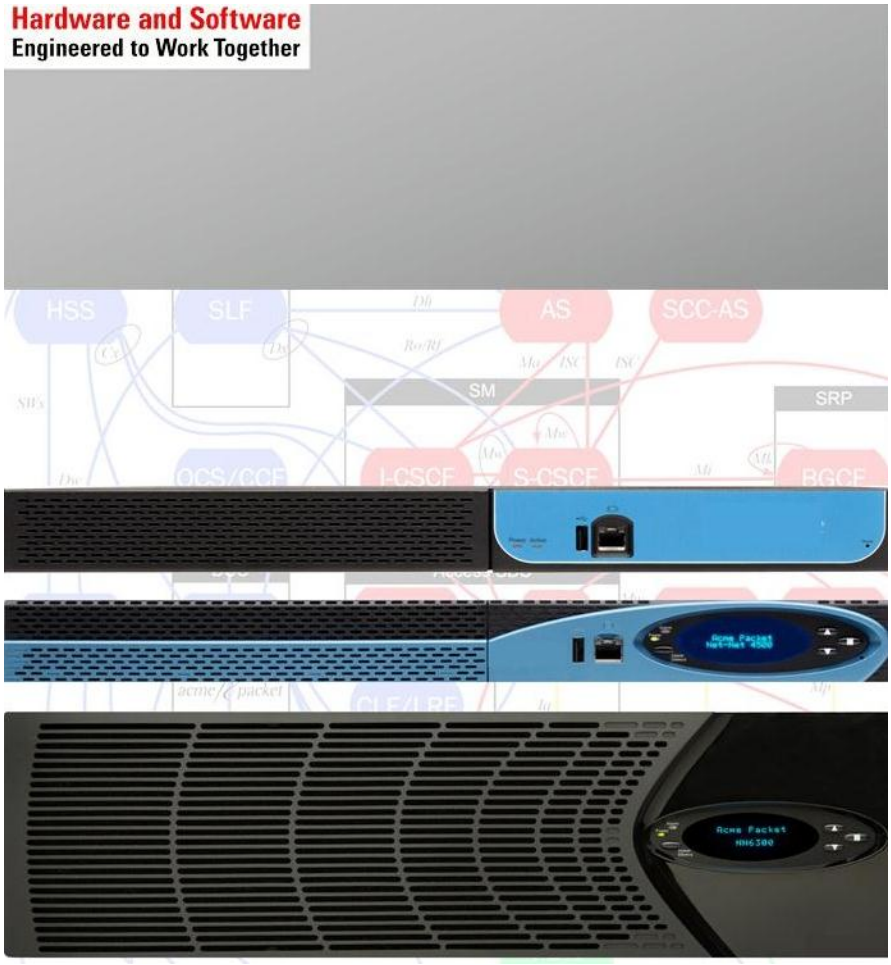

Cisco UCM 4.x H.323 Interworking to AT&T SIP with Acme Packet 3000-4000 Series SBC

A Technical Application Note

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Disclaimer

The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, and timing of any features or functionality described for Oracle's products remains at the sole discretion of Oracle.

Emergency 911/E911 Services Limitations

While AT&T IP Flexible Reach services support E911/911 calling capabilities in certain circumstances, there are significant limitations on how these capabilities are delivered. Please review the AT&T IP Flexible Reach Service Guide in detail to understand these limitations and restrictions.

Specific IP endpoints Support
Specific IP endpoints are supported with IP Flex Reach. These endpoints must support SCCP and NTE. The Cisco IP endpoints that support SCCP and NTE are:

VG224 - 7902, 7905, 7911, 7912, 7931, 7937, 7940, 7941, 7942, 7945, 7960, 7961, 7962, 7965, 7970, 7971, 7975

Future new phone models

The Cisco IP endpoints that do NOT support NTE and thus are NOT supported with IP Flex Reach are: 7910, 7920, 7935, 7936
VG248 - DPA-7610, DPA-7630

Please refer to the following Cisco website for further information.

http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/srnd/6x/media.html#wp1055031

HIPCS is not supported with Cisco Unified Communication Manager

If the customer is in a HIPCS serving area, Cisco Unified Communication Manager SIP is not supported. Please consult with your customer care or sales person to determine if you are in a HIPCS serving area.

AT&T IP Teleconferencing Service is not supported when G.729 is configured on Cisco Unified Communication Manager

Cisco Unified Communication Manager only supports a single codec on an IP trunk. Since the AT&T IP Teleconferencing (IPTC) Service supports G.711, a Cisco Unified Communication Manager configured for G.729 will not work with the IPTC service.

