Vendor-Specific(26), Id=FaxBack(30694)
   Len=2, Type=FB-Per-Fax-CDR-Info(31)
       Value=
Len=41, Type=Vendor-Specific(26), Id=FaxBack(30694)
   Len=35, Type=FB-Connection-Server(44)
       Value=Connection Server on NETSATTESTER
Len=15, Type=Vendor-Specific(26), Id=FaxBack(30694)
   Len=9, Type=FB-Client-Account-Id(30)
       Value=account
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
   Len=6, Type=FB-Is-Send(32)
       Value=1
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
   Len=6, Type=FB-Fax-Error-Code(38)
       Value=0
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
```

```
        Len=6, Type=FB-Total-Seconds(39)
          Value=17
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
     Len=6, Type=FB-Page-Count(41)
          Value=1
Len=35, Type=Vendor-Specific(26), Id=FaxBack(30694)
     Len=29, Type=FB-Port-Server(42)
          Value=Port Server on NETSATTESTER
Len=18, Type=Vendor-Specific(26), Id=FaxBack(30694)
     Len=12, Type=FB-Dial-Prefix-Used(49)
          Value=@localhost
Len=55, Type=Vendor-Specific(26), Id=FaxBack(30694)
     Len=49, Type=FB-SIP-Call-Id(50)
          Value=92c9b84c-3470-4662-b3c3-f4547d9ef5a3@10.0.0.159
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
     Len=6, Type=FB-Extended-Error-Code(51)
          Value=0
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
     Len=6, Type=FB-V21-Frame-Error-Count(52)
          Value=0
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
     Len=6, Type=FB-ECM-Frame-Error-Count(53)
          Value=0
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
     Len=6, Type=FB-RTN-Count(54)
          Value=0
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
     Len=6, Type=FB-RTP-Count(55)
          Value=0
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
     Len=6, Type=FB-Fax-Capabilities(63)
          Value=7
Len=21, Type=Vendor-Specific(26), Id=FaxBack(30694)
     Len=15, Type=FB-Port-Used(43)
          Value=IPF_PORT_0001
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
     Len=6, Type=FB-Connect-BPS(40)
          Value=14400
Len=20, Type=Vendor-Specific(26), Id=FaxBack(30694)
     Len=14, Type=FB-Dial-Number(34)
          Value=555-222-3333
Len=10, Type=Vendor-Specific(26), Id=FaxBack(30694)
     Len=4, Type=FB-Local-CSID(36)
          Value=NT
Len=10, Type=Vendor-Specific(26), Id=FaxBack(30694)
     Len=4, Type=FB-Remote-CSID(37)
          Value=NT
Len=8, Type=Vendor-Specific(26), Id=FaxBack(30694)
     Len=2, Type=FB-Caller-Id(35)
          Value=
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
     Len=6, Type=FB-Start-Time(33)
          Value=8/5/2009 10:55:20 AM, 8/5/2009 5:55:20 PM UTC (0x4A79C788)
Len=34, Type=Acct-Session-Id(44)
     Value=eccd406a92624869a518ca45cba9de7c
Len=12, Type=Vendor-Specific(26), Id=FaxBack(30694)
     Len=6, Type=FB-Called-Number-Result(62)
```

```
    Value=0
End
```

## Accounting-Request Attributes

The following attributes appear in Accounting-Request packets sent from the port server.

### Acct-Session-Id

| Attribute Type | Data Type | Length |
|---|---|---|
| RADIUS defined | String (ASCII) | 0-48 chars |

A unique ASCII string that identifies the session. An example Session Id string: 78967f9a89164bb1b43132dec73d45fe.

### FB-Called-Number-Result

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | Integer | 4 bytes |

The FB-Called-Number-Result attribute will only appear in Accounting Stop requests. It will only appear when the sent fax session ended successfully, or ended with a fax error (an error that occurred after the fax protocol was successfully engaged) or ended with a voice answering the call. This attribute will not appear for other errors, such as telephony, media gateway, or server errors.

If the RADIUS server is managing a Called Numbers database, then the presence of this attribute in an Accounting Stop request should be used to detect that the Called Numbers database should be updated for the FB-Dial-Number that is included in the same request.

