Attribute Definitions

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This appendix describes Intelligent Services Gateway (ISG) attributes, including the appropriate RADIUS codes for the vendor-specific attributes (VSAs). Cisco uses two types of vendor specific attributes; some are defined as AVPair and others that are not AVPair.

This appendix describes the following ISG attributes:

Cisco Vendor-Specific AVPair Attributes

To identify an Avpair attribute, RADIUS code 26 is used followed by Cisco vendor ID (9) and the Standard VSA ID of 1. The Avpair attribute is then encoded using the format of Cisco-AVPair= “attribute-name = attribute value”. The exact format is shown in the figure below:

Table 1 AVPair Attribute Format

a	b	c	d	e	f

- a = 26 (RADIUS code for VSA)
- b = len (length of the RADIUS VSA)
- c = 9 (Cisco vendor ID)
- d = 1 (standard VSA ID)
- e = len (length of the vendor-specific subattribute)
- f = “attribute-name=attribute-value”

Table 2 shows Cisco vendor-specific AVPair attributes for ISG.

Table 2 Cisco Vendor-Specific AVPair Attributes

Attribute Name and Value	Function	Example	Used in**
ip:portbundle=enable	Enable PBHK feature	ip:portbundle=enable	Acc-Acc CoA Req
ip:l4redirect=redirect to *{group server-group-name | ip ip-address [port port-number]} [duration seconds] [frequency seconds]*	Enables L4 redirection.	ip:l4redirect=redirect to group L4-REDIRECT ip:l4redirect=redirect list 199 to group SERVER_GROUP1 duration 120 frequency 120	Acc-Acc CoA Req
ip:traffic-class= [in | out] access-group [*acl-number* | name *acl-name*] [priority *value*]	Classification (traffic class) for a TC service **Note** TC cannot be dynamically downloaded via the ip:inacl or other VSA pairs. The ACLs in this command must be predefined on the ISG.	ip:traffic-class=in access-group name ACL_IN_L4R priority 5	Acc-Acc CoA Req
ip:inacl[#number]={standard-access-control-list | extended-access-control-list}	Incoming ACL definition, for feature push.	ip:inacl=ACL1_IN where “ACL1_IN” is predefined on the ISG OR ip:inacl#10=deny ip any 13.13.16.0 0.0.0.255 ip:inacl#20=permit ip any any	Acc-Acc CoA Req
ip:outacl[#number]= {standard-access-control-list | extended-access-control-list}	Outgoing ACL definition, for feature push.	Ip:outacl=ACL1_OUT where “ACL1_OUT” is predefined on the ISG or ip:outacl#10=deny ip 13.13.16.0 0.0.0.255 any ip:outacl#20=permit ip any any	Acc-Acc CoA Req
ip:sub-qos-policy-in=*in-policy-name*	Per-Session MQC Input policy name **Note** Actual MQC policy must be predefined on the ISG. Supported for both IP and PPP sessions.	ip:sub-qos-policy-int=QOS_POLICY_IN	Acc-Acc CoA Req