Abstract

This application note defines an interworking configuration model suitable for the Oracle Communications Session Border Controllers connecting H.323 Trunks from Cisco Unified Communications Manager (UCM) to AT&T's IP Flex Reach service. The reference configuration presented was tested in AT&T's lab.

Introduction

Within the heterogeneous IP telephony networks deployed today, Enterprises cannot always migrate quickly from legacy H.323 IP-PBX trunks to SIP. Many have found it valuable to use the protocol interworking function (IWF) of the Oracle Communications Session Border Controller for passing VoIP traffic between their network and SIP carriers. The Oracle Communications Session Border Controller supports interworking capabilities between H.323 and SIP protocols. It enables an enterprise to take advantage of carrier SIP trunks while migrating to SIP at a slower pace on their IP-PBX. While transport of media is handled via RTP for both signaling protocols, interworking is required to setup the correct SDP and corresponding H.245 capabilities exchange.

The Cisco UCM (formerly Call Manager) is commonly deployed with version 4.1.x and as such, the protocol of choice for the phones is SCCP (Skinny) and for IP Trunks it has been H.323. This has been the best combination of protocols for access to the widest range of features and the ability to support toll by-pass over the corporate WAN. This also poses a number of problems when an Enterprise is looking to take advantage of service provider SIP trunking cost savings and disaster recovery benefits that can be realized over existing PSTN/PRI technology.

Since there is a protocol mismatch between the UCM H.323 implementation and carrier SIP trunks, a protocol interworking function is needed. There are also special considerations that need to be taken into account because of the manner in which SCCP negotiates the media stream at the end of the call setup sequence as opposed to the beginning. The resulting H.323 signaling uses the "SlowStart" method where the media channels are negotiated after the call Connect message.

Simply interworking H.323 SlowStart to SIP signaling without special consideration of the media negotiation will lead to a SIP INVITE request without SDP for RTP negotiation. The first negotiation of "delayed" SDP Offer in this case is typically in the 200OK call Connect message with the SDP Answer in the ACK to the 200OK. In between the 200OK and the ACK are the SlowStart H.323 and SCCP Connect messages and media setup. This delay can lead to clipping at the beginning of a call, most notably to an IVR or voice mail server. The Cisco solution requires MTP DSP resources in order to present the media offer at the call setup which can become very costly as it requires many servers for large scale deployments.

The SBC has the ability to interwork the UCM H.323 signaling to SIP and include SDP in the INVITE for "Early Offer" without the need for MTP resources.

This Oracle Technical Application Note outlines the recommended configuration for the Acme Packet 3000/4000 series Session Border Controllers, the industry leading Session Border Controllers, for

connecting H.323 Trunks from Cisco UCM 4.x to AT&T's IP Flex Reach service. This document is based on the Acme Packet OS version C5.1.0 but is applicable to images 4.x and higher.

Intended Audience

This document is intended for use by Oracle Systems Engineers, third party Systems Integrators, and end-users of the Oracle Communications Session Border Controller. It assumes that the reader is familiar with basic operations of the Oracle Communications Session Border Controller.

Support

Cisco Call Manager Guide is located at the following AT&T URL:
http://www.corp.att.com/dna/support/

**The AT&T website is password protected. The ID and Password are provided to each customer when they place an order for IP Flexible Reach or IP Toll Free service.

Design Goals

The reference configuration represents the most common Cisco UCM (Cisco Call Manager) deployment model: UCM originating H.323 traffic and terminating to AT&T Flex Reach basic SIP trunk via the Oracle SBC. The config also supports bi-directional call-flows (H.323 to SIP and SIP to H.323) via Local-Policy routes. While not presented here, the configuration can be extended to add SIP to SIP Trunking traffic with UCM, which is a common migration strategy for most Enterprise UCM customer networks deploying the Oracle SBC [3].

There is considerable flexibility in configuring H.323 on the SBC. Possible modes include the h323-stack registering as a gateway, acting as a static gateway or behaving as a peering gatekeeper. There are also multiple signaling methods (i.e. FastStart, SlowStart) within the SBC H.323/IWF configuration. This document recommends optimized settings for H.323 configurations whenever possible. Some of the h323-stack and or session-agent parameters MAY need to be modified for interoperability reasons.

This document will annotate each configuration with information on its general applicability. The intent is to:

- Minimize UCM H.323 interoperability issue's by standardizing field configurations
- Provide guidelines for new users for the Session Border Controller
- Provide a configuration template, baselining the H.323 to SIP IWF configuration (with accompanying diagram)
- Flexibility: how resilient the configuration is and how adaptable the configuration is when turning up new UCM H.323 to SIP networks
- Performance: minimize the use of unnecessary configuration objects

IWF Peering Scenario with UCM 4.x

This section includes a reference architecture diagram, where the Session Border Controller is integrated as an Enterprise CPE trunking Session Border Controller, performing interworking between the Enterprise (UCM) and the AT&T SIP trunk. This reference architecture must be confirmed or modified by the customer according to the specific project requirements.