A result of Success or FaxError (despite being an error) should be considered as evidence that a fax machine was contacted at the FB-Dial-Number. A result of VoiceError should be regarded as evidence that the FB-Dial-Number is potentially a wrong number, or possibly a shared voice/fax number, where it is likely that a voice will answer the call on a subsequent fax send to the same number.

| Value | Meaning |
|---|---|
| 0 | Success |
| 1 | FaxError |
| 2 | VoiceError |

### FB-Caller-ID

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | String (UTF-8) | 0-32 chars |

For received faxes only, the remote caller ID.

### FB-CDR-Info

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | String (UTF-8) | 0-64 chars |

An optional string that comes from the billing account and is saved with the CDR at the end of a session.

### FB-CDR-Type

| Attribute Type | Data Type | Length |
|---|---|---|

| FaxBack vendor-specific | Integer | 4 bytes |
|---|---|---|

The FB-CDR-Type attribute categorizes the CDR according to the following table.  A value of 0 represents a completed real-time send or receive fax delivery.  Other values relate to the processing of faxes sent to/from fax ATAs.

The FB-Description attribute in the CDR will provide additional detail.

| Value | Meaning |
|---|---|
| 0 | Realtime, a real-time fax sent or received (successfully or not) |
| 1 | Status, a port server component is updating the status of a queued fax |
| 2 | SendFromClient, a fax being sent from a fax ATA and uploaded to a Queue Server |
| 3 | ReceiveToClient, a fax being received by a fax ATA and downloaded from a Queue Server |
| 4 | Deleted, a queued fax was deleted |
| 5 | Copied, a queued fax was copied and/or moved to another queue or location |
| 6 | SendStageCompleted, a queued fax has advanced to another send stage |

## FB-Client-Account-ID

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | String (UTF-8) | 0-16 chars |

The account used by the client that physically sent or received the fax.  Accounts can send faxes on-behalf-of other accounts, as well as receive faxes that failed-over from other accounts.  In such a case, this account will be different from the account specified in the User-Name attribute.

## FB-Connect-BPS

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | Integer | 4 bytes |

The highest detected transmission rate bits per second during the fax session.

## FB-Connection-Server

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | String (UTF-8) | 0-64 chars |

A string that identifies the connection server that handled the fax session.

## FB-Customer

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | String (UTF-8) | 0-64 chars |

An optional description of the account.  This information comes from the account, and is saved with the CDR at the end of a session.

## FB-Description

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | String (UTF-8) | 0-64 chars |

Provides additional detail for CDRs when the FB-CDR-Type is other than 0 (real-time fax).

## FB-Dial-Number

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | String (UTF-8) | 0-64 chars |

For a Send, this was the send fax number.  For a Receive, this is the inbound DID.

## FB-Dial-Prefix-Used

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | String (UTF-8) | 0-60 chars |

For a Send, ….

## FB-ECM-Frame-Error-Count

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | Integer | 4 bytes |

The ECM frame error count for the fax session.

## FB-Extended-Error-Code

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | Integer | 4 bytes |

The FaxBack extended error code for the fax session.

## FB-Fax-Capabilities

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | Integer | 4 bytes |

The fax capabilities of the remote fax device.  The following bit values are possible:

| Value | Meaning |
|---|---|
| 1 | ECM |
| 2 | MR |
| 4 | MMR |
| 8 | JBIG |
| 16 | JPEG |
| 32 | RES_200_400 |
| 64 | RES_300_300 |
| 128 | RES_400_400 |

## FB-Fax-Error-Code

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | Integer | 4 bytes |

The FaxBack error code for the fax session.  Zero means success.  There are many error codes that can be looked up with a utility.

## FB-Is-Send

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | Integer | 4 bytes |

If 1 fax was a Send, of 0 fax was a Receive.

## FB-Local-CSID

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | String (UTF-8) | 0-32 chars |

For sent and received faxes, the TSI for a send, the CSI for a receive.

