APPENDIX B

RADIUS Attributes

The Cisco Secure Access Control Server Release 4.2, hereafter referred to as ACS, supports many Remote Access Dial-In User Service (RADIUS) attributes. This appendix lists the standard attributes, vendor-proprietary attributes, and vendor-specific attributes that ACS supports.

This appendix contains:

Before Using RADIUS Attributes

You can enable different attribute-value (AV) pairs for Internet Engineering Task Force (IETF) RADIUS and any supported vendor. For outbound attributes, you can configure the attributes that are sent and their content by using the ACS web interface. The RADIUS attributes that are sent to authentication, authorization, and accounting (AAA) clients in access-accept messages are user specific.

To configure a specific attribute to be sent for a user, you must ensure that:

1. In the Network Configuration section, you must configure the AAA client entry corresponding to the access device that grants network access to the user to use a variety of RADIUS that supports the attribute that you want sent to the AAA client. For more information about the RADIUS attribute sets that RADIUS varieties support, see Displaying TACACS+ Configuration Options, page 2-6.

2. In the Interface Configuration section, you must enable the attribute so that it appears on user or user group profile pages. You can enable attributes on the page corresponding to the RADIUS variety that supports the attribute. For example, IETF RADIUS Session-Timeout attribute (27) appears on the RADIUS (IETF) page.

Note By default, per-user RADIUS attributes are not enabled (they do not appear in the Interface Configuration page). Before you can enable attributes on a per-user basis, you must enable the **Per-user TACACS+/RADIUS Attributes** option on the Advanced Options page in the Interface Configuration section. After enabling per-user attributes, a user column will appear as disabled in the Interface Configuration page for that attribute.

3. In the profile that you use to control authorizations for the user— in the user or group edit pages or Shared RADIUS Authorization Component page—you must enable the attribute. Enabling this attribute causes ACS to send the attribute to the AAA client in the access-accept message. In the options that are associated with the attribute, you can determine the value of the attribute that is sent to the AAA client.

Note Settings in a user profile override settings in a group profile. For example, if you configure Session-Timeout in the user profile and also in the group to which the user is assigned, ACS sends the AAA client the Session-Timeout value that is specified in the user profile. If Network Access Profiles (NAPs) are being used, it is possible that attributes from Shared RADIUS Authorization Components may be included in the access-accept response. For a discussion about the interaction among group, user, and Shared Radius Authorization Components (SRAC) attributes, see Merging Attributes, page 14-35.

Cisco IOS Dictionary of RADIUS IETF

ACS supports Cisco RADIUS IETF (IOS RADIUS AV pairs). Before selecting AV pairs for ACS, you must confirm that your AAA client is a compatible release of Cisco IOS or compatible AAA client software. For more information, see the *Installation Guide for Cisco Secure ACS for Windows Release 4.2* or the *Installation Guide for Cisco Secure ACS Solution Engine Release 4.2* for information about network and port requirements.

Note If you specify a given AV pair on ACS, the corresponding AV pair must be implemented in the Cisco IOS software that is running on the network device. Always consider which AV pairs your Cisco IOS release supports. If ACS sends an AV pair that the Cisco IOS software does not support, the attribute is not implemented.

Note Because IP pools and callback supersede them, the following RADIUS attributes do not appear on the Group Setup page:

Number	Name
8	Framed-IP-Address
19	Callback-Number
218	Ascend-Assign-IP-Pool

None of these attributes can be set via Relational Database Management System (RDBMS) Synchronization.

Table B-1 lists the supported Cisco IOS RADIUS AV pairs.

Table B-1 Cisco IOS Software RADIUS AV Pairs

Number	Attribute	Type of Value	Inbound/Outbound	Multiple
1	User-Name	String	Inbound	No
2	User-Password	String	Outbound	No
3	CHAP-Password	String	Outbound	No
4	NAS-IP Address	Ipaddr	Inbound	No
5	NAS-Port	Integer	Inbound	No
6	Service-Type	Integer	Both	No
7	Framed-Protocol	Integer	Both	No
9	Framed-IP-Netmask	Ipaddr (maximum length 15 characters)	Outbound	No
10	Framed-Routing	Integer	Outbound	No
11	Filter-Id	String	Outbound	Yes
12	Framed-MTU	Integer (maximum length 10 characters)	Outbound	No
13	Framed-Compression	Integer	Outbound	Yes
14	Login-IP-Host	Ipaddr (maximum length 15 characters)	Both	Yes
15	Login-Service	Integer	Both	No
16	Login-TCP-Port	Integer (maximum length 10 characters)	Outbound	No
18	Reply-Message	String	Outbound	Yes
21	Expiration	Date	—	—
22	Framed-Route	String	Outbound	Yes
24	State	String (maximum length 253 characters)	Outbound	No
25	Class	String	Outbound	Yes
26	Vendor specific	String	Outbound	Yes
27	Session-Timeout	Integer (maximum length 10 characters)	Outbound	No
28	Idle-Timeout	Integer (maximum length 10 characters)	Outbound	No
30	Called-Station-ID	String	Inbound	No

Table B-1 Cisco IOS Software RADIUS AV Pairs (continued)

Number	Attribute	Type of Value	Inbound/Outbound	Multiple
31	Calling-Station-ID	String	Inbound	No
33	Login-LAT-Service	String (maximum length 253 characters)	Inbound	No
40	Acct-Status-Type	Integer	Inbound	No
41	Acct-Delay-Time	Integer	Inbound	No
42	Acct-Input-Octets	Integer	Inbound	No
43	Acct-Output-Octets	Integer	Inbound	No
44	Acct-Session-ID	String	Inbound	No
45	Acct-Authentic	Integer	Inbound	No
46	Acct-Session-Time	Integer	Inbound	No
47	Acct-Input-Packets	Integer	Inbound	No
48	Acct-Output-Packets	Integer	Inbound	No
49	Acct-Terminate-Cause	Integer	Inbound	No
61	NAS-Port-Type	Integer	Inbound	No
62	NAS-Port-Limit	Integer (maximum length 10 characters)	Both	No

Cisco IOS/PIX 6.0 Dictionary of RADIUS VSAs

ACS supports Cisco IOS/PIX 6.0 vendor-specific attributes (VSAs). The vendor ID for this Cisco RADIUS Implementation is 9.

Table B-2 lists the supported Cisco IOS/PIX 6.0 RADIUS VSAs.

Note For a discussion of the Cisco IOS/PIX 6.0 RADIUS `cisco-av-pair` attribute, see About the cisco-av-pair RADIUS Attribute, page B-5.

Note For details about the Cisco IOS H.323 VSAs, refer to Cisco IOS Voice-over-IP (VoIP) documentation.

Note For details about the Cisco IOS Node Route Processor-Service Selection Gateway VSAs (VSAs 250, 251, and 252), refer to Cisco IOS documentation.