The Enterprise H.323 UCM peers with the long distance SIP provider via the Oracle Communications Session Border Controller IWF function. Below is the network diagram and representative call-flow.

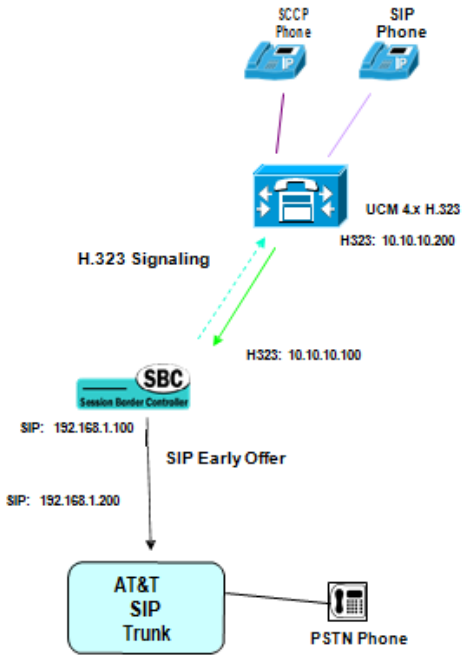

Diagram 1: Enterprise H.323 UCM 4.x to AT&T SIP Trunk via Oracle Communications Session Border Controller IWF

Cisco CCM H.323 Slow Start GW-GW IWF Call Setup via Oracle Communications Session Border Controller

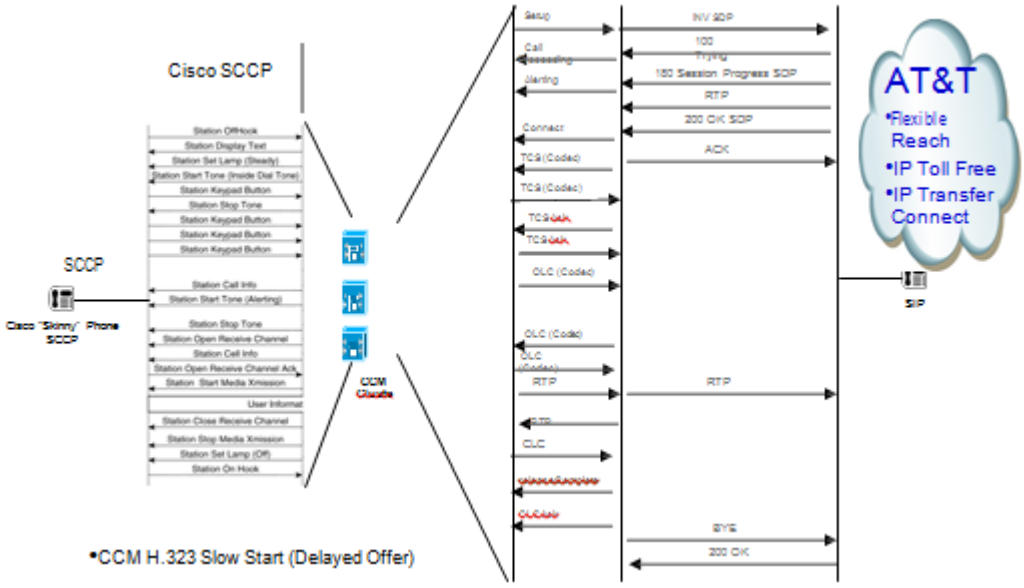

Diagram 2: Call-Flow for Enterprise UCM H.323 4.x to AT&T SIP Trunk via Oracle Communications Session Border Controller IWF

Notes on Reference Configuration

The Enterprise UCM is configured for H.323 Trunking and acts as a H.323 gateway. The Oracle Communications Session Border Controller is configured to perform IWF function, converting H.323 to SIP signaling between the Enterprise and AT&T's network.

Enabling the SBC's interworking implementation is done via the iwf-config element. For H.323 SlowStart calls, it is required to configure the media-profiles parameter to provide a list of codecs that will be offered in the SIP SDP exchange. The SBC also requires the customary configuration of H.323 and SIP config objects to support IWF call-flows. H.323 endpoints (gateways, gatekeepers) should be configured as session-agents so that SIP to H.323 calls are correctly interworked.

The realm labeled *peer-h323* and its corresponding h323-stack (address 10.10.10.100) is where the H.323 signaling and RTP will enter/exit the SBC. The Enterprise UCM needs to signal to this target IP address.

The realm labeled *core-sip* and its corresponding sip-interface (address 192.168.1.100) is where the SIP signaling will enter/exit the SBC to/from the long distance SIP provider.

