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IPv4-IPv6 AT&T IP Flexible Reach Service with Avaya Communication Manager 6.0 and Acme Packet 3000-4000 Series SBC

A Technical Application Note

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Disclaimer

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Emergency 911/E911 Services Limitations and Restrictions - Although AT&T provides 911/E911 calling capabilities, AT&T does not warrant or represent that the equipment and software (e.g., IP PBX) reviewed in this customer configuration guide will properly operate with AT&T IP Flexible Reach to complete 911/E911 calls; therefore, it is Customer's responsibility to ensure proper operation with its equipment/software vendor.

While AT&T IP Flexible Reach services support E911/911 calling capabilities under certain Calling Plans, there are circumstances when that E911/911 service may not be available, as stated in the Service Guide for AT&T IP Flexible Reach found at http://new.serviceguide.att.com. Such circumstances include, but are not limited to, relocation of the end user's CPE, use of a non-native or virtual telephone number, failure in the broadband connection, loss of electrical power, and delays that may occur in updating the Customer's location in the automatic location information database. Please review the AT&T IP Flexible Reach Service Guide in detail to understand the limitations and restrictions.

Abstract

This technical application note defines a SIP configuration model suitable for the Acme Packet 3000-4000 series Session Border Controllers (SBCs) connecting Avaya Communication Manager 6.0 (IPv4 address family) from a customer premise to AT&T's IP Flexible Reach service (IPv6 address family) with MIS, PNT or AVPN transport. The reference configuration presented was tested in AT&T's labs.

Introduction

This Oracle technical application note outlines the recommended IPv4/IPv6 interworking configuration for the Acme Packet 3000-4000 series, the industry leading Session Border Controllers, for connecting AT&T's IP Flexible Reach service to Avaya Communication Manager 6.0 customers. This document is applicable to Acme Packet OS-C versions 6.2.0m6 and higher.

NOTE: This solution REQUIRES a valid IPv4/IPv6 feature license. The command line output from "show features" will list "IPv4-v6 interworking" if the license has been installed on the system.

Intended Audience

This document is intended for user by Oracle Systems Engineers, Oracle Enterprise Customers and Partners. It assumes that the reader is familiar with basic operations of the Session Border Controllers.

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 SIP to SIP deployment models. Originating IPv4 Avaya SIP traffic and terminating to an IPv6 SIP provider via the Oracle Communications Session Border Controller. The configuration also supports bidirectional call-flows via Local-Policy routes.

This document will annotate each configuration with information on its general applicability. The intent is to: Minimize UCM SIP interoperability issue's by standardizing field configurations

- Minimize SIP to SIP interoperability issue's by standardizing field configurations

- Provide guidelines for new users for the Session Border Controller

- Provide a configuration template, base-lining the SIP to SIP configuration (with accompanying Diagram)

- Flexibility: how resilient the configuration is and how adaptable the configuration is when turning up new SIP to SIP networks.

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- Performance: minimize the use of unnecessary configuration objects

Reference Architecture

This section includes a reference architecture diagram, where the Session Border Controller is integrated as an Enterprise CPE Trunking Session Border Controller, performing SIP between Avaya Communication Manager 6.0 in the Enterprise and the AT&T Flexible Reach service.

The Avaya IPv4 Communication Manager peers with the IPv6 AT&T IP Flexible Reach service via the Oracle Communications Session Border Controller (as depicted below).