Table B-2 Cisco IOS/PIX 6.0 RADIUS VSAs

Number	Attribute	Type of Value	Inbound/Outbound	Multiple
1	cisco-av-pair	String	Both	Yes
2	cisco-nas-port	String	Inbound	No
23	cisco-h323-remote-address	String	Inbound	No
24	cisco-h323-conf-id	String	Inbound	No

Table B-2 Cisco IOS/PIX 6.0 RADIUS VSAs (continued)

Number	Attribute	Type of Value	Inbound/Outbound	Multiple
25	cisco-h323-setup-time	String	Inbound	No
26	cisco-h323-call-origin	String	Inbound	No
27	cisco-h323-call-type	String	Inbound	No
28	cisco-h323-connect-time	String	Inbound	No
29	cisco-h323-disconnect-time	String	Inbound	No
30	cisco-h323-disconnect-cause	String	Inbound	No
31	cisco-h323-voice-quality	String	Inbound	No
33	cisco-h323-gw-id	String	Inbound	No
35	cisco-h323-incoming-conn-id	String	Inbound	No
101	cisco-h323-credit-amount	String (maximum length 247 characters)	Outbound	No
102	cisco-h323-credit-time	String (maximum length 247 characters)	Outbound	No
103	cisco-h323-return-code	String (maximum length 247 characters)	Outbound	No
104	cisco-h323-prompt-id	String (maximum length 247 characters)	Outbound	No
105	cisco-h323-day-and-time	String (maximum length 247 characters)	Outbound	No
106	cisco-h323-redirect-number	String (maximum length 247 characters)	Outbound	No
107	cisco-h323-preferred-lang	String (maximum length 247 characters)	Outbound	No
108	cisco-h323-redirect-ip-addr	String (maximum length 247 characters)	Outbound	No
109	cisco-h323-billing-model	String (maximum length 247 characters)	Outbound	No
110	cisco-h323-currency	String (maximum length 247 characters)	Outbound	No
250	cisco-ssg-account-info	String (maximum length 247 characters)	Outbound	No
251	cisco-ssg-service-info	String (maximum length 247 characters)	Both	No
253	cisco-ssg-control-info	String (maximum length 247 characters)	Both	No

About the cisco-av-pair RADIUS Attribute

The first attribute in the Cisco IOS/PIX 6.0 RADIUS implementation, `cisco-av-pair`, supports the inclusion of many AV pairs by using the following format:

attribute sep value

where *attribute* and *value* are an AV pair supported by the releases of IOS implemented on your AAA clients, and *sep* is **=** for mandatory attributes and asterisk (*) for optional attributes. You can then use the full set of Terminal Access Controller Access Control System (TACACS+) authorization features for RADIUS.

Note The attribute name in an AV pair is case sensitive. Typically, attribute names are all in lowercase letters.

The following is an example of two AV pairs included in a single Cisco IOS/PIX 6.0 RADIUS `cisco-av-pair` attribute:

```
ip:addr-pool=first
shell:priv-lvl=15
```

The first example activates the Cisco multiple named IP address pools feature during IP authorization (during PPP IPCP address assignment). The second example immediately grants access to a user of a device-hosted administrative session to **EXEC** commands.

In IOS, support for Network Admission Control (NAC) includes the use of the following AV pairs:

- **url-redirect**—Enables the AAA client to intercept an HTTP request and redirect it to a new URL. This pair is especially useful if the result of posture validation indicates that the NAC-client computer requires an update or patch that you have made available on a remediation web server. For example, a user can be redirected to a remediation web server to download and apply a new virus DAT file or an operating system patch. For example:

  ```
  url-redirect=http://10.1.1.1
  ```

- **posture-token**—Enables ACS to send a text version of a system posture token (SPT) derived by posture validation. The SPT is always sent in numeric format and using the posture-token AV pair renders the result of a posture validation request more easily read on the AAA client. For example:

  ```
  posture-token=Healthy
  ```

Caution The posture-token AV pair is the only way that ACS notifies the AAA client of the SPT that posture validation returns. Because you manually configure the posture-token AV pair, errors in configuring the posture-token can cause the incorrect system posture token to be sent to the AAA client or; if the AV pair name is mistyped, the AAA client will not receive the system posture token at all.

For a list of valid SPTs, see Posture Tokens, page 13-3.

- **status-query-timeout**—Overrides the status-query default value of the AAA client with the value that you specify, in seconds. For example:

  ```
  status-query-timeout=150
  ```

For more information about AV pairs that IOS supports, refer to the documentation for the releases of IOS implemented on your AAA clients.

Cisco VPN 3000 Concentrator/ASA/PIX 7.x+ Dictionary of RADIUS VSAs

ACS supports Cisco VPN 3000/ASA/PIX 7.x+ RADIUS VSAs. The vendor ID for this Cisco RADIUS Implementation is 3076.

Note Some of the RADIUS VSAs supported by Cisco virtual private network (VPN) 3000 Concentrators, Adaptive Security Appliance (ASA), and Project Information Exchange (PIX) 7.x+ appliances are interdependent. Before you implement them, we recommend that you refer to your respective device documentation.

For example, to control Microsoft Point-to-Point Encryption (MPPE) settings for users accessing the network through a Cisco VPN 3000-series concentrator, use the CVPN3000-PPTP-Encryption (VSA 20) and CVPN3000-L2TP-Encryption (VSA 21) attributes. Settings for CVPN3000-PPTP-Encryption (VSA 20) and CVPN3000-L2TP-Encryption (VSA 21) override Microsoft MPPE RADIUS settings. If either of these attributes is enabled, ACS determines the values to be sent in outbound RADIUS (Microsoft) attributes and sends them along with the RADIUS (Cisco VPN 3000/ASA/PIX 7.x+) attributes, regardless of whether RADIUS (Microsoft) attributes are enabled in the ACS web interface or how those attributes might be configured.

Table B-3 lists the supported Cisco VPN 3000 Concentrator RADIUS VSAs.

Table B-3 Cisco VPN 3000 Concentrator /ASA/PIX 7.x+ RADIUS VSAs

Number	Attribute	Type of Value	Inbound/Outbound	Multiple
1	CVPN3000-Access-Hours	String (maximum length 247 characters)	Outbound	No
2	CVPN3000-Simultaneous-Logins	Integer (maximum length 10 characters)	Outbound	No
5	CVPN3000-Primary-DNS	Ipaddr (maximum length 15 characters)	Outbound	No
6	CVPN3000-Secondary-DNS	Ipaddr (maximum length 15 characters)	Outbound	No
7	CVPN3000-Primary-WINS	Ipaddr (maximum length 15 characters)	Outbound	No
8	CVPN3000-Secondary-WINS	Ipaddr (maximum length 15 characters)	Outbound	No
9	CVPN3000-SEP-Card-Assignment	Integer	Outbound	No
11	CVPN3000-Tunneling-Protocols	Integer	Outbound	No
12	CVPN3000-IPSec-Sec-Association	String (maximum length 247 characters)	Outbound	No
13	CVPN3000-IPSec-Authentication	Integer	Outbound	No
15	CVPN3000-IPSec-Banner1	String (maximum length 247 characters)	Outbound	No
16	CVPN3000-IPSec-Allow-Passwd-Store	Integer	Outbound	No
17	CVPN3000-Use-Client-Address	Integer	Outbound	No
20	CVPN3000-PPTP-Encryption	Integer	Outbound	No
21	CVPN3000-L2TP-Encryption	Integer	Outbound	No
27	CVPN3000-IPSec-Split-Tunnel-List	String (maximum length 247 characters)	Outbound	No
28	CVPN3000-IPSec-Default-Domain	String (maximum length 247 characters)	Outbound	No
29	CVPN3000-IPSec-Split-DNS-Names	String (maximum length 247 characters)	Outbound	No
30	CVPN3000-IPSec-Tunnel-Type	Integer	Outbound	No
31	CVPN3000-IPSec-Mode-Config	Integer	Outbound	No
33	CVPN3000-IPSec-User-Group-Lock	Integer	Outbound	No
34	CVPN3000-IPSec-Over-UDP	Integer	Outbound	No
35	CVPN3000-IPSec-Over-UDP-Port	Integer (maximum length 10 characters)	Outbound	No
36	CVPN3000-IPSec-Banner2	String (maximum length 247 characters)	Outbound	No
37	CVPN3000-PPTP-MPPC-Compression	Integer	Outbound	No
38	CVPN3000-L2TP-MPPC-Compression	Integer	Outbound	No
39	CVPN3000-IPSec-IP-Compression	Integer	Outbound	No
40	CVPN3000-IPSec-IKE-Peer-ID-Check	Integer	Outbound	No
41	CVPN3000-IKE-Keep-Alives	Integer	Outbound	No