The Local-Policy configurations route sessions to/from the Enterprise H.323 UCM to the long distance SIP provider.

WF Peering Configuration

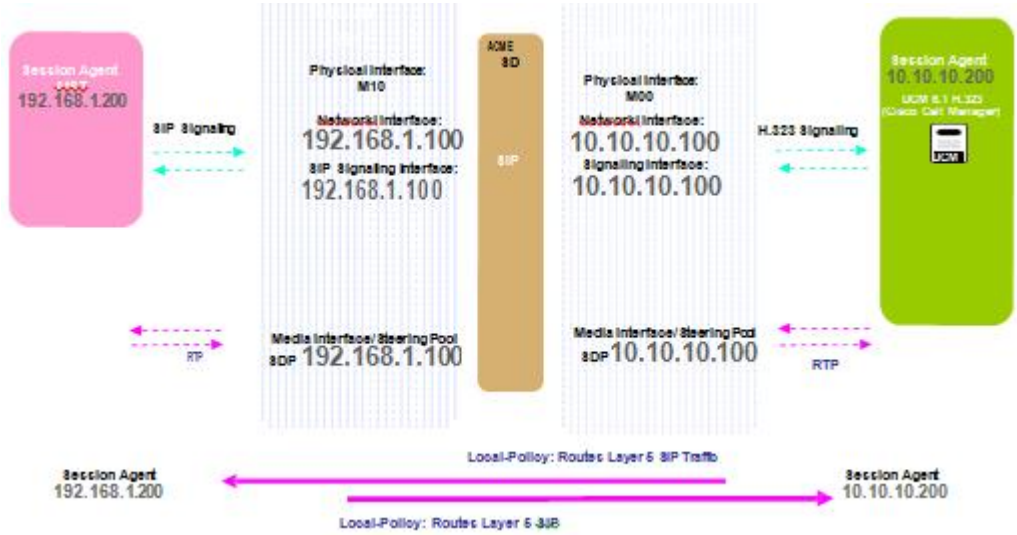

Diagram 3: Network Diagram for Reference Configuration

Normative References

[1] Acme Packet, "Net-Net 4000 S-C6.1.0 ACLI Configuration Guide", 400-0061-61, Jan 2009.

[2] Heyphets, S., "BCP - H.323-SIP Interworking (IWF) Peering Configuration", 520-0031-00, Aug 2008 [3] Walker, C., "Cisco UCM 6.x SIP to ATT SIP with Net-Net 3000-4000 Series SD Application Note", 510-0014-00, June 2009