## FB-Msg-Type

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | String (ASCII) | 0-32 chars |

The category of fax message.

| Value | Meaning |
|---|---|
| 0 | Message |
| 1 | Success Notification |
| 2 | Failure Notification |

## FB-Page-Count

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | Integer | 4 bytes |

The total number of pages sent or received.

## FB-Per-Fax-CDR-Info

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | String (UTF-8) | 0-64 chars |

An optional string that is parsed by the Connection Server from the fax number of send faxes. The Connection Server supports a "Per Fax CDR Info Delimiter" setting that if set causes the Connection Server to parse all send fax numbers, and set the FB-Per-Fax-CDR-Info to any value in the fax number that is to the right of the delimiter.

## FB-Port-Server

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | String (UTF-8) | 0-64 chars |

A string that identifies the port server that handled the fax session.

## FB-Port-Used

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | String (UTF-8) | 0-64 chars |

The name of the FaxBack fax driver port that handled the fax session. All fax ports are named automatically during setup. Named ports are useful for diagnostic purposes, when examining sessions that were logged with extended diagnostic information.

## FB-Rcv-Account-Id

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | String (UTF-8) | 0-64 chars |

The account that actually received the fax.  This field is set only for received faxes where the primary account associated with a DID was busy or unavailable, and instead the "failover receive account" received the fax.

## FB-Related-Id

| Attribute Type | Data Type | Length |
| --- | --- | --- |
| FaxBack vendor-specific | String (ASCII) | 0-32 chars |

Faxes sent and received through fax ATAs are delivered in stages, for example, the upload of a fax from the ATA to the Queue Server is one stage, and later the delivery of the fax by a real-time port server client or by an external component that is not part of the port server is another delivery stage.  In order to connect CDRs from various delivery stages, the FB-Related-Id will contain a session-id from an earlier delivery stage of the same fax message.

## FB-Remote-CSID

| Attribute Type | Data Type | Length |
| --- | --- | --- |
| FaxBack vendor-specific | String (ASCII) | 0-32 chars |

For sent and received faxes, the TSI for a receive, the CSI for a send.

## FB-RTN-Count

| Attribute Type | Data Type | Length |
| --- | --- | --- |
| FaxBack vendor-specific | Integer | 4 bytes |

The retrain negative count for the fax session.

## FB-RTP-Count

| Attribute Type | Data Type | Length |
| --- | --- | --- |
| FaxBack vendor-specific | Integer | 4 bytes |

The retrain positive count for the fax session.

## FB-SIP-Call-Id

| Attribute Type | Data Type | Length |
| --- | --- | --- |
| FaxBack vendor-specific | String (ASCII) | 0-96 chars |

The SIP Call-Id for the fax session.

## FB-Source

| Attribute Type | Data Type | Length |
| --- | --- | --- |
| FaxBack vendor-specific | String (UTF-8) | 0-64 chars |

An optional description of the creator of the account.  This information comes from the account, and is saved with the CDR at the end of a session.

## FB-Start-Time

| Attribute Type | Data Type | Length |
| --- | --- | --- |
| FaxBack vendor-specific | Unix date | 4 bytes |

Date and time (UTC) when the session with the Connection Server first started (upon first contact with the client for a send request, or when a DID was first matched to an account, before the actual fax session).

## FB-Total-Seconds

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | Integer | 4 bytes |

The total duration of a fax session, including the dial duration and the fax session duration.

## FB-V21-Frame-Error-Count

| Attribute Type | Data Type | Length |
|---|---|---|
| FaxBack vendor-specific | Integer | 4 bytes |

The V21 frame error count from the fax session.

## User-Name

| Attribute Type | Data Type | Length |
|---|---|---|
| RADIUS defined | String (UTF-8) | 1-16 or 1-64 chars |

The account to be billed for the sent or received fax.