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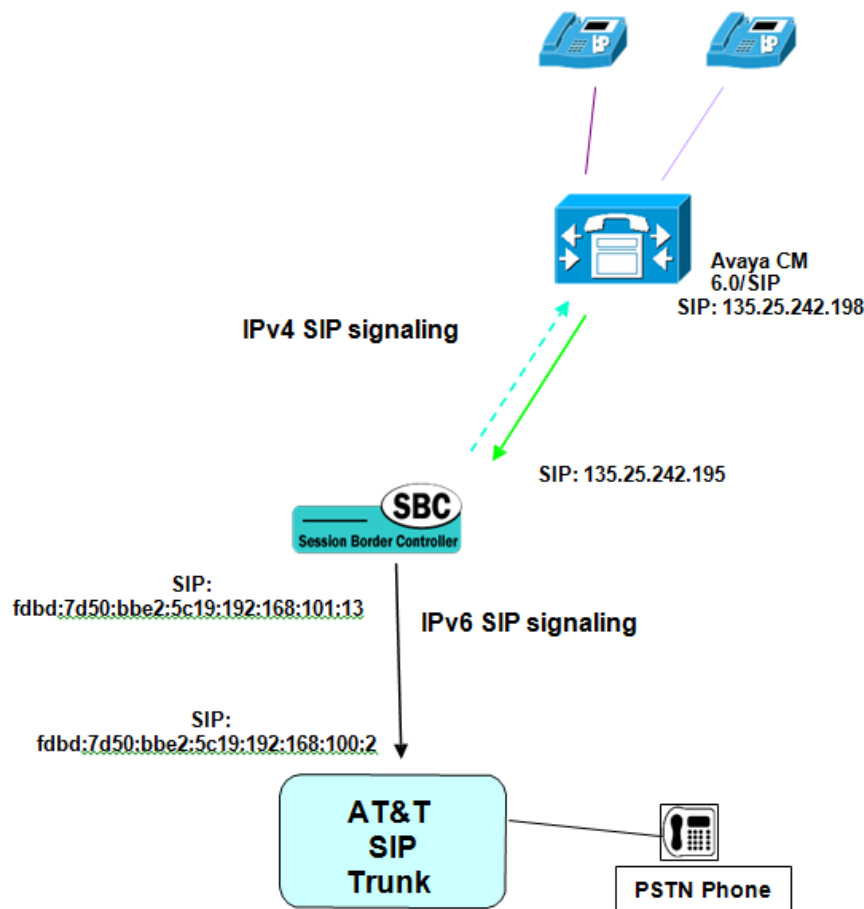
Service Requirements

This Below is a description of service requirements that must be adhered to for the solution to work as tested.

- If Avaya Aura® Communication Manager receives an SDP offer with multiple codecs, where at least two of the codecs are supported in the codec set provisioned on Avaya Aura® Communication Manager, then Avaya Aura® Communication Manager selects a codec according to the priority order specified in the Avaya Aura® Communication Manager codec set, not the priority order specified in the SDP offer. For example, if the AT&T IP Toll Free service offers G.711, G.729A, and G.729B in that order, but the Avaya Aura® Communication Manager codec set contains G.729B, G729A, and G.711 in that order, then Avaya Aura® Communication Manager selects G.729A, not G.711. The practical resolution is to provision the Avaya Aura® Communication Manager codec set to match the expected codec priority order in AT&T IP Toll Free SDP offers.

- G.726 codec is not supported between Avaya Aura® Communication Manager and the AT&T IP Toll Free service.

- G.711 faxing is not supported between Avaya Aura® Communication Manager and the AT&T IP Toll Free service. Avaya Aura® Communication Manager does not support the protocol negotiation that AT&T requires to have G.711 fax calls work. T.38 faxing is supported, as is Group 3 and Super Group 3 fax. Fax speeds are limited to 9600 in the configuration tested. In addition, Fax Error Correction Mode

- (ECM) is not supported by Avaya Aura® Communication Manager.

- Shuffling must be disabled on the Avaya Aura® Communication Manager "local" SIP trunk due to codec negotiation issues with Avaya SIP telephones.

- Avaya Aura® Communication Manager 6.0 inserts a leading plus sign to calling number headers by default (e.g. Update, From, PAI, Contact). The AT&T IP Toll Free service does not support the use of digit strings with a leading plus sign ("+") in headers containing calling numbers (Update in the case of the inbound only AT&T IP Toll Free service). The SIP-manipulation rules in the Acme Packet 3000/4000 will remove the leading plus sign ("+") before sending to AT&T's network.

Notes on Reference Configuration

In the configuration, the Realm labeled INSIDE, and its corresponding IPv4 SIP Interface address 135.25.242.195, is where the SIP signaling and eventual RTP (when signaling dictates RTP can start), will enter and exit the Session Border Controller. This address represents the Oracle Communications Session Border Controller's SIP Signaling target for the Avaya Communication Manager to signal to.

The Realm labeled OUTSIDE and its corresponding IPv6 SIP Interface address fdbd:7d50:bbe2:5c19:192:168:101:13, is where all SIP messaging enters and exits the Oracle Communications Session Border Controller to and from the AT&T network SIP Peering side.

The Local-Policy configurations route sessions to/from the Avaya CM to AT&T's network.