Table B-3 Cisco VPN 3000 Concentrator /ASA/PIX 7.x+ RADIUS VSAs (continued)

Number	Attribute	Type of Value	Inbound/Outbound	Multiple
42	CVPN3000-IPSec-Auth-On-Rekey	Integer	Outbound	No
45	CVPN3000-Required-Client-Firewall-Vendor-Code	Integer (maximum length 10 characters)	Outbound	No
46	CVPN3000-Required-Client-Firewall-Product-Code	Integer (maximum length 10 characters)	Outbound	No
47	CVPN3000-Required-Client-Firewall-Description	String (maximum length 247 characters)	Outbound	No
48	CVPN3000-Require-HW-Client-Auth	Integer	Outbound	No
49	CVPN3000-Require-Individual-User-Auth	Integer	Outbound	No
50	CVPN3000-Authenticated-User-Idle-Timeout	Integer (maximum length 10 characters)	Outbound	No
51	CVPN3000-Cisco-IP-Phone-Bypass	Integer	Outbound	No
52	CVPN3000-User-Auth-Server-Name	String (maximum length 247 characters)	Outbound	No
53	CVPN3000-User-Auth-Server-Port	Integer (maximum length 10 characters)	Outbound	No
54	CVPN3000-User-Auth-Server-Secret	String (maximum length 247 characters)	Outbound	No
55	CVPN3000-IPSec-Split-Tunneling-Policy	Integer	Outbound	No
56	CVPN3000-IPSec-Required-Client-Firewall-Capability	Integer	Outbound	No
57	CVPN3000-IPSec-Client-Firewall-Filter-Name	String (maximum length 247 characters)	Outbound	No
58	CVPN3000-IPSec-Client-Firewall-Filter-Optional	Integer	Outbound	No
59	CVPN3000-IPSec-Backup-Servers	Integer	Outbound	No
60	CVPN3000-IPSec-Backup-Server-List	String (maximum length 247 characters)	Outbound	No
62	CVPN3000-MS-Client-Intercept-DHCP-Configure-Message	Integer	Outbound	No
63	CVPN3000-MS-Client-Subnet-Mask	Ipaddr (maximum length 15 characters)	Outbound	No
64	CVPN3000-Allow-Network-Extension-Mode	Integer	Outbound	No
65	Authorization-Type	Integer	Outbound	No
66	Authorization-Required	Integer	Outbound	No
67	Authorization-DN-Field	String	Outbound	No
68	IKE-Keepalive-Confidence-Interval	Integer	Outbound	No
69	WebVPN-Content-Filter-Parameters	Integer	Outbound	No
75	Cisco-LEAP-Bypass	Integer	Outbound	No
77	Client-Type-Version-Limiting	String	Outbound	No
79	WebVPN-Port-Forwarding-Name	String	Outbound	No

Table B-3 Cisco VPN 3000 Concentrator /ASA/PIX 7.x+ RADIUS VSAs (continued)

Number	Attribute	Type of Value	Inbound/Outbound	Multiple
80	IE-Proxy-Server	String	Outbound	No
81	IE-Proxy-Server-Policy	Integer	Outbound	No
82	IE-Proxy-Exception-List	String	Outbound	No
83	IE-Proxy-Bypass-Local	Integer	Outbound	No
84	IKE-Keepalive-Retry-Interval	Integer	Outbound	No
85	Tunnel-Group-Lock	String	Outbound	No
86	Access-List-Inbound	String	Outbound	No
87	Access-List-Outbound	String	Outbound	No
88	Perfect-Forward-Secrecy-Enable	Integer	Outbound	No
89	NAC-Enable	Integer	Outbound	No
90	NAC-Status-Query-Timer	Integer	Outbound	No
91	NAC-Revalidation-Timer	Integer	Outbound	No
92	NAC-Default-ACL	Integer	Outbound	No
93	WebVPN-URL-Entry-Enable	Integer	Outbound	No
94	WebVPN-File-Access-Enable	Integer	Outbound	No
95	WebVPN-File-Server-Entry-Enable	Integer	Outbound	No
96	WebVPN-File-Server-Browsing-Enable	Integer	Outbound	No
97	WebVPN-Port-Forwarding-Enable	Integer	Outbound	No
98	WebVPN-Outlook-Exchange-Proxy-Enable	Integer	Outbound	No
98	WebVPN-Port-Forwarding-HTTP-Proxy	Integer	Outbound	No
99	WebVPN-Outlook-Exchange-Proxy-Enable	Integer	Outbound	No
100	WebVPN-Auto-Applet-Download-Enable	Integer	Outbound	No
101	WebVPN-Citrix-MetaFrame-Enable	Integer	Outbound	No
102	WebVPN-Apply-ACL	Integer	Outbound	No
103	WebVPN-SSL-VPN-Client-Enable	Integer	Outbound	No
104	WebVPN-SSL-VPN-Client-Required	Integer	Outbound	No
105	WebVPN-SSL-VPN-Client-Keep-Installation	Integer	Outbound	No
135	CVPN3000-Strip-Realm	Integer	Outbound	No

Cisco VPN 5000 Concentrator Dictionary of RADIUS VSAs

ACS supports the Cisco VPN 5000 RADIUS VSAs. The vendor ID for this Cisco RADIUS Implementation is 255. Table B-4 lists the supported Cisco VPN 5000 Concentrator RADIUS VSAs.

Table B-4 Cisco VPN 5000 Concentrator RADIUS VSAs

Number	Attribute	Type of Value	Inbound/Outbound	Multiple
001	CVPN5000-Tunnel-Throughput	Integer	Inbound	No
002	CVPN5000-Client-Assigned-IP	String	Inbound	No
003	CVPN5000-Client-Real-IP	String	Inbound	No
004	CVPN5000-VPN-GroupInfo	String (maximum length 247 characters)	Outbound	No
005	CVPN5000-VPN-Password	String (maximum length 247 characters)	Outbound	No
006	CVPN5000-Echo	Integer	Inbound	No
007	CVPN5000-Client-Assigned-IPX	Integer	Inbound	No

Cisco Building Broadband Service Manager Dictionary of RADIUS VSA

ACS supports a Cisco Building Broadband Service Manager (BBSM) RADIUS VSA. The vendor ID for this Cisco RADIUS Implementation is 5263.

Table B-5 lists the supported Cisco BBSM RADIUS VSA.

Table B-5 Cisco BBSM RADIUS VSA

Number	Attribute	Type of Value	Inbound/Outbound	Multiple
001	CBBSM-Bandwidth	Integer	Both	No

Cisco Airespace Dictionary of RADIUS VSA

Table B-6 lists the supported RADIUS (Cisco Airespace) attributes. In addition to these attributes, Cisco Airespace devices support some IETF attributes for 802.1x identity networking:

- Tunnel-Type (64)
- Tunnel-Medium-Type (65)
- Tunnel-Private-Group-Id (81)

ACS cannot offer partial support of IETF; hence, adding an Cisco Airespace device (into the Network Configuration) will automatically enable all IETF attributes.

Table B-6 Cisco Airespace RADIUS Attributes

Number	Name	Description	Type of Value	Inbound/Outbound	Multiple
1	Aire-WLAN-Id	Name of the user being authenticated.	Integer	Outbound	No
2	Aire-QoS-Level	Enumerations: 0: Bronze 1: Silver 2: Gold 3: Platinum 4: Uranium	Integer	Outbound	No
3	Aire-DSCP	—	Integer	Outbound	No
4	Aire-802.1P-Tag	—	Integer	Outbound	No
5	Aire-Interface-Name	—	String	Outbound	No
6	Aire-ACL-Name	—	String	Outbound	No

IETF Dictionary of RADIUS IETF (AV Pairs)

Table B-7 lists the supported RADIUS (IETF) attributes. If the attribute has a security server-specific format, the format is specified.