# UUID Mode

To simplify the RADIUS server implementation, accounts are managed by exchanging account *names* with the RADIUS server, even though the port server internally uses a UUID (Universally Unique Identifier) to identify each account. In general, the port server manages this distinction by converting account names into UUIDs when RADIUS responses are returned to the port server, and by converting UUIDs into account names when certain requests are sent to the RADIUS server. Because UUIDs are limited to 16 bytes, this imposes a 16 byte (bytes not characters) limitation on account name lengths.

Despite the 16 byte name length limitation, an enormous number of unique account names can be created using ASCII characters. However, if the 16 byte limitation is too restrictive, the name length can be expanded to 64 characters (utf-8 encoded). This is accomplished by enabling "UUID Mode" on the port server using the "Fax Hardware Setup" application, and by adding support for UUIDs to the RADIUS server implementation. An additional configuration option allows the UUID format to be specified. All UUIDs can be formatted as either *Binary* (16 raw bytes), *Hex string* (e.g., "0x05A32765C400499390D835289F96988A"), or *Dash string* (e.g., "05A32765-C400-4993-90D8-35289F96988A").

The following commands work differently when UUID mode is enabled:

- For the Get-Account/Account-Login and Get-Account/Account-Validate commands, the port server still sends the account name in the User-Name attribute for requests. But, for Get-Account/Account-Login the RADIUS server must return the FB-Account-UUID attribute for the account, and FB-Rcv-Failover-Account-UUID for the failover account.

- For the Get-Account/Pre-Send-Session command, the port server can send either a User-Name or FB-Account-UUID attribute (it will never send both attributes in the same request). Even with UUID Mode enabled, the send on-behalf-of feature works off of names, where one account can send on-behalf-of another, so the RADIUS server must handle both types of input for identifying an account. The response packet must include a User-Name attribute set to the name of the identified account.

- For the Get-Account/Pre-Receive-Session command, the port server can send either a User-Name or FB-Account-UUID attribute (it will never send both attributes in the same request). Even with UUID Mode enabled, a received fax in a message queue will be routed to the recipient by account name, so the RADIUS server must handle both types of input for identifying an account. The response packet must include a User-Name attribute set to the name of the identified account.

- For the Get-Account/For-External-Module command, the port server can send either a User-Name or FB-Account-UUID attribute (it will never send both attributes in the same request). The response packet must include a User-Name attribute set to the name of the identified account.

- For the Get-Load-Balance-Group-Members command in any context, the port server will send a FB-Account-UUID to identify the load balance group. Each member of the group must be identified in the response packet with a FB-Account-UUID attribute.

- For the Get-DID/Pre-Send-Session command, if this command is supported by the RADIUS server, it must return both User-Name and FB-Account-UUID attributes, for the account that the request DID mapped to.

- For the Get-DIDs-For-Account/For-External-Module command, the port server will send an FB-Account-UUID attribute in the request packet, and not a User-Name attribute.

# RADIUS Dictionary

This following RADIUS dictionary contains all port server RADIUS attributes. This information can be found in the file "Port Server RADIUS Dictionary.txt".