NOTE: multiple PBXs can be supported on a common Acme Packet 3000/4000 by adding the following configuration elements for each new platform:

- Realm that faces the new PBX (i.e. INSIDE-new)

    o The same Physical-Interface and Network-Interface may be used

- Realm that faces IP Flexible Reach (i.e. ATT-new)

    o The same Physical-Interface and Network-Interface may be used

- SIP-interface that faces the new PBX (requires a new IP address for SIP-port)

- SIP-interface that faces IP Flexible Reach (requires a new IP address for SIP-port)

- Steering-Pool with the new "PBX facing" IP address and Realm

- Steering-Pool with the new "IP Flexible Reach facing" IP address and Realm

- Local-Policy with Source realm of new "PBX facing" realm and Next-Hop of AT&T facing IP address and Realm name

- Local-Policy with Source realm of new "AT&T facing" realm and Next-Hop of new PBX facing IP address and Realm name

- Session-Agent with new "PBX facing" IP address and Realm name

It should be noted that "platform specific" header manipulation rules and translation-rules should be configured under their respective SIP-INTERFACE rather than on a "global" level. This prevents unnecessary and potentially harmful SIP signaling modifications to the other PBX platforms that could cause certain call flows to fail.

RFC1981 – Path MTU discovery protocol limitation

When a router receives an IPv6 message that is too big for the router's "outgoing link", the router will return an "ICMP too big" message. The IPv6 sender should then fragment the packet and resend it. When Oracle sends an IPv6 packet, it does not currently support the receipt of an ICMP too big message and the subsequent re-transmission of a fragmented version of the original IPv6 packet. The issue is most common when the "outgoing link" is an IPv4 tunnel. In a VoIP scenario, this large IPv6 packet will typically be an initial VoIP/SIP INVITE. If this situation occurs, the call being initiated by the INVITE will fail.

Normative References

[1] Oracle, "Acme Packet 4000 S-C6.2.0 ACLI Configuration Guide", 400-0061-62 Rev 2.20, Apr 2012. [2] Archer, M., "BCP SIP Peering Configuration", 520-0038-01, Mar 2010

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Appendix A: Reference Diagram and Configuration