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Appendix A: Reference Configuration

```
acmepacket# show run
h323-config
        state                                 enabled
        log-level                             WARNING
        response-tmo                          4
        connect-tmo                           180
        rfc2833-payload                       101
        alternate-routing                     proxy
        codec-fallback                        disabled
        options                               noReInvite

h323-stack
        name                                  h323-stackccm
        description
        state                                 enabled
        isgateway                             disabled
        realm-id                              enterprise-core-ccm
        assoc-stack
        local-ip                              10.10.10.100
        max-calls                             1000
        max-channels                          6
        registration-ttl                      120
        terminal-alias
                                              h323-ID=acme
        prefixes
        ras-port                              1719
        auto-gk-discovery                     enabled
        multicast                             0.0.0.0:0
        gatekeeper                            0.0.0.0:0
        gk-identifier
        q931-port                             1720
        alternate-transport
        q931-max-calls                        200
        h245-tunneling                        enabled
        fs-in-first-msg                       disabled
        call-start-fast                       enabled
        call-start-slow                       disabled
        media-profiles
        process-registration                  disabled
        allow-anonymous                       all
        options                               inbandTone
                                               suppress100rel
        proxy-mode
        h245-stage                            alerting
        q931-start-port                       0
        q931-number-ports                     0
        dynamic-start-port                    8192
        dynamic-number-ports                  1024
        rfc2833-mode                          transparent
        filename
        tcp-keepalive                         disabled
```

```
iwf-config
      state                                 enabled
      media-profiles
                                            g729
                                            pcmu
      logging                               enabled
      add-reason-hdr                        enabled
      no-sdp-in-invite                      disabled

local-policy
        from-address            *
        to-address              *
        source-realm            peer
        activate-time           N/A
        deactivate-time         N/A
        state                   enabled
        policy-priority         none
        policy-attribute
                next-hop                    10.10.10.200
                realm                       enterprise-core-ccm
                action                      none
                terminate-recursion         disabled
                carrier
                start-time                  0000
                end-time                    2400
                days-of-week                U-S
                cost                        0
                app-protocol                H323
                state                       enabled
                media-profiles

local-policy
        from-address            *
        to-address              *
        source-realm            enterprise-core-ccm
        activate-time           N/A
        deactivate-time         N/A
        state                   enabled
        policy-priority         none
        policy-attribute
                next-hop                    SAG:ATT
                realm                       peer
                action                      none
                terminate-recursion         disabled
                carrier
                start-time                  0000
                end-time                    2400
                days-of-week                U-S
                cost                        0
                app-protocol                SIP
                state                       enabled
                media-profiles

media-manager
      state                                 enabled
      latching                              disabled
      flow-time-limit                       86400
```

```
        initial-guard-timer                 43200
        subsq-guard-timer                   43200
        tcp-flow-time-limit                 86400
        tcp-initial-guard-timer             300
        tcp-subsq-guard-timer               300
        tcp-number-of-ports-per-flow        2
        hnt-rtcp                            disabled
        algd-log-level                      NOTICE
        mbcd-log-level                      NOTICE
        options                             min-signal-duration=100
        red-flow-port                       1985
        red-mgcp-port                       1986
        red-max-trans                       10000
        red-sync-start-time                 5000
        red-sync-comp-time                  1000
        media-policing                      enabled
        max-signaling-bandwidth             10000000
        max-untrusted-signaling             100
        min-untrusted-signaling             30
        app-signaling-bandwidth             0
        tolerance-window                    30
        rtcp-rate-limit                     0
        min-media-allocation                32000
        min-trusted-allocation              1000
        deny-allocation                     1000
        anonymous-sdp                       disabled
        arp-msg-bandwidth                   32000
        fragment-msg-bandwidth              0
        rfc2833-timestamp                   enabled
        default-2833-duration               100
       rfc2833-end-pkts-only-for-non-sig disabled
       translate-non-rfc2833-event      disabled