Table B-7 RADIUS (IETF) Attributes

Number	Name	Description	Type of Value	Inbound/Outbound	Multiple
1	User-Name	Name of the user being authenticated.	String	Inbound	No
2	User-Password	User password or input following an access challenge. Passwords longer than 16 characters are encrypted by using IETF Draft #2 or later specifications.	String	Outbound	No
3	CHAP-Password	PPP (Point-to-Point Protocol) Challenge Handshake Authentication Protocol (CHAP) response to an Access-Challenge.	String	Outbound	No
4	NAS-IP Address	IP address of the AAA client that is requesting authentication.	Ipaddr	Inbound	No

Table B-7 RADIUS (IETF) Attributes (continued)

Number	Name	Description	Type of Value	Inbound/Outbound	Multiple
5	NAS-Port	Physical port number of the AAA client that is authenticating the user. The AAA client port value (32 bits) comprises one or two 16-bit values, depending on the setting of the RADIUS server extended **portnames** command. Each 16-bit number is a 5-digit decimal integer interpreted as: • Asynchronous terminal lines, async network interfaces, and virtual async interfaces, the value is `00`*ttt*, where *ttt* is the line number or async interface unit number. • Ordinary synchronous network interfaces, the value is `10xxx`. • Channels on a primary-rate ISDN (Integrated Services Digital Network) interface, the value is `2ppcc`. • Channels on a basic rate ISDN interface, the value is `3bb0c`. • Other types of interfaces, the value is `6nnss`.	Integer	Inbound	No
6	Service-Type	Type of service requested or type of service to be provided: • In a request: – **Framed**—For a known Point-to-Point Protocol (PPP) or Serial Line Internet Protocol (SLIP) connection. – **Administrative User**—For **enable** command. • In a response: – **Login**—Make a connection. – **Framed**—Start SLIP or PPP. – **Administrative User**—Start an EXEC or **enable ok**. – **Exec User**—Start an EXEC session.	Integer	Both	No
7	Framed-Protocol	Framing to be used for framed access.	Integer	Both	No
8	Framed-IP-Address	Address to be configured for the user.	—	—	—
9	Framed-IP-Netmask	IP netmask to be configured for the user when the user is a router to a network. This AV causes a static route to be added for Framed-IP-Address with the mask specified.	Ipaddr (maximum length 15 characters)	Outbound	No

Table B-7 RADIUS (IETF) Attributes (continued)

Number	Name	Description	Type of Value	Inbound/Outbound	Multiple
10	Framed-Routing	Routing method for the user when the user is a router to a network. Only None and Send and Listen values are supported for this attribute.	Integer	Outbound	No
11	Filter-Id	Name of the filter list for the user, formatted: *%d*, *%d.in*, or *%d.out*. This attribute is associated with the most recent service-type command. For **login** and **EXEC**, use *%d* or *%d.out* as the line access list value from 0 to 199. For Framed service, use *%d* or *%d.out* as interface output access list and *%d.in* for input access list. The numbers are self-encoding to the protocol to which they refer.	String	Outbound	Yes
12	Framed-MTU	Indicates the maximum transmission unit (MTU) that you can configure for the user when the MTU is not negotiated by PPP or some other means.	Integer (maximum length 10 characters)	Outbound	No
13	Framed-Compression	Compression protocol used for the link. This attribute results in **/compress** being added to the PPP or SLIP autocommand generated during EXEC authorization. Not currently implemented for non-EXEC authorization.	Integer	Outbound	Yes
14	Login-IP-Host	Host to which the user will connect when the `Login-Service` attribute is included.	Ipaddr (maximum length 15 characters)	Both	Yes
15	Login-Service	Service that you should use to connect the user to the login host. Service is indicated by a numeric value: 0: Telnet 1: Rlogin 2: TCP-Clear 3: PortMaster 4: LAT	Integer	Both	No
16	Login-TCP-Port	Transmission Control Protocol (TCP) port with which to connect the user when the Login-Service attribute is also present.	Integer (maximum length 10 characters)	Outbound	No
18	Reply-Message	Text that the user will see.	String	Outbound	Yes
19	Callback-Number	—	String	Outbound	No
20	Callback-Id	—	String	Outbound	No

Table B-7 RADIUS (IETF) Attributes (continued)

Number	Name	Description	Type of Value	Inbound/Outbound	Multiple
22	Framed-Route	Routing information to configure for the user on this AAA client. The RADIUS RFC (Request for Comments) format (net/bits [router [metric]]) and the old style dotted mask (net mask [router [metric]]) are supported. If the router field is omitted or zero (0), the peer IP address is used. Metrics are ignored.	String	Outbound	Yes
23	Framed-IPX-Network	—	Integer	Outbound	No
24	State	Allows State information to be maintained between the AAA client and the RADIUS server. This attribute is applicable only to CHAP challenges.	String (maximum length 253 characters)	Outbound	No
25	Class	Arbitrary value that the AAA client includes in all accounting packets for this user if supplied by the RADIUS server.	String	Both	Yes
26	Vendor-Specific	Carries subattributes known as vendor-specific attributes (VSAs), a feature of RADIUS that allows vendors to support their own extended attributes. Subattributes are identified by IANA-assigned vendor numbers in combination with the vendor-assigned subattribute number. For example, the vendor number for Cisco IOS/PIX 6.0 RADIUS is 9. The `cisco-av-pair` VSA is attribute 1 in the set of VSAs related to vendor number 9.	String	Outbound	Yes
27	Session-Timeout	Maximum number of seconds of service to provide to the user before the session terminates. This AV becomes the per-user absolute timeout. This attribute is not valid for PPP sessions.	Integer (maximum length 10 characters)	Outbound	No
28	Idle-Timeout	Maximum number of consecutive seconds of idle connection time that the user is allowed before the session terminates. This AV becomes the per-user session-timeout. This attribute is not valid for PPP sessions.	Integer (maximum length 10 characters)	Outbound	No
29	Termination-Action	Indicates what action the NAS should take when the specified service is completed. It is only used in Access-Accept packets. If the Value is set to RADIUS-Request (1), upon termination of the specified service, the NAS may send a new Access-Request to the RADIUS server, including the State attribute if any.	Integer	Both	No
30	Called-Station-Id	Allows the AAA client to send the telephone number or other information identifying the AAA client as part of the access-request packet by using automatic number identification or similar technology. Different devices provide different identifiers.	String	Inbound	No

Table B-7 RADIUS (IETF) Attributes (continued)

Number	Name	Description	Type of Value	Inbound/Outbound	Multiple
31	Calling-Station-Id	Allows the AAA client to send the telephone number or other information identifying the end-user client as part of the access-request packet by using Dialed Number Identification Server (DNIS) or similar technology. For example, Cisco Aironet Access Points usually send the MAC address of the end-user client.	String	Inbound	No
32	NAS-Identifier	—	String	Inbound	No
33	Proxy-State	Included in proxied RADIUS requests per RADIUS standards. The operation of ACS does not depend on the contents of this attribute.	String (maximum length 253 characters)	Inbound	No
34	Login-LAT-Service	System with which the local area transport (LAT) protocol connects the user. This attribute is only available in the EXEC mode.	String (maximum length 253 characters)	Inbound	No
35	Login-LAT-Node	—	String	Inbound	No
36	Login-LAT-Group	—	String	Inbound	No
37	Framed-AppleTalk-Link	—	Integer	Outbound	No
38	Framed-AppleTalk-Network	—	Integer	Outbound	Yes
39	Framed-AppleTalk-Zone	—	String	Out	No
40	Acct-Status-Type	Specifies whether this accounting-request marks the beginning of the user service (start) or the end (stop).	Integer	Inbound	No
41	Acct-Delay-Time	Number of seconds the client has been trying to send a particular record.	Integer	Inbound	No
42	Acct-Input-Octets	Number of octets received from the port while this service is being provided.	Integer	Inbound	No
43	Acct-Output-Octets	Number of octets sent to the port while this service is being delivered.	Integer	Inbound	No
44	Acct-Session-Id	Unique accounting identifier that makes it easy to match start and stop records in a log file. The `Acct-Session-Id` restarts at 1 each time the router is power cycled or the software is reloaded. Contact Cisco support if this interval is unsuitable.	String	Inbound	No