The Avaya CM peers with the AT&T IP Flexible Reach service via the Oracle Communications Session Border Controller (as depicted below):
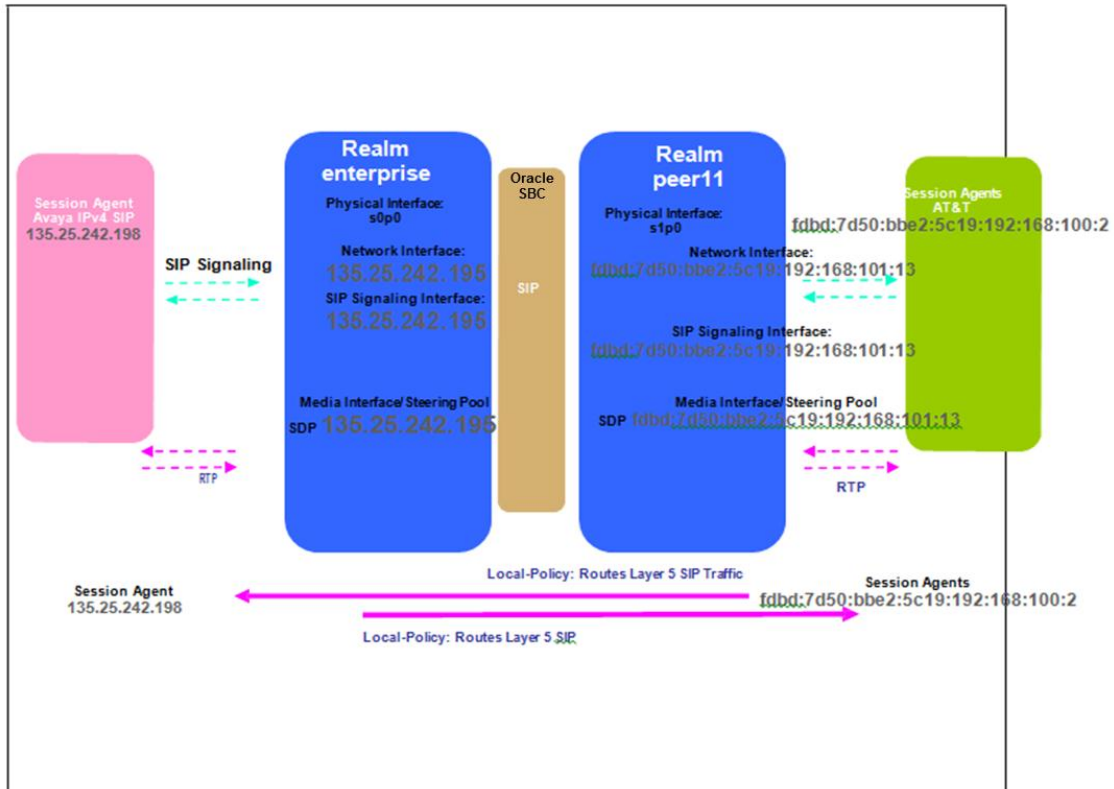

```
local-policy
        from-address
                                        *
        to-address
                                        *
        source-realm
                                        ATT
        description
        activate-time                   N/A
        deactivate-time                 N/A
        state                           enabled
        policy-priority                 none
        last-modified-by                admin@console
        last-modified-date              2011-11-29 08:27:50
        policy-attribute
                next-hop                    135.25.242.198
                realm                       AvayaCM
                action                      none
                terminate-recursion         disabled
                carrier
```

```
                start-time                      0000
                end-time                        2400
                days-of-week                    U-S
                cost                            10
                app-protocol                    SIP
                state                           enabled
                methods
                media-profiles
                lookup                          single
                next-key
                eloc-str-lkup                   disabled
                eloc-str-match
local-policy
        from-address
                                        *

        to-address
                                        *

        source-realm

                                        AvayaCM
        description

        activate-time                   N/A
        deactivate-time                 N/A
        state                           enabled
        policy-priority                 none
        last-modified-by                admin@console
        last-modified-date              2011-09-28 08:20:21
        policy-attribute
                next-hop                        2001:1890:1001:200e::7
                realm                           ATT
                action                          none
                terminate-recursion             disabled
                carrier
                start-time                      0000
                end-time                        2400
                days-of-week                    U-S
                cost                            0
                app-protocol                    SIP
                state                           enabled
                methods
                media-profiles
                lookup                          single
                next-key
                eloc-str-lkup                   disabled
                eloc-str-match
media-manager
        state                           enabled
        latching                        enabled
        flow-time-limit                 999999999
        initial-guard-timer             300
        subsq-guard-timer               300
        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
        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
```