```
# FaxBack Port Server RADIUS Dictionary
# This file was created 9/1/2010 2:14:29 PM

VENDOR FaxBack 30694

ATTRIBUTE FB-Command                     1 integer FaxBack
ATTRIBUTE FB-Context                     2 integer FaxBack
ATTRIBUTE FB-Account-Type               10 integer FaxBack
ATTRIBUTE FB-CDR-Info                   11 string  FaxBack
ATTRIBUTE FB-Customer                   12 string  FaxBack
ATTRIBUTE FB-Source                     13 string  FaxBack
ATTRIBUTE FB-Rcv-Email                  14 string  FaxBack
ATTRIBUTE FB-Snd-Email                  15 string  FaxBack
ATTRIBUTE FB-Rcv-Format                 16 integer FaxBack
ATTRIBUTE FB-Rcv-CSID                   17 string  FaxBack
ATTRIBUTE FB-Snd-TSID                   18 string  FaxBack
ATTRIBUTE FB-Snd-ANI                    19 string  FaxBack
ATTRIBUTE FB-Save-CDR                   22 integer FaxBack
ATTRIBUTE FB-Snd-From-Account           23 integer FaxBack
ATTRIBUTE FB-Rcv-To-Account             24 integer FaxBack
ATTRIBUTE FB-Rcv-Failover-Account-Id    25 string  FaxBack
ATTRIBUTE FB-Rcv-Failover-Mode          26 integer FaxBack
ATTRIBUTE FB-Rule-Group                 27 string  FaxBack
ATTRIBUTE FB-Account-Login-Group        28 string  FaxBack
ATTRIBUTE FB-DID-Enabled                29 integer FaxBack
ATTRIBUTE FB-Client-Account-Id          30 string  FaxBack
ATTRIBUTE FB-Per-Fax-CDR-Info           31 string  FaxBack
ATTRIBUTE FB-Is-Send                    32 integer FaxBack
ATTRIBUTE FB-Start-Time                 33 date    FaxBack
ATTRIBUTE FB-Dial-Number                34 string  FaxBack
ATTRIBUTE FB-Caller-Id                  35 string  FaxBack
ATTRIBUTE FB-Local-CSID                 36 string  FaxBack
ATTRIBUTE FB-Remote-CSID                37 string  FaxBack
ATTRIBUTE FB-Fax-Error-Code             38 integer FaxBack
ATTRIBUTE FB-Total-Seconds              39 integer FaxBack
ATTRIBUTE FB-Connect-BPS                40 integer FaxBack
ATTRIBUTE FB-Page-Count                 41 integer FaxBack
ATTRIBUTE FB-Port-Server                42 string  FaxBack
ATTRIBUTE FB-Port-Used                  43 string  FaxBack
ATTRIBUTE FB-Connection-Server          44 string  FaxBack
ATTRIBUTE FB-Client-Info                45 string  FaxBack
ATTRIBUTE FB-Last-Modified-Time         46 date    FaxBack
ATTRIBUTE FB-Snd-Time-Expired           47 integer FaxBack
ATTRIBUTE FB-Rcv-Time-Expired           48 integer FaxBack
ATTRIBUTE FB-Dial-Prefix-Used           49 string  FaxBack
ATTRIBUTE FB-SIP-Call-Id                50 string  FaxBack
ATTRIBUTE FB-Extended-Error-Code        51 integer FaxBack
ATTRIBUTE FB-V21-Frame-Error-Count      52 integer FaxBack
ATTRIBUTE FB-ECM-Frame-Error-Count      53 integer FaxBack
ATTRIBUTE FB-RTN-Count                  54 integer FaxBack
```

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ATTRIBUTE FB-RTP-Count                      55 integer FaxBack
ATTRIBUTE FB-Snd-On-Behalf-Of               56 integer FaxBack
ATTRIBUTE FB-Queue-Profile                  57 string  FaxBack
ATTRIBUTE FB-Transfer-Type                  58 integer FaxBack
ATTRIBUTE FB-Account-UUID                   59 octets  FaxBack
ATTRIBUTE FB-Rcv-Failover-Account-UUID      60 octets  FaxBack
ATTRIBUTE FB-Call-Ahead-Mode                61 integer FaxBack
ATTRIBUTE FB-Called-Number-Result           62 integer FaxBack
ATTRIBUTE FB-Fax-Capabilities               63 integer FaxBack
ATTRIBUTE FB-Serial-Number                  64 string  FaxBack
ATTRIBUTE FB-MAC-Address                    65 string  FaxBack
ATTRIBUTE FB-Fax-ATA-Type                   66 integer FaxBack
ATTRIBUTE FB-Provisioning-Arg               67 string  FaxBack