Table B-7 RADIUS (IETF) Attributes (continued)

Number	Name	Description	Type of Value	Inbound/Outbound	Multiple
44	Acct-Authentic	Way in which the user was authenticated—by RADIUS, the AAA client itself, or another remote authentication protocol. This attribute is set to **radius** for users who are authenticated by RADIUS; to **remote** for TACACS+ and Kerberos; or to **local** for local, enable, line, and if-needed methods. For all other methods, the attribute is omitted.	Integer	Inbound	No
46	Acct-Session-Time	Number of seconds the user has been receiving service.	Integer	Inbound	No
47	Acct-Input-Packets	Number of packets received from the port while this service is being provided to a framed user.	Integer	Inbound	No
48	Acct-Output-Packets	Number of packets sent to the port while this service is being delivered to a framed user.	Integer	Inbound	No
49	Acct-Terminate-Cause	Reports details on why the connection was terminated. Termination causes are indicated by a numeric value: 1: User request 2: Lost carrier 3: Lost service 4: Idle timeout 5: Session-timeout 6: Admin reset 7: Admin reboot 8: Port error 9: AAA client error 10: AAA client request 11: AAA client reboot 12: Port unneeded 13: Port pre-empted 14: Port suspended 15: Service unavailable 16: Callback 17: User error 18: Host request	Integer	Inbound	No
50	Acct-Multi-Session-Id	—	String	Inbound	No
51	Acct-Link-Count	—	Integer	Inbound	No
52	Acct-Input-Gigawords	—	Integer	Inbound	No

Table B-7 RADIUS (IETF) Attributes (continued)

Number	Name	Description	Type of Value	Inbound/Outbound	Multiple
53	Acct-Output-Gigawords	—	Integer	Inbound	No
55	Event-Timestamp	—	Date	Inbound	No
60	CHAP-Challenge	—	String	Inbound	No
61	NAS-Port-Type	Indicates the type of physical port the AAA client is using to authenticate the user. Physical ports are indicated by a numeric value: 0: Asynchronous 1: Synchronous 2: ISDN-Synchronous 3: ISDN-Asynchronous (V.120) 4: ISDN- Asynchronous (V.110) 5: Virtual	Integer	Inbound	No
62	Port-Limit	Sets the maximum number of ports to be provided to the user by the network-access server.	Integer (maximum length 10 characters)	Both	No
63	Login-LAT-Port	—	String	Both	No
64	Tunnel-Type	—	Tagged integer	Both	Yes
65	Tunnel-Medium-Type	—	Tagged integer	Both	Yes
66	Tunnel-Client-Endpoint	—	Tagged string	Both	Yes
67	Tunnel-Server-Endpoint	—	Tagged string	Both	Yes
68	Acct-Tunnel-Connection	—	String	Inbound	No
69	Tunnel-Password	—	Tagged string	Both	Yes
70	ARAP-Password	—	String	Inbound	No
71	ARAP-Features	—	String	Outbound	No
72	ARAP-Zone-Access	—	Integer	Outbound	No

Table B-7 RADIUS (IETF) Attributes (continued)

Number	Name	Description	Type of Value	Inbound/Outbound	Multiple
73	ARAP-Security	—	Integer	Inbound	No
74	ARAP-Security-Data	—	String	Inbound	No
75	Password-Retry	—	Integer	Internal use only	No
76	Prompt	—	Integer	Internal use only	No
77	Connect-Info	—	String	Inbound	No
78	Configuration-Token	—	String	Internal use only	No
79	EAP-Message	—	String	Internal use only	No
80	Message-Authenticator	—	String	Outbound	No
81	Tunnel-Private-Group-ID	—	Tagged string	Both	Yes
82	Tunnel-Assignment-ID	—	Tagged string	Both	Yes
83	Tunnel-Preference	—	Tagged integer	Both	No
85	Acct-Interim-Interval	—	Integer	Outbound	No
87	NAS-Port-Id	—	String	Inbound	No
88	Framed-Pool	—	String	Internal use only	No
90	Tunnel-Client-Auth-ID	—	Tagged string	Both	Yes
91	Tunnel-Server-Auth-ID	—	Tagged string	Both	Yes
135	Primary-DNS-Server	—	Ipaddr	Both	No
136	Secondary-DNS-Server	—	Ipaddr	Both	No
187	Multilink-ID	—	Integer	Inbound	No
188	Num-In-Multilink	—	Integer	Inbound	No
190	Pre-Input-Octets	—	Integer	Inbound	No

Table B-7 RADIUS (IETF) Attributes (continued)

Number	Name	Description	Type of Value	Inbound/Outbound	Multiple
191	Pre-Output-Octets	—	Integer	Inbound	No
192	Pre-Input-Packets	—	Integer	Inbound	No
193	Pre-Output-Packets	—	Integer	Inbound	No
194	Maximum-Time	—	Integer	Both	No
195	Disconnect-Cause	—	Integer	Inbound	No
197	Data-Rate	—	Integer	Inbound	No
198	PreSession-Time	—	Integer	Inbound	No
208	PW-Lifetime	—	Integer	Outbound	No
209	IP-Direct	—	Ipaddr	Outbound	No
210	PPP-VJ-Slot-Comp	—	Integer	Outbound	No
218	Assign-IP-pool	—	Integer	Outbound	No
228	Route-IP	—	Integer	Outbound	No
233	Link-Compression	—	Integer	Outbound	No
234	Target-Utils	—	Integer	Outbound	No
235	Maximum-Channels	—	Integer	Outbound	No
242	Data-Filter	—	Ascend filter	Outbound	Yes
243	Call-Filter	—	Ascend filter	Outbound	Yes
244	Idle-Limit	—	Integer	Outbound	No

Microsoft MPPE Dictionary of RADIUS VSAs

ACS supports the Microsoft RADIUS VSAs used for MPPE. The vendor ID for this Microsoft RADIUS Implementation is 311. MPPE is an encryption technology developed by Microsoft to encrypt PPP links. These PPP connections can be via a dial-up line, or over a VPN tunnel such as PPTP. MPPE is supported by several RADIUS network device vendors that ACS supports. The following ACS RADIUS protocols support the Microsoft RADIUS VSAs:

- Cisco IOS/PIX 6.0
- Cisco VPN 3000/ASA/PIX 7.x+

- Ascend
- Cisco Airespace

To control Microsoft MPPE settings for users accessing the network through a Cisco VPN 3000-series concentrator, use the CVPN3000-PPTP-Encryption (VSA 20) and CVPN3000-L2TP-Encryption (VSA 21) attributes. Settings for CVPN3000-PPTP-Encryption (VSA 20) and CVPN3000-L2TP-Encryption (VSA 21) override Microsoft MPPE RADIUS settings. If either of these attributes is enabled, ACS determines the values to be sent in outbound RADIUS (Microsoft) attributes and sends them along with the RADIUS (Cisco VPN 3000/ASA/PIX 7.x+) attributes, regardless of whether RADIUS (Microsoft) attributes are enabled in the ACS web interface or how those attributes might be configured.