network-interface
        name                                        M00
        sub-port-id                                 0
        description                                 AT&T/Peer Facing
        hostname
        ip-address                                  192.168.1.100
        pri-utility-addr                            192.168.1.101
        sec-utility-addr                            192.168.1.102
        netmask                                     255.255.255.0
        gateway                                     192.168.1.1
        sec-gateway
        gw-heartbeat
                  state                                     disabled
                  heartbeat                                 0
                  retry-count                               0
                  retry-timeout                             1
                  health-score                              0
        dns-ip-primary
        dns-ip-backup1
        dns-ip-backup2
        dns-domain
        dns-timeout                                 11
        hip-ip-list                                 192.168.1.100
        ftp-address
```

```
       icmp-address snmp-
       address telnet-
       address
network-interface
       name                                  M10
       sub-port-id                           0
       description                           Enterprise/Core Facing
       hostname
       ip-address                            10.10.10.100
       pri-utility-addr                      10.10.10.101
       sec-utility-addr                      10.10.10.102
       netmask                               255.255.255.0
       gateway                               10.10.10.1
       sec-gateway
       gw-heartbeat
                 state                             disabled
                 heartbeat                         0
                 retry-count                       0
                 retry-timeout                     1
                 health-score                      0
       dns-ip-primary
       dns-ip-backup1
       dns-ip-backup2
       dns-domain
       dns-timeout                           11
       hip-ip-list                           10.10.10.100
       ftp-address
       icmp-address                          10.10.10.100
       snmp-address
       telnet-address


phy-interface
       name                                  M00
       operation-type                        Media
       port                                  0
       slot                                  0
       virtual-mac
       admin-state                           enabled
       auto-negotiation                      enabled duplex-mode
       speed

phy-interface
       name                                  M10
       operation-type                        Media
       port                                  0
       slot                                  1
       virtual-mac
       admin-state                           enabled
       auto-negotiation                      enabled
       duplex-mode
       speed

realm-config
     identifier                         peer
          addr-prefix                        0.0.0.0
```

```
        network-
        interfaces                    M00:0
        sm-in-realm                   enabled
        sm-in-network                 enabled
        sm-same-ip                    enabled
        sm-in-system                  enabled
        bw-cac-non-sm                 disabled
        msm-release                   disabled
        qos-enable                    disabled
        max-bandwidth                 0
        ext-policy-svr
        max-latency                   0
        max-jitter                    0
        max-packet-loss               0
        observ-window-size            0
        parent-realm
        dns-realm
        media-policy
        in-translationid
        out-translationid
        in-manipulationid
        out-manipulationid
        class-profile
        average-rate-limit            0
        access-control-trust-level
        invalid-signal-threshold      0
        maximum-signal-threshold      0
        untrusted-signal-threshold    0
        deny-period                   30
        symmetric-latching            disabled
        pai-strip                     disabled
        trunk-context
        early-media-allow
        additional-prefixes
        restricted-latching           none
        restriction-mask              32
        accounting-enable             enabled
        user-cac-mode                 none
        user-cac-bandwidth            0
        user-cac-sessions             0
        net-management-control        disabled
        delay-media-update            disabled

realm-config
        identifier                    enterprise-core-com
        addr-prefix                   0.0.0.0
        network-interfaces
                                      M10:0
        sm-in-realm                   enabled
        sm-in-network                 enabled
        sm-same-ip                    enabled
        sm-in-system                  enabled
        bw-cac-non-sm                 disabled
        msm-release                   disabled
        qos-enable                    disabled
        max-bandwidth                 0
        ext-policy-svr
```

```
max-latency                     0
max-jitter                      0
max-packet-loss                 0
observ-window-size              0
parent-realm dns-
realm media-policy
in-translationid
out-translationid
in-manipulationid
out-manipulationid
class-profile
average-rate-limit              0
access-control-trust-level
invalid-signal-threshold        0
maximum-signal-threshold        0
untrusted-signal-threshold      0
deny-period                     30
symmetric-latching              disabled
pai-strip                       disabled
trunk-context
early-media-allow
additional-prefixes
restricted-latching             none
restriction-mask                32
accounting-enable               enabled
user-cac-mode                   none
user-cac-bandwidth              0
user-cac-sessions               0
net-management-control          disabled
delay-media-update              disabled
```