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```
        min-untrusted-signaling          30
        app-signaling-bandwidth          0
        tolerance-window                 30
        rtcp-rate-limit                  0
        trap-on-demote-to-deny           enabled
        syslog-on-demote-to-deny         disabled
        syslog-on-demote-to-untrusted    disabled
        min-media-allocation             2000
        min-trusted-allocation           4000
        deny-allocation                  64000
        anonymous-sdp                    disabled
        arp-msg-bandwidth                32000
        fragment-msg-bandwidth           0
        rfc2833-timestamp                disabled
        default-2833-duration            100
        rfc2833-end-pkts-only-for-non-sig enabled
        translate-non-rfc2833-event      disabled
        media-supervision-traps          disabled
        dnsalg-server-failover           disabled
        last-modified-by                 admin@console
        last-modified-date               2011-05-26 13:19:34
network-interface
        name                             ATT
        sub-port-id                      0
        description hostname
        ip-address                       fdbd:7d50:bbe2:5c19:192:168:101:13/112
        pri-utility-addr
        sec-utility-addr
        gateway                          fdbd:7d50:bbe2:5c19:192:168:101:1
        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                       fdbd:7d50:bbe2:5c19:192:168:101:13
        ftp-address
        icmp-address                      fdbd:7d50:bbe2:5c19:192:168:101:13
        snmp-address telnet-
        address ssh-address
        last-modified-by                 admin@console
        last-modified-date               2011-02-23 12:18:42
network-interface
        name                             AvayaCM
        sub-port-id                      0
        description
        hostname
        ip-address                       135.25.242.195
        pri-utility-addr sec-utility-
        addr
        netmask                          255.255.255.224
        gateway                          135.25.242.193
        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                      135.25.242.195
    ftp-address                     135.25.242.195
    icmp-address                     135.25.242.195
    snmp-address
    telnet-address                  135.25.242.195
    ssh-address
    last-modified-by                admin@console
    last-modified-date              2011-11-01 09:26:05
phy-interface
    name                            AvayaCM
    operation-type                  Media
    port                            0
    slot                            0
    virtual-mac
    admin-state                     enabled
    auto-negotiation                disabled
    duplex-mode                     FULL
    speed                           100
    overload-protection             disabled
    last-modified-by                admin@console
    last-modified-date              2009-04-28 14:29:07
phy-interface
    name                            ATT
    operation-type                  Media
    port                            0
    slot                            1
    virtual-mac
    admin-state                     enabled
    auto-negotiation                disabled
    duplex-mode                     FULL
    speed                           100
    overload-protection             disabled
    last-modified-by                admin@console
    last-modified-date              2011-02-28 11:07:18
realm-config
    identifier                      ATT
    description
    addr-prefix                     fdbd:7d50:bbe2:5c19:192:168::/64
    network-interfaces
                                    ATT:0
    mm-in-realm                     enabled
    mm-in-network                   enabled
    mm-same-ip                      enabled
    mm-in-system                    enabled
    bw-cac-non-mm                   disabled
    msm-release                     enabled
    generate-UDP-checksum           disabled
    max-bandwidth                   0
    fallback-bandwidth              0
    max-priority-bandwidth          0
    max-latency                     0
    max-jitter                      0
    max-packet-loss                 0
    observ-window-size              0
    parent-realm
    dns-realm media-policy
    media-sec-policy
```

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```
        in-translationid out-
        translationid in-
        manipulationid out-
        manipulationid
        manipulation-string
        manipulation-pattern
        class-profile
        average-rate-limit              0
        access-control-trust-level      none
        invalid-signal-threshold        0
        maximum-signal-threshold        0
        untrusted-signal-threshold      0
        nat-trust-threshold             0
        deny-period                     30
        cac-failure-threshold           0
        untrust-cac-failure-threshold   0
        ext-policy-svr
        diam-e2-address-realm
        symmetric-latching              disabled
        pai-strip                       disabled
        trunk-context
        early-media-allow               both
        enforcement-profile additional-
        prefixes
        restricted-latching             none
        restriction-mask                32
        accounting-enable               enabled
        user-cac-mode                   none|
        user-cac-bandwidth              0
        user-cac-sessions               0
        icmp-detect-multiplier          0
        icmp-advertisement-interval     0
        icmp-target-ip
        monthly-minutes                 0
        net-management-control          disabled
        delay-media-update              disabled
        refer-call-transfer             disabled
        dyn-refer-term                  disabled
        codec-policy
        codec-manip-in-realm            disabled
        constraint-name
        call-recording-server-id
        xnq-state                       xnq-unknown
        hairpin-id                      0
        stun-enable                     disabled
        stun-server-ip                  0.0.0.0
        stun-server-port                3478
        stun-changed-ip                 0.0.0.0
        stun-changed-port               3479
        match-media-profiles qos-constraint
        sip-profile
        sip-isup-profile
        block-rtcp                      disabled
        hide-egress-media-update        disabled last-
        modified-by                     admin@console
        last-modified-date              2011-09-01 05:07:28
realm-config
        identifier                      AvayaCM
        description
        addr-prefix                     0.0.0.0
        network-interfaces
                                        AvayaCM:0
        mm-in-realm                     disabled
        mm-in-network                   enabled
```

```
mm-same-ip                          enabled
mm-in-system                        enabled
bw-cac-non-mm                       disabled
msm-release                         disabled
generate-UDP-checksum               disabled
max-bandwidth                       0
fallback-bandwidth                  0
max-priority-bandwidth              0
max-latency                         0
max-jitter                          0
max-packet-loss                     0
observ-window-size                  0
parent-realm dns-realm |
media-policy
media-sec-policy
in-translationid out-
translationid in-
manipulationid out-
manipulationid
manipulation-string
manipulation-pattern
class-profile
average-rate-limit                  0
access-control-trust-level          none
invalid-signal-threshold            0
maximum-signal-threshold            0
untrusted-signal-threshold          0
nat-trust-threshold                 0
deny-period                         30
cac-failure-threshold               0
untrust-cac-failure-threshold    0
ext-policy-svr
diam-e2-address-realm
symmetric-latching                  disabled
pai-strip                           disabled
trunk-context
early-media-allow                   both
enforcement-profile
additional-prefixes
restricted-latching                 none
restriction-mask                    32
accounting-enable                   enabled
user-cac-mode                       none
user-cac-bandwidth                  0
user-cac-sessions                   0
icmp-detect-multiplier              0
icmp-advertisement-interval         0
icmp-target-ip
monthly-minutes                     0
net-management-control              disabled
delay-media-update                  disabled
refer-call-transfer                 disabled
dyn-refer-term                      disabled
codec-policy
codec-manip-in-realm                disabled
constraint-name
call-recording-server-id
xng-state                           xng-unknown
hairpin-id                          0
stun-enable                         disabled
stun-server-ip                      0.0.0.0
stun-server-port                    3478
stun-changed-ip                     0.0.0.0
stun-changed-port                   3479
```