Table B-8 lists the supported MPPE RADIUS VSAs.

Table B-8 Microsoft MPPE RADIUS VSAs

Number	Attribute	Type of Value	Description	Inbound/ Outbound	Multiple
1	MS-CHAP-Response	String	—	Inbound	No
2	MS-CHAP-Error	String	—	Outbound	No
3	MS-CHAP-CPW-1	String	—	Inbound	No
4	MS-CHAP-CPW-2	String	—	Inbound	No
5	MS-CHAP-LM-Enc-PW	String	—	Inbound	No
6	MS-CHAP-NT-Enc-PW	String	—	Inbound	No
7	MS-MPPE-Encryption-Policy	Integer	The MS-MPPE-Encryption-Policy attribute signifies whether the use of encryption is allowed or required. If the Policy field is equal to 1 (Encryption-Allowed), you can use any or none of the encryption types specified in the MS-MPPE-Encryption-Types attribute. If the Policy field is equal to 2 (Encryption-Required), you can use any of the encryption types specified in the MS-MPPE-Encryption-Types attribute; but at least one must be used.	Outbound	No
8	MS-MPPE-Encryption-Types	Integer	The MS-MPPE-Encryption-Types attribute signifies the types of encryption available for use with MPPE. It is a four-octet integer that is interpreted as a string of bits.	Outbound	No
10	MS-CHAP-Domain	String	—	Inbound	No
11	MS-CHAP-Challenge	String	—	Inbound	No

Table B-8 Microsoft MPPE RADIUS VSAs (continued)

Number	Attribute	Type of Value	Description	Inbound/ Outbound	Multiple
12	MS-CHAP-MPPE-Keys	String	The MS-CHAP-MPPE-Keys attribute contains two session keys for use by the MPPE. This attribute is only included in Access-Accept packets. **Note** ACS auto generates the MS-CHAP-MPPE-Keys attribute value; there is no value to set in the web interface.	Outbound	No
16	MS-MPPE-Send-Key	String (maximum length 240 characters)	The MS-MPPE-Send-Key attribute contains a session key for use by MPPE. This key is for encrypting packets sent from the AAA client to the remote host. This attribute is only included in Access-Accept packets.	Outbound	No
17	MS-MPPE-Recv-Key	String (maximum length 240 characters)	The MS-MPPE-Recv-Key attribute contains a session key for use by MPPE. This key is for encrypting packets that the AAA client from the remote host receives. This attribute is only included in Access-Accept packets.	Outbound	No
18	MS-RAS-Version	String	—	Inbound	No
25	MS-CHAP-NT-Enc-PW	String	—	Inbound	No
26	MS-CHAP2-Response	String	—	Outbound	No
27	MS-CHAP2-CPW	String	—	Inbound	No

Ascend Dictionary of RADIUS AV Pairs

ACS supports the Ascend RADIUS AV pairs. Table B-9 contains Ascend RADIUS dictionary translations for parsing requests and generating responses. All transactions comprise AV pairs. The value of each attribute is specified as:

- **string**—0-253 octets.
- **abinary**—0-254 octets.
- **ipaddr**—4 octets in network byte order.
- **integer**—32-bit value in big endian order (high byte first).
- **call filter**—Defines a call filter for the profile.

Note RADIUS filters are retrieved only when a call is placed by using a RADIUS outgoing profile or answered by using a RADIUS incoming profile. Filter entries are applied in the order in which they are entered. If you change a filter in an Ascend RADIUS profile, the changes do not take effect until a call uses that profile.

- **date**—32-bit value in big-endian order. For example, seconds since 00:00:00 universal time (UT), January 1, 1970.

- **enum**—Enumerated values are stored in the user file with dictionary value translations for easy administration.

Table B-9 Ascend RADIUS Attributes

Number	Attribute	Type of Value	Inbound/ Outbound	Multiple
Dictionary of Ascend Attributes				
1	User-Name	String	Inbound	No
2	User-Password	String	Outbound	No
3	CHAP-Password	String	Outbound	No
4	NAS-IP-Address	Ipaddr	Inbound	No
5	NAS-Port	Integer	Inbound	No
6	Service-Type	Integer	Both	No
7	Framed-Protocol	Integer	Both	No
8	Framed-IP-Address	Ipaddr	Both	No
9	Framed-IP-Netmask	Ipaddr	Outbound	No
10	Framed-Routing	Integer	Outbound	No
11	Framed-Filter	String	Outbound	Yes
12	Framed-MTU	Integer	Outbound	No
13	Framed-Compression	Integer	Outbound	Yes
14	Login-IP-Host	Ipaddr	Both	Yes
15	Login-Service	Integer	Both	No
16	Login-TCP-Port	Integer	Outbound	No
17	Change-Password	String	—	—
18	Reply-Message	String	Outbound	Yes
19	Callback-ID	String	Outbound	No
20	Callback-Name	String	Outbound	No
22	Framed-Route	String	Outbound	Yes
23	Framed-IPX-Network	Integer	Outbound	No
24	State	String	Outbound	No
25	Class	String	Outbound	Yes
26	Vendor-Specific	String	Outbound	Yes
30	Call-Station-ID	String	Inbound	No
31	Calling-Station-ID	String	Inbound	No
40	Acct-Status-Type	Integer	Inbound	No
41	Acct-Delay-Time	Integer	Inbound	No
42	Acct-Input-Octets	Integer	Inbound	No
43	Acct-Output-Octets	Integer	Inbound	No
44	Acct-Session-Id	Integer	Inbound	No

Table B-9 Ascend RADIUS Attributes (continued)

Number	Attribute	Type of Value	Inbound/ Outbound	Multiple
45	Acct-Authentic	Integer	Inbound	No
46	Acct-Session-Time	Integer	Inbound	No
47	Acct-Input-Packets	Integer	Inbound	No
48	Acct-Output-Packets	Integer	Inbound	No
64	Tunnel-Type	String	Both	Yes
65	Tunnel-Medium-Type	String	Both	Yes
66	Tunnel-Client-Endpoint	String (maximum length 250 characters)	Both	Yes
67	Tunnel-Server-Endpoint	String (maximum length 250 characters)	Both	Yes
68	Acct-Tunnel-Connection	Integer (maximum length 253 characters)	Inbound	No
104	Ascend-Private-Route	String (maximum length 253 characters)	Both	No
105	Ascend-Numbering-Plan-ID	Integer (maximum length 10 characters)	Both	No
106	Ascend-FR-Link-Status-Dlci	Integer (maximum length 10 characters)	Both	No
107	Ascend-Calling-Subaddress	String (maximum length 253 characters)	Both	No
108	Ascend-Callback-Delay	String (maximum length 10 characters)	Both	No
109	Ascend-Endpoint-Disc	String (maximum length 253 characters)	Both	No
110	Ascend-Remote-FW	String (maximum length 253 characters)	Both	No
111	Ascend-Multicast-GLeave-Delay	Integer (maximum length 10 characters)	Both	No
112	Ascend-CBCP-Enable	String	Both	No
113	Ascend-CBCP-Mode	String	Both	No
114	Ascend-CBCP-Delay	String (maximum length 10 characters)	Both	No
115	Ascend-CBCP-Trunk-Group	String (maximum length 10 characters)	Both	No
116	Ascend-AppleTalk-Route	String (maximum length 253 characters)	Both	No
117	Ascend-AppleTalk-Peer-Mode	String (maximum length 10 characters)	Both	No
118	Ascend-Route-AppleTalk	String (maximum length 10 characters)	Both	No
119	Ascend-FCP-Parameter	String (maximum length 253 characters)	Both	No
120	Ascend-Modem-PortNo	Integer (maximum length 10 characters)	Inbound	No
121	Ascend-Modem-SlotNo	Integer (maximum length 10 characters)	Inbound	No
122	Ascend-Modem-ShelfNo	Integer (maximum length 10 characters)	Inbound	No
123	Ascend-Call-Attempt-Limit	Integer (maximum length 10 characters)	Both	No
124	Ascend-Call-Block_Duration	Integer (maximum length 10 characters)	Both	No
125	Ascend-Maximum-Call-Duration	Integer (maximum length 10 characters)	Both	No
126	Ascend-Router-Preference	String (maximum length 10 characters)	Both	No
127	Ascend-Tunneling-Protocol	String (maximum length 10 characters)	Both	No
128	Ascend-Shared-Profile-Enable	Integer	Both	No
129	Ascend-Primary-Home-Agent	String (maximum length 253 characters)	Both	No