session-agent

hostname		192.168.1.20	
ip-address			
port		5060	
state		enabled	
app-protocol		SIP	
app-type			
transport-method		UDP	
realm-id		peer	
description		AT&T Session Agent Primary	
carriers			
allow-next-hop-lp		enabled	
constraints		enabled	
max-sessions		0	
max-inbound-sessions		0	
max-outbound-sessions		0	
max-burst-rate		0	
max-inbound-burst-rate		0	
max-outbound-burst-rate		0	
max-sustain-rate		0	
max-inbound-sustain-rate		0	
max-outbound-sustain-rate		0	
min-seizures		5	
min-asr		0	
time-to-resume	0		

```
                ttr-no-response                 300
                in-service-period               0
                burst-rate-window               0
                sustain-rate-window             0
                req-uri-carrier-mode            None
                proxy-mode
                redirect-action
                loose-routing                   enabled
                send-media-session              enabled
                response-map
                ping-method                     OPTIONS,hdrs=0
                ping-interval                   300
                ping-in-service-response-
                codec out-service-response-
                codec media-profiles
                in-translationid
                out-translationid
                trust-me                        enabled
                request-uri-headers
                stop-recurse
                local-response-map
                ping-to-user-part
                ping-from-user-part
                li-trust-me                     disabled
                in-manipulationid
                out-manipulationid
                p-asserted-id
                trunk-group
                max-register-sustain-rate       0
                early-media-allow
                invalidate-registrations        disabled
                rfc2833-mode                    none
                rfc2833-payload                 0
                codec-policy

session-agent
                hostname                        192.168.1.201
                ip-address
                port                            5060
                state                           enabled
                app-protocol                    SIP
                app-type
                transport-method                UDP
                realm-id                        peer
                description                     AT&T Session Agent Secondary
                carriers
                allow-next-hop-lp               enabled
                constraints                     enabled
                max-sessions                    0
                max-inbound-sessions            0
                max-outbound-sessions           0
                max-burst-rate                  0
                max-inbound-burst-rate          0
                max-outbound-burst-rate         0
                max-sustain-rate                0
                max-inbound-sustain-rate        0
                max-outbound-sustain-rate       0
```

```
                min-seizures                    5
                min-asr                         0
                time-to-resume                  0
                ttr-no-response                 300
                in-service-period               0
                burst-rate-window               0
                sustain-rate-window             0
                req-uri-carrier-mode            None
                proxy-mode
                redirect-action
                loose-routing                   enabled
                send-media-session              enabled
                response-map
                ping-method                     OPTIONS,hops=0
                ping-interval                   300
                ping-in-service-response-codes
                out-service-response-codes
                media-profiles in-
                translationid
                out-translationid
                trust-me                        enabled
                request-uri-headers
                stop-recurse
                local-response-map
                ping-to-user-part
                ping-from-user-part
                li-trust-me                     disabled
                in-manipulationid
                out-manipulationid
                p-asserted-id
                trunk-group
                max-register-sustain-rate       0
                early-media-allow
                invalidate-registrations        disabled
                rfc2833-mode                    none
                rfc2833-payload                 0
                codec-policy

session-agent
                hostname                        10.10.10.200
                ip-address
                port                            1720
                state                           enabled
                app-protocol                    H323
                app-type                        H323-GW
                transport-method                UDP+TCP
                realm-id                        *
                description                     Enterprise H323 UCM
                carriers
                allow-next-hop-lp               enabled
                constraints                     disabled
                max-sessions                    0
                max-inbound-sessions            0
                max-outbound-sessions           0
                max-burst-rate                  0
                max-inbound-burst-rate          0
                max-outbound-burst-rate         0
```

```
        max-sustain-rate                    0
        max-inbound-sustain-rate            0
        max-outbound-sustain-rate           0
        min-register                        5
        min-rar                             0
        time-to-resume                  0
        ttr-no-response                     0
        in-service-period                   0
        burst-rate-window                   0
        sustain-rate-window                 0
        sag-recv-modifier-mode              None
        proxy-mode
        redirect-action
        loose-routing                       enabled
        send-media-session                  enabled
        response-map
        ping-method
        ping-interval
        ping-in-service-response-codes
        out-service-response-codes
        media-profiles                      g729 g711Ulaw64k
        in-translationid
        out-translationid
        trust-me                            disabled
        request-uri-headers
        stop-recurse
        local-response-map
        ping-to-user-part
        ping-from-user-part
        li-trust-me                         disabled
        in-manipulationid
        out-manipulationid
        p-asserted-id
        trunk-group
        max-register-sustain-rate           0
        early-media-allow
        invalidate-registrations            disabled
        rfc2833-mode                        none
        rfc2833-payload                     0
        codec-policy

session-group
        group-name                      ATT
        description
        state                           enabled
        app-protocol                    SIP
        strategy                        RoundRobin
        dest
                                        192.168.1.200
                                        192.168.1.201
        trunk-
        group
        sag-recursion                   disabled
        stop-sag-recurse                401,407

sip-config
        state                           enabled
        operation-mode                  dialog
```

```
        dialog-transparency             enabled
        home-realm-id                   peer
        egress-realm-id                 enterprise-core-cm
        nat-mode                        Public
        registrar-domain
        registrar-host
        registrar-port                  0
        register-service-route          always
        init-time                       500
        max-time                        4000
        trans-expire                    32
        invite-expire                   180
        inactive-dynamic-conn           32
        enforcement-profile
        pac-method
        pac-interval                    10
        pac-strategy                    RoundRobin
        pac-load-weight                 1
        pac-session-weight              1
        pac-route-weight                1
        pac-callid-lifetime             600
        pac-user-lifetime               3600
        red-sip-port                    1988
        red-max-trans                   10000
        red-sync-start-time             5000
        red-sync-comp-time              1000
        add-reason-header               disabled
        sip-message-len                 0
        enum-sag-match                  disabled
        extra-method-stats              disabled
        rph-feature                     disabled
        nsep-user-sessions-rate         0
        registration-cache-limit        0
        options                         add-prack-to-tag-no
                                          insert-sep-header max-udp-
                                          length=0
                                          set-disconnect-time-on-bye

sip-feature
        name                            100rel
        realm                           peer
        support-mode-inbound            Strip
        require-mode-inbound            Reject
        proxy-require-mode-inbound      Pass
        support-mode-outbound           Strip
        require-mode-outbound           Reject
        proxy-require-mode-outbound     Pass

sip-interface
        state                           enabled
        realm-id                        peer
        description
        sip-port
                address                         192.168.1.100
                port                            5060
                transport-protocol              UDP
                tls-profile
```

```
                allow-anonymous                 agents-only
        carriers
        trans-expire                    0
        invite-expire                   0
        max-redirect-contacts           0