Table 2 Cisco Vendor-Specific AVPair Attributes

Attribute Name and Value	Function	Example	Used in**
ip:sub-qos-policy-out=<*out-policy-name*>	Per-Session MQC Output policy name **Note** Actual MQC policy must be predefined on the ISG. Supported for both IP and PPP sessions.	ip:sub-qos-policy-out=QOS_POLICY_OUT	Acc-Acc CoA Req
atm:vc-qos-policy-in=<*in-policy-name*>	Specifies MQC policy applied on atm vc	atm:vc-qos-policy-in=QOS_POLICY_IN	Acc-Acc CoA Req
atm:vc-qos-policy-out=<*out-policy-name*>	Specifies MQC policy applied on atm vc	atm:vc-qos-policy-out=QOS_POLICY_OUT	Acc-Acc CoA Req
ip:vrf-id=<*vrf_name*>	Places a session inside the specified VRF	ip:vrf-id=VPN_ISP1	Acc-Acc CoA Req
ip:ip-unnumbered=<*loopback address*>	Specifies loopback address	ip:ip-unnumbered=loopback5	Acc-Acc CoA Req
ip:pool-def#n =<*ip pool definition*>	IP pool definition for router	ip:pool-def#1=beta 2.0.2.5 2.0.2.8	
ip:addr-pool =<*pool_name*>	IP address pool name used for PPP access	ip:addr-pool=PPPOE_POOL	Acc-Acc CoA Req
parent-session-id=<*id-number*>	Used to match a TC service with parent session for accounting purposes.	parent-session-id=00000081	Accounting
client-mac-address=<*mac-address*>	Identify client's MAC address	client-mac-address=0050.5607.0103	Acc-Req Accounting
circuit-id-tag=<*tag name*>	DHCP Option 82 tag (identifies line card & port)	circuit-id-tag=0|4|22|1|15	Acc-Req Acc-Acc CoA Req Accounting
remote-id-tag=<*tag name*>	DHCP Option 82 tag (identifies DSLAM or L2 switch)	remote-id-tag=0|6|000d.edc0.3f80	Acc-Req Acc-Acc CoA Req Accounting
vrf-id = <*vrf name*>	Identifier for the virtual routing table.	vrf-id=VPN_ISP1	Accounting
sg-version=<*isg-version*>	Identify ISG version	sg-version=1.0	CoA Ack
connect-progress=<*session-state*>	Report session state - (Call Up, LAN Ses Up)	connect-progress= Call Up	Accounting
disc-cause-ext=<*disconnect-cause*>	Report disconnect cause – (No Reason, PPP Receive Term, TS User Exit)	disc-cause-ext= PPP Receive Term	Accounting
subscriber:classname=<dhcp-*class-name*>	Used to assign IP address from a specific DHCP pool	subscriber:classname=VPN_ISP1_CLASS	Acc-Acc CoA Req

Table 2 Cisco Vendor-Specific AVPair Attributes

Attribute Name and Value	Function	Example	Used in**
subscriber:accounting-list=<*accounting-method-list-name*>	The session or service requires accounting.	subscriber:accounting-list=ACCNT_LIST1	Acc-Acc CoA Req
Prepaid-config=<*prepaid-method -name*>	Specify service is pre-paid	prepaid-config=PREPAID_CONFIG	Acc-Acc CoA Req
subscriber:policy-directive=<*policy-directive*>	Additional policy directive for a service. (i.e., further authentication)	subscriber:policy-directive=authenticate aaa list APP1_SERVER	Acc-Acc
subscriber:subscriber-service = <*type of service*>	Type of service – (vpdn, local, relay-pppoe) Typically used as part of a service profile for PPP sessions to decide whether the session needs to forwarded or terminated.	subscriber:subscriber-service=local	Acc-Acc
subscriber:sg-service-type=primary	Indicates whether service is primary.	subscriber:sg-service-type=primary	Acc-Acc
subscriber:service-group =<*group-name* >	Defines a group name to outline what non-primary services are dependent on a primary service.	subscriber:sg-service-type=ISP1_SERVICES	Acc-Acc CoA-Req
vpdn:tunnel-id =<*vpdn_tunnel_id*>	VPDN tunnel id	vpdn:tunnel-id=nas1	Acc-Acc CoA-Req
vpdn:l2tp-tunnel_password=<*vpdn_tunnel_password*>	VPDN tunnel password	vpdn:l2tp-tunnel-password=cisco	Acc-Acc CoA-Req
vpdn:ip-addresses=<*vpdn_ip_address*>	VPDN Ip addresses	vpdn:ip-addresses=10.0.1.26	Acc-Acc CoA-Req
vpdn:tunnel-type =<*vpdn_tunnel_type*>	VPDN tunnel type (t2tp,l2f, pptp)	vpdn:tunnel-type=l2tp	Acc-Acc CoA-Req

Cisco Vendor-Specific non-AVPair Attributes

To identify an Avpair attribute, RADIUS code 26 is still used followed by Cisco vendor ID (9) but a vendor-specific sub-attribute is used. The non-Avpair attribute is then encoded using the format shown in Table 3.

Table 3 Non-AVPair Attribute Format

a	b	c	d	e	f

- a = 26 (RADIUS code for VSA)
- b = len (length of the RADIUS VSA)
- c = 9 (Cisco vendor ID)
- d = n (vendor specific sub-attribute ID)
- e = len (length of the vendor-specific subattribute)
- f = Attribute value (can contain a sub-attribute code followed by value <*code*> <*sub attribute value*>)

Table 4 shows Cisco vendor-specific non-AVPair attributes for ISG.