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```
          match-media-profiles qos-
          constraint
          sip-profile
          sip-isup-profile
          block-rtcp                      disabled
          hide-egress-media-update        disabled
          last-modified-by                admin@console
          last-modified-date              2011-09-01 05:08:05
session-agent
          hostname                        fdbd:7d50:bbe2:5c19:192:168:100:2
          ip-address
          port                            5060
          state                           enabled
          app-protocol                    SIP
          app-type
          transport-method                UDP
          realm-id                        ATT
          egress-realm-id
          description
          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-seizures                    5
          min-ask                         0
          time-to-resume                  0
          ttr-no-response                 0
          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
          ping-interval                   0
          ping-send-mode                  keep-alive
          ping-all-addresses              disabled
          ping-in-service-response-codes
          out-service-response-codes media-
          profiles
          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
          manipulation-string
          manipulation-pattern
          p-asserted-id
```

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```
        trunk-group
        max-register-sustain-rate        0
        early-media-allow
        invalidate-registrations         disabled
        rfc2833-mode                     none
        rfc2833-payload                  0
        codec-policy
        enforcement-profile
        refer-call-transfer              disabled
        reuse-connections                NONE
        tcp-keepalive                    none
        tcp-reconn-interval              0
        max-register-burst-rate          0
        register-burst-window            0
        sip-profile
        sip-isup-profile
        last-modified-by                 admin@console
        last-modified-date               2011-02-21 17:04:57
session-agent
        hostname                         135.25.242.198
        ip-address
        port                             5060
        state                            enabled
        app-protocol                     SIP
        app-type
        transport-method                 StaticTCP
        realm-id                         *
        egress-realm-id
        description                      avaya
        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-seizures                     5
        min-asr                          0
        time-to-resume                   0
        ttr-no-response                  0
        in-service-period                0
        burst-rate-window                0
        sustain-rate-window              0
        req-uri-carrier-mode             None
        proxy-mode
        redirect-action                  Proxy
        loose-routing                    enabled
        send-media-session               enabled
        response-map
        ping-method
        ping-interval                    0
        ping-send-mode                   keep-alive
        ping-all-addresses               disabled
        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
        manipulation-string
        manipulation-pattern
        p-asserted-id
        trunk-group
        max-register-sustain-rate  0
        early-media-allow
        invalidate-registrations   disabled
        rfc2833-mode               none
        rfc2833-payload            0
        codec-policy
        enforcement-profile
        refer-call-transfer        disabled
        reuse-connections          TCP
        tcp-keepalive              none
        tcp-reconn-interval        0
        max-register-burst-rate    0
        register-burst-window      0
        sip-profile
        sip-isup-profile
        last-modified-by           admin@console
        last-modified-date         2011-11-29 08:28:04
session-agent
        hostname                   2001:1890:1001:200e::7
        ip-address
        port                       5060
        state                      enabled
        app-protocol               SIP
        app-type
        transport-method           UDP
        realm-id                   ATT
        egress-realm-id
        description 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-seizures               5
        min-asr                    0
        time-to-resume             0
        ttr-no-response            0
        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
```

```
        ping-interval                   0
        ping-send-mode                  keep-alive
        ping-all-addresses              disabled
        ping-in-service-response-codes out-service-
        response-codes media-profiles
        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
        manipulation-string
        manipulation-pattern
        p-asserted-id
        trunk-group
        max-register-sustain-rate       0
        early-media-allow
        invalidate-registrations        disabled
        rfc2833-mode                    none
        rfc2833-payload                 0
        codec-policy
        enforcement-profile
        refer-call-transfer             disabled
        reuse-connections               NONE
        tcp-keepalive                   none
        tcp-reconn-interval             0
        max-register-burst-rate         0
        register-burst-window           0
        sip-profile
        sip-isup-profile
        last-modified-by                admin@console
        last-modified-date              2011-05-12 15:35:23
sip-config
        state                           enabled
        operation-mode                  dialog
        dialog-transparency             enabled
        home-realm-id
        egress-realm-id                 AvayaCM
        nat-mode                        Public
        registrar-domain
        registrar-host
        registrar-port                  0
        register-service-route          always
        init-timer                      500
        max-timer                       4000
        trans-expire                    10
        invite-expire                   180
        inactive-dynamic-conn           32
        enforcement-profile
        pac-method
        pac-interval                    10
        pac-strategy                    PropDist
        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
```