ATTRIBUTE FB-Upload-Logs                    68 integer FaxBack
ATTRIBUTE FB-Msg-Type                       69 integer FaxBack
ATTRIBUTE FB-CDR-Type                       70 integer FaxBack
ATTRIBUTE FB-Description                    71 string  FaxBack
ATTRIBUTE FB-Related-Id                     72 string  FaxBack
ATTRIBUTE FB-Line-Num                       73 integer FaxBack
ATTRIBUTE FB-Line-Id                        74 string  FaxBack
ATTRIBUTE FB-DID                            75 string  FaxBack

# Values for FB-Command

VALUE FB-Command Get-Account                             1
VALUE FB-Command Get-Account-From-DID                    2
VALUE FB-Command Get-Account-From-Sender-Email-Address   3
VALUE FB-Command Get-Load-Balance-Group-Members          4
VALUE FB-Command Get-Call-Ahead-Mode                     5
VALUE FB-Command Get-Account-From-Serial-Number          6
VALUE FB-Command Get-Account-From-MAC-Address            7
VALUE FB-Command Get-DID                                 8
VALUE FB-Command Get-DIDs-For-Account                    9

# Values for FB-Context

VALUE FB-Context Account-Login       1
VALUE FB-Context Account-Validate    2
VALUE FB-Context Pre-Send-Session    3
VALUE FB-Context Pre-Receive-Session 4
VALUE FB-Context For-External-Module 5

# Values for FB-Account-Type

VALUE FB-Account-Type Private                                0
VALUE FB-Account-Type Shared-Send-Only                       1
VALUE FB-Account-Type Private-Queue-Transfer-Type            4
VALUE FB-Account-Type Shared-Send-Only-Queue-Transfer-Type  5
VALUE FB-Account-Type Load-Balance-Group-Alternating        8
VALUE FB-Account-Type Load-Balance-Group-Most-Free          9
VALUE FB-Account-Type Load-Balance-Group-Random             10

# Values for FB-Transfer-Type

VALUE FB-Transfer-Type Any      0
VALUE FB-Transfer-Type Realtime 1
VALUE FB-Transfer-Type Queue    2
```

```
# Values for FB-Rcv-Format

VALUE FB-Rcv-Format TIFF 0
VALUE FB-Rcv-Format PDF  1


# Values for FB-Save-CDR

VALUE FB-Save-CDR False 0
VALUE FB-Save-CDR True  1


# Values for FB-Snd-From-Account

VALUE FB-Snd-From-Account False 0
VALUE FB-Snd-From-Account True  1


# Values for FB-Rcv-To-Account

VALUE FB-Rcv-To-Account False 0
VALUE FB-Rcv-To-Account True  1


# Values for FB-Rcv-Failover-Mode

VALUE FB-Rcv-Failover-Mode As-Needed                 0
VALUE FB-Rcv-Failover-Mode Always                    1
VALUE FB-Rcv-Failover-Mode Load-Balance-Group-Member 2


# Values for FB-DID-Enabled

VALUE FB-DID-Enabled False 0
VALUE FB-DID-Enabled True  1


# Values for FB-Is-Send

VALUE FB-Is-Send False 0
VALUE FB-Is-Send True  1


# Values for FB-Snd-Time-Expired

VALUE FB-Snd-Time-Expired False 0
VALUE FB-Snd-Time-Expired True  1


# Values for FB-Rcv-Time-Expired

VALUE FB-Rcv-Time-Expired False 0
VALUE FB-Rcv-Time-Expired True  1


# Values for FB-Called-Number-Result

VALUE FB-Called-Number-Result Success    0
VALUE FB-Called-Number-Result FaxError   1
VALUE FB-Called-Number-Result VoiceError 2


# Values for FB-Upload-Logs

VALUE FB-Upload-Logs Never              0
VALUE FB-Upload-Logs After-Errors       1
```

```
VALUE FB-Upload-Logs After-All-Sessions 2

# Values for FB-Msg-Type

VALUE FB-Msg-Type Message           0
VALUE FB-Msg-Type SuccessNotification 1
VALUE FB-Msg-Type FailureNotification 2

# Values for FB-CDR-Type

VALUE FB-CDR-Type Realtime          0
VALUE FB-CDR-Type Status            1
VALUE FB-CDR-Type SendFromClient    2
VALUE FB-CDR-Type ReceiveToClient   3
VALUE FB-CDR-Type Deleted           4
VALUE FB-CDR-Type Copied            5
VALUE FB-CDR-Type SendStageCompleted 6
```