Table 4 Cisco Vendor specific non-AVPair attributes

Sub-AttrID	Attribute Type	Value	Function	Example	Used in
249	subscriber-password	<*Initiator vector*> <*encrypted value*>	Authenticator for password encryption within a CoA Account Logon or CoA Service Activate	(This is a 16 byte vector – followed by an encrypted value)	CoA Req
250	account-info	A<*service-name; username; password*>	Auto-start service; the username and password are optional	AINTERNET_SERVICE	Acc-Acc CoA_Ack
250	account-info	N[*service-state*] <*service-name*> [*time-connected*] [*username*] [*pkt-in*] [*pkt-out*] [*bytes_in*] [*bytes_out*]	To list service accessible to subscriber or to report service status. Service state: 0 – inactive 1 - active	N1BOD_1MEG_SERVICE;277;IP_UC1;139;179; 24236;213422	Acc-Acc CoA_Ack
250	account-info	QU*;cir;normal burst;excess burst*;D;*cir;normal burst;excess burst*	QoS parameters for the session in both the Upstream and Downstream direction	QU;512000;256000; D;512000;256000	Acc-Acc CoA Ack
250	account-info	V*cookie*	Specifies a cookie string for a service (used for billing).	VSERVICE_GROUP_1	Acc-Acc CoA Ack

Table 4 Cisco Vendor specific non-AVPair attributes

Sub-AttrID	Attribute Type	Value	Function	Example	Used in
250	account-info	S[*IP-address* | *PBHK*]	Subscriber identifier between ISG & portal. The port number is used when PBHK is enabled.	S10.10.10.11:85	CoA Req CoA Ack
250	account-info	$MA<*MAC-address*>	Subscriber MAC address.	$MA0050.5607.0103	CoA Ack
250	account-info	$SI[*sub-interface*]	Sub-interface for interface session.	$SI	CoA Ack
250	account-info	$VP<*VPI/VCI*>	VPI/VCI for ATM interface session.	$VP	CoA Ack
251	service-info	N<*service-name*>	Service name in accounting requests.	NBOD_1MEG_SERVICE	Accounting
251	service-info	QU;cir;normal burst;excess burst;D;cir;normal burst;excess burst	Uplink and downlink subscriber policing (feature push capabilities).	QU;512000;256000; D;512000;256000	CoA Req
251	service-info	PPW:tariff time:days	Postpaid tariff switch parameters.	PPW:	
251	service-info	Vcookie	Service cookie used for billing.	VSERVICE_GROUP_1	Accounting
252	command-code	<command-code>, optionally followed by sub-attributes as described in RADIUS Interface Guide	CoA Command Code 0x1 Account Logon 0x2 Account Alogoff 0x4 Session Query 0xB Service Activate 0xC Service De-Activate	0x4INTERNET_SERVICE	CoA Req CoA Ack
252	command-code	0x10 (Command code), followed by ascii command code value	ASCII Values - (OUT OF MEMORY, AUTHENTICATE USER FAIL, NO RESOURCE FOR CONN, SERVICE AUTHENTICATION ERROR, HOST NOT LOGON, AUTHORIZE USER ERROR, AAA REQ SEND FAIL, AUTHORIZE USER FAIL)	0x10 ‘5’ ‘5’ (Code 55 for Service authentication error)	CoA Nak

Table 4 Cisco Vendor specific non-AVPair attributes

Sub-AttrID	Attribute Type	Value	Function	Example	Used in
253	control-info	QT<*value*>	Used for pre-paid. QT defines Time Quota in seconds.	QT600	Acc-Req Acc-Acc
		QV<*value*>	QV defines Volume-based Quota in bytes.	QV10000	
		QR<*number*>	QR defines Prepaid ReauthReason. QR1: re-authorization is performed due to idle timer expiry QR0 is only applicable for a prepaid service which has both Time(QT) and Volume(QV)	QR1	
		QB<*bytes-used since-switch, time*>	QB - indicates tariff switching happened in previous interval	QB9540,59	
		QX<*seconds before switch*>;<*pre-switch volume in bytes*>;<*post-switch volume in bytes*>	QX defines Quota for Tariff Switching	QX300,8588,3219	
253	control-info	I*value-overflow*; *value*	Indicates the overflow value and value of I (input) bytes in accounting packets. The formula to calculate the exact byte count is *value-overflow**4294 967296 + *value*	I0;266867	Accounting
253	control-info	O*value-overflow;* *value*	Indicates the overflow value and value of O (output) bytes in accounting packets. The formula to calculate the exact byte count is *value-overflow**4294 967296 + *value*.	O0;266940	Accounting