Table B-9 Ascend RADIUS Attributes (continued)

Number	Attribute	Type of Value	Inbound/ Outbound	Multiple
130	Ascend-Secondary-Home-Agent	String (maximum length 253 characters)	Both	No
131	Ascend-Dialout-Allowed	Integer	Both	No
133	Ascend-BACP-Enable	Integer	Both	No
134	Ascend-DHCP-Maximum-Leases	Integer (maximum length 10 characters)	Both	No
135	Ascend-Client-Primary-DNS	Address (maximum length 15 characters)	Both	No
136	Ascend-Client-Secondary-DNS	Address (maximum length 15 characters)	Both	No
137	Ascend-Client-Assign-DNS	Enum	Both	No
138	Ascend-User-Acct-Type	Enum	Both	No
139	Ascend-User-Acct-Host	Address (maximum length 15 characters)	Both	No
140	Ascend-User-Acct-Port	Integer (maximum length 10 characters)	Both	No
141	Ascend-User-Acct-Key	String (maximum length 253 characters)	Both	No
142	Ascend-User-Acct-Base	Enum (maximum length 10 characters)	Both	No
143	Ascend-User-Acct-Time	Integer (maximum length 10 characters)	Both	No
Support IP Address Allocation from Global Pools				
144	Ascend-Assign-IP-Client	Ipaddr (maximum length 15 characters)	Outbound	No
145	Ascend-Assign-IP-Server	Ipaddr (maximum length 15 characters)	Outbound	No
146	Ascend-Assign-IP-Global-Pool	String (maximum length 253 characters)	Outbound	No
DHCP Server Functions				
147	Ascend-DHCP-Reply	Integer	Outbound	No
148	Ascend-DHCP-Pool-Number	Integer (maximum length 10 characters)	Outbound	No
Connection Profile/Telco Option				
149	Ascend-Expect-Callback	Integer	Outbound	No
Event Type for an Ascend-Event Packet				
150	Ascend-Event-Type	Integer (maximum length 10 characters)	Inbound	No
RADIUS Server Session Key				
151	Ascend-Session-Svr-Key	String (maximum length 253 characters)	Outbound	No
Multicast Rate Limit Per Client				
152	Ascend-Multicast-Rate-Limit	Integer (maximum length 10 characters)	Outbound	No
Connection Profile Fields to Support Interface-Based Routing				
153	Ascend-IF-Netmask	Ipaddr (maximum length 15 characters)	Outbound	No
154	Ascend-Remote-Addr	Ipaddr (maximum length 15 characters)	Outbound	No
Multicast Support				
155	Ascend-Multicast-Client	Integer (maximum length 10 characters)	Outbound	No
Frame Datalink Profiles				
156	Ascend-FR-Circuit-Name	String (maximum length 253 characters)	Outbound	No

Table B-9 Ascend RADIUS Attributes (continued)

Number	Attribute	Type of Value	Inbound/ Outbound	Multiple
157	Ascend-FR-LinkUp	Integer (maximum length 10 characters)	Outbound	No
158	Ascend-FR-Nailed-Group	Integer (maximum length 10 characters)	Outbound	No
159	Ascend-FR-Type	Integer (maximum length 10 characters)	Outbound	No
160	Ascend-FR-Link-Mgt	Integer (maximum length 10 characters)	Outbound	No
161	Ascend-FR-N391	Integer (maximum length 10 characters)	Outbound	No
162	Ascend-FR-DCE-N392	Integer (maximum length 10 characters)	Outbound	No
163	Ascend-FR-DTE-N392	Integer (maximum length 10 characters)	Outbound	No
164	Ascend-FR-DCE-N393	Integer (maximum length 10 characters)	Outbound	No
165	Ascend-FR-DTE-N393	Integer (maximum length 10 characters)	Outbound	No
166	Ascend-FR-T391	Integer (maximum length 10 characters)	Outbound	No
167	Ascend-FR-T392	Integer (maximum length 10 characters)	Outbound	No
168	Ascend-Bridge-Address	String (maximum length 253 characters)	Outbound	No
169	Ascend-TS-Idle-Limit	Integer (maximum length 10 characters)	Outbound	No
170	Ascend-TS-Idle-Mode	Integer (maximum length 10 characters)	Outbound	No
171	Ascend-DBA-Monitor	Integer (maximum length 10 characters)	Outbound	No
172	Ascend-Base-Channel-Count	Integer (maximum length 10 characters)	Outbound	No
173	Ascend-Minimum-Channels	Integer (maximum length 10 characters)	Outbound	No
IPX Static Routes				
174	Ascend-IPX-Route	String (maximum length 253 characters)	Inbound	No
175	Ascend-FT1-Caller	Integer (maximum length 10 characters)	Inbound	No
176	Ascend-Backup	String (maximum length 253 characters)	Inbound	No
177	Ascend-Call-Type	Integer	Inbound	No
178	Ascend-Group	String (maximum length 253 characters)	Inbound	No
179	Ascend-FR-DLCI	Integer (maximum length 10 characters)	Inbound	No
180	Ascend-FR-Profile-Name	String (maximum length 253 characters)	Inbound	No
181	Ascend-Ara-PW	String (maximum length 253 characters)	Inbound	No
182	Ascend-IPX-Node-Addr	String (maximum length 253 characters)	Both	No
183	Ascend-Home-Agent-IP-Addr	Ipaddr (maximum length 15 characters)	Outbound	No
184	Ascend-Home-Agent-Password	String (maximum length 253 characters)	Outbound	No
185	Ascend-Home-Network-Name	String (maximum length 253 characters)	Outbound	No
186	Ascend-Home-Agent-UDP-Port	Integer (maximum length 10 characters)	Outbound	No
187	Ascend-Multilink-ID	Integer	Inbound	No
188	Ascend-Num-In-Multilink	Integer	Inbound	No
189	Ascend-First-Dest	Ipaddr	Inbound	No
190	Ascend-Pre-Input-Octets	Integer	Inbound	No

Table B-9 Ascend RADIUS Attributes (continued)