        proxy-mode
        redirect-action
        contact-mode                    none
        nat-traversal                   none
        nat-interval                    30
        tcp-nat-interval                30
        registration-caching            disabled
        min-reg-expire                  300
        registration-interval           3600
        route-to-registrar              disabled
        secured-network                 disabled
        teluri-scheme                   disabled
        uri-fqdn-domain
        trust-mode                      all
        max-nat-interval                3600
        nat-int-increment               10
        nat-test-increment              30
        sip-dynamic-hnt                 disabled
        stop-recurse                    401,407
        port-map-start                  0
        port-map-end                    0
        in-manipulationid
        out-manipulationid              Privacy
        sip-ims-feature                 disabled
        operator-identifier
        anonymous-priority              none
        max-incoming-conns              0
        per-src-ip-max-incoming-conns   0
        inactive-conn-timeout           0
        untrusted-conn-timeout          0
        network-id
        ext-policy-server
        default-location-string
        charging-vector-mode            none
        charging-function-address-mode  none
        ccf-address
        ecf-address
        term-tgrp-mode                  none
        implicit-service-route          disabled
        rfc2833-payload                 101
        rfc2833-mode                    transparent
        constraint-name
        response-map
        local-response-map
        enforcement-profile
        refer-call-transfer             disabled
        route-unauthorized-calls
        tcp-keepalive                   none
        add-sdp-invite                  disabled
        add-sdp-profiles sip-
manipulation
```

```
name                                Privacy
description                         changing ip
header-rule
        name                                PAI_Header
        header-name                         P-Asserted-Identity
        action                              manipulate
        comparison-type                     case-sensitive
        match-value
        msg-type                            any
        new-value
        methods
        element-rule
                name                                PAI_Local_IP
                parameter-name
                type                                uri-host
                action                              replace
                match-val-type                      any
                comparison-type                     case-sensitive
                match-value
                new-value                           $LOCAL_IP
header-rule
        name                                PPI_Header
        header-name                         P-Preferred-Identity
        action                              manipulate
        comparison-type                     case-sensitive
        match-value
        msg-type                            any
        new-value
        methods
        element-rule
                name                                PPI_Local_IP
                parameter-name
                type                                uri-host
                action                              replace
                match-val-type                      any
                comparison-type                     case-sensitive
                match-value
                new-value                           $LOCAL_IP
header-rule
        name                                From_Header
        header-name                         From
        action                              manipulate
        comparison-type                     case-sensitive
        match-value
        msg-type                            request
        new-value
        methods
        element-rule
                name                                From_header
                parameter-name
                type                                uri-host
                action                              replace
                match-val-type                      any
                comparison-type                     case-sensitive
                match-value
                new-value                           $LOCAL_IP
header-rule
```

```
        name                            To_Header
        header-name                     To
        action                          manipulate
        comparison-type                 case-sensitive
        match-value
        msg-type                        request
        new-value
        methods
        element-rule
                name                            To_header
                parameter-name
                type                            uri-host
                action                          replace
                match-val-type                  any
                comparison-type                 case-sensitive
                match-value
                new-value                       $REMOTE_IP
header-rule
        name                            RPI_Header
        header-name                     Remote-Party-ID
        action                          manipulate
        comparison-type                 case-sensitive
        match-value
        msg-type                        any
        new-value
        methods
        element-rule
                name                            RPI_header
                parameter-name
                type                            uri-host
                action                          replace
                match-val-type                  any
                comparison-type                 case-sensitive
                match-value
                new-value                       $LOCAL_IP
header-rule
        name                            Refer_header
        header-name                     Referred-By
        action                          manipulate
        comparison-type                 case-sensitive
        match-value
        msg-type                        any
        new-value
        methods
        element-rule
                name                            referredbyhdr
                parameter-name
                type                            uri-host
                action                          replace
                match-val-type                  any
                comparison-type                 case-sensitive
                match-value
                new-value                       $LOCAL_IP
header-rule
        name                            ReferredTo
        header-name                     Refer-To
        action                          manipulate
```

```
                comparison-type                 case-sensitive
                match-value
                msg-type                        any
                new-value
                methods
                element-rule
                        name                            refertohdr
                        parameter-name
                        type                            uri-host
                        action                          replace
                        match-val-type                  any
                        comparison-type                 case-sensitive
                        match-value
                        new-value                       $REMOTE_IP

        header-rule
                        name                            ContactHdr
                        header-name                     Contact
                        action                          manipulate
                        comparison-type                 case-sensitive
                        match-value
                        msg-type                        any
                        new-value
                        methods
                        element-rule
                                name                            ContactHostReplace
                                parameter-name
                                type                            uri-host
                                action                          replace
                                match-val-type                  any
                                comparison-type                 case-sensitive
                                match-value
                                new-value                       $LOCAL_IP

steering-pool
        ip-address                      192.168.1.100
        start-port                      16384
        end-port                        32767
        realm-id                        peer
        network-interface

steering-pool
        ip-address                      10.10.10.100
        start-port                      16384
        end-port                        32767
        realm-id                        enterprise-core-com
        network-interface

system-config
        hostname                        Enterprise
        description                     Enterprise-SD
        location
        mib-system-contact
        mib-system-name
        mib-system-location
        snmp-enabled                    enabled
        enable-snmp-auth-traps          disabled
```

```
enable-snmp-syslog-notify       enabled
enable-snmp-monitor-traps       enabled
enable-env-monitor-traps        disabled
snmp-syslog-his-table-length    1
snmp-syslog-level               WARNING
system-log-level                WARNING
process-log-level               NOTICE
process-log-ip-address          0.0.0.0
process-log-port                0
call-trace                      disabled
internal-trace                  disabled
log-filter                      all
default-gateway                 192.168.1.1
restart                         enabled
exceptions
telnet-timeout                  0
console-timeout                 0
remote-control                  enabled
link-redundancy-state           disabled
```

Cisco UCM 4.x H.323 Interworking to AT&T SIP with Acme Packet 3000-4000 Series SBC
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