Number	Attribute	Type of Value	Inbound/ Outbound	Multiple
191	Ascend-Pre-Output-Octets	Integer	Inbound	No
192	Ascend-Pre-Input-Packets	Integer	Inbound	No
193	Ascend-Pre-Output-Packets	Integer	Inbound	No
194	Ascend-Maximum-Time	Integer (maximum length 10 characters)	Both	No
195	Ascend-Disconnect-Cause	Integer	Inbound	No
196	Ascend-Connect-Progress	Integer	Inbound	No
197	Ascend-Data-Rate	Integer	Inbound	No
198	Ascend-PreSession-Time	Integer	Inbound	No
199	Ascend-Token-Idle	Integer (maximum length 10 characters)	Outbound	No
200	Ascend-Token-Immediate	Integer	Outbound	No
201	Ascend-Require-Auth	Integer (maximum length 10 characters)	Outbound	No
202	Ascend-Number-Sessions	String (maximum length 253 characters)	Outbound	No
203	Ascend-Authen-Alias	String (maximum length 253 characters)	Outbound	No
204	Ascend-Token-Expiry	Integer (maximum length 10 characters)	Outbound	No
205	Ascend-Menu-Selector	String (maximum length 253 characters)	Outbound	No
206	Ascend-Menu-Item	String	Outbound	Yes
RADIUS Password Expiration Options				
207	Ascend-PW-Warntime	Integer (maximum length 10 characters)	Outbound	No
208	Ascend-PW-Lifetime	Integer (maximum length 10 characters)	Outbound	No
209	Ascend-IP-Direct	Ipaddr (maximum length 15 characters)	Outbound	No
210	Ascend-PPP-VJ-Slot-Comp	Integer (maximum length 10 characters)	Outbound	No
211	Ascend-PPP-VJ-1172	Integer (maximum length 10 characters)	Outbound	No
212	Ascend-PPP-Async-Map	Integer (maximum length 10 characters)	Outbound	No
213	Ascend-Third-Prompt	String (maximum length 253 characters)	Outbound	No
214	Ascend-Send-Secret	String (maximum length 253 characters)	Outbound	No
215	Ascend-Receive-Secret	String (maximum length 253 characters)	Outbound	No
216	Ascend-IPX-Peer-Mode	Integer	Outbound	No
217	Ascend-IP-Pool-Definition	String (maximum length 253 characters)	Outbound	No
218	Ascend-Assign-IP-Pool	Integer	Outbound	No
219	Ascend-FR-Direct	Integer	Outbound	No
220	Ascend-FR-Direct-Profile	String (maximum length 253 characters)	Outbound	No
221	Ascend-FR-Direct-DLCI	Integer (maximum length 10 characters)	Outbound	No
222	Ascend-Handle-IPX	Integer	Outbound	No
223	Ascend-Netware-Timeout	Integer (maximum length 10 characters)	Outbound	No
224	Ascend-IPX-Alias	String (maximum length 253 characters)	Outbound	No

Table B-9 Ascend RADIUS Attributes (continued)

Number	Attribute	Type of Value	Inbound/ Outbound	Multiple
225	Ascend-Metric	Integer (maximum length 10 characters)	Outbound	No
226	Ascend-PRI-Number-Type	Integer	Outbound	No
227	Ascend-Dial-Number	String (maximum length 253 characters)	Outbound	No
Connection Profile/PPP Options				
228	Ascend-Route-IP	Integer	Outbound	No
229	Ascend-Route-IPX	Integer	Outbound	No
230	Ascend-Bridge	Integer	Outbound	No
231	Ascend-Send-Auth	Integer	Outbound	No
232	Ascend-Send-Passwd	String (maximum length 253 characters)	Outbound	No
233	Ascend-Link-Compression	Integer	Outbound	No
234	Ascend-Target-Util	Integer (maximum length 10 characters)	Outbound	No
235	Ascend-Max-Channels	Integer (maximum length 10 characters)	Outbound	No
236	Ascend-Inc-Channel-Count	Integer (maximum length 10 characters)	Outbound	No
237	Ascend-Dec-Channel-Count	Integer (maximum length 10 characters)	Outbound	No
238	Ascend-Seconds-Of-History	Integer (maximum length 10 characters)	Outbound	No
239	Ascend-History-Weigh-Type	Integer	Outbound	No
240	Ascend-Add-Seconds	Integer (maximum length 10 characters)	Outbound	No
241	Ascend-Remove-Seconds	Integer (maximum length 10 characters)	Outbound	No
Connection Profile/Session Options				
242	Ascend-Data-Filter	Call filter	Outbound	Yes
243	Ascend-Call-Filter	Call filter	Outbound	Yes
244	Ascend-Idle-Limit	Integer (maximum length 10 characters)	Outbound	No
245	Ascend-Preempt-Limit	Integer (maximum length 10 characters)	Outbound	No
Connection Profile/Telco Options				
246	Ascend-Callback	Integer	Outbound	No
247	Ascend-Data-Svc	Integer	Outbound	No
248	Ascend-Force-56	Integer	Outbound	No
249	Ascend-Billing-Number	String (maximum length 253 characters)	Outbound	No
250	Ascend-Call-By-Call	Integer (maximum length 10 characters)	Outbound	No
251	Ascend-Transit-Number	String (maximum length 253 characters)	Outbound	No
Terminal Server Attributes				
252	Ascend-Host-Info	String (maximum length 253 characters)	Outbound	No
PPP Local Address Attribute				
253	Ascend-PPP-Address	Ipaddr (maximum length 15 characters)	Outbound	No
MPP Percent Idle Attribute				

Table B-9 Ascend RADIUS Attributes (continued)

Number	Attribute	Type of Value	Inbound/ Outbound	Multiple
254	Ascend-MPP-Idle-Percent	Integer (maximum length 10 characters)	Outbound	No
255	Ascend-Xmit-Rate	Integer (maximum length 10 characters)	Outbound	No

Nortel Dictionary of RADIUS VSAs

Table B-10 lists the Nortel RADIUS VSAs supported by ACS. The Nortel vendor ID number is 1584.

Table B-10 Nortel RADIUS VSAs

Number	Attribute	Type of Value	Inbound/ Outbound	Multiple
035	Bay-Local-IP-Address	Ipaddr (maximum length 15 characters)	Outbound	No
054	Bay-Primary-DNS-Server	Ipaddr (maximum length 15 characters)	Outbound	No
055	Bay-Secondary-DNS-Server	Ipaddr (maximum length 15 characters)	Outbound	No
056	Bay-Primary-NBNS-Server	Ipaddr (maximum length 15 characters)	Outbound	No
057	Bay-Secondary-NBNS-Server	Ipaddr (maximum length 15 characters)	Outbound	No
100	Bay-User-Level	Integer	Outbound	No
101	Bay-Audit-Level	Integer	Outbound	No

Juniper Dictionary of RADIUS VSAs

Table B-11 lists the Juniper RADIUS VSAs supported by ACS. The Juniper vendor ID number is 2636.

Table B-11 Juniper RADIUS VSAs

Number	Attribute	Type of Value	Inbound/ Outbound	Multiple
001	Juniper-Local-User-Name	String (maximum length 247 characters)	Outbound	No
002	Juniper-Allow-Commands	String (maximum length 247 characters)	Outbound	No
003	Juniper-Deny-Commands	String (maximum length 247 characters)	Outbound	No

3COMUSR Dictionary of RADIUS VSAs

Table B-12 lists the 3COMUSR RADIUS VSAs supported by ACS. The 3COMUSR vendor ID number is 429.

Table B-12 3COMUSR RADIUS VSAs

Number	Attribute	Type of Value	Inbound/ Outbound	Multiple
0x6C	Modulation-Type	Integer	IN OUT	No
0x99	Error-Control	Integer	IN OUT	No
0xC7	Compression	Integer	IN OUT	No
0x9015	Call-Tracking-ID	Integer	IN OUT	No
0x9014	MIC	Integer	IN OUT	No
0x9019	Chassis-Call-Slot	Integer	IN OUT	No
0x9023	Connect-Speed	Integer	IN OUT	No
0x901A	Chassis-Call-Span	Integer	IN OUT	No
0x901B	Chassis-Call-Channel	Integer	IN OUT	No
0x901D	Unauthenticated-Time	Integer	IN OUT	No
0x982F	MP-MRRU	Integer	IN OUT	No
0x9841	MP-EDO	Integer	IN OUT	No