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```
        red-sync-start-time             5000
        red-sync-comp-time                 1000
        add-reason-header               disabled
        sip-message-len                 4096
        enum-sag-match                  disabled
        extra-method-stats              disabled
        rph-feature                     disabled
        nsep-user-sessions-rate            0
        nsep-sa-sessions-rate              0
        registration-cache-limit           0
        register-use-to-for-lp          disabled
        options                         add-prov-to-tag=no
                                            max-udp-length=0
                                            set-inv-exp-at-100-resp
        refer-src-routing               disabled
        add-ucid-header                 disabled
        proxy-sub-events
        pass-gruu-contact               disabled
        sag-lookup-on-redirect             disabled
        set-disconnect-time-on-bye         disabled
        last-modified-by                admin@console
        last-modified-date              2011-09-01 05:03:41
sip-feature
        name                            Replaces
        realm
        support-mode-inbound            Pass
        require-mode-inbound      Pass    proxy-
        require-mode-inbound      Pass  support-
        mode-outbound             Pass
        require-mode-outbound             Pass
        proxy-require-mode-outbound       Pass
        last-modified-by                admin@console
        last-modified-date              2011-02-25 11:46:10
sip-interface
        state                           enabled
        realm-id                        AvayaCM
        description
        sip-port
                address                         135.25.242.195
                port                            5060
                transport-protocol              TCP
                tls-profile
                allow-anonymous                 all
                ims-aka-profile 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                90
        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
```

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```
        sip-dynamic-hnt              disabled
        stop-recurse                 401,407
        port-map-start                  0
        port-map-end                    0
        in-manipulationid            storecontact
        out-manipulationid           NAT_IP_rel
        manipulation-string
        manipulation-pattern
        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    pass   charging-
        function-address-mode pass 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
        ims-aka-feature              disabled
        enforcement-profile
        route-unauthorized-calls
        tcp-keepalive                none
        add-sdp-invite               disabled
        add-sdp-profiles
        sip-profile
        sip-isup-profile
        last-modified-by             admin@console
        last-modified-date           2011-11-01 09:27:03
sip-interface
        state                        enabled
        realm-id                     ATT
        description
        sip-port
                address                      fdbd:7d50:bbe2:5c19:192:168:101:13
                port                         5060
                transport-protocol           UDP
                tls-profile
                allow-anonymous              agents-only
                ims-aka-profile 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                90
        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              ChangeSubState
        out-manipulationid             Privacy
        manipulation-string
        manipulation-pattern
        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    pass   charging-
        function-address-mode pass ccf-address
        ecf-address
        term-tgrp-mode                 none
        implicit-service-route         disabled
        rfc2833-payload                101
        rfc2833-mode                   preferred
        constraint-name
        response-map
        local-response-map
        ims-aka-feature                disabled
        enforcement-profile
        route-unauthorized-calls
        tcp-keepalive                  none
        add-sdp-invite                 disabled
        add-sdp-profiles
        sip-profile
        sip-isup-profile
        last-modified-by               admin@console
        last-modified-date             2011-02-28 12:31:15
sip-manipulation
        name                           Privacy
        description split-
        headers join-headers
        header-rule
                name                                   From_Header
                header-name                            From
                action                                 manipulate
                comparison-type                        case-sensitive
                msg-type                               request
                methods match-value
                new-value element-
                rule
                        name                                   From_header
                        parameter-name
                        type                                   uri-host
                        action                                 replace
                        match-val-type                         any
```

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```
                comparison-type                    case-sensitive
                match-value
                new-value                          $LOCAL_IP |
header-rule
        name                               To_Header
        header-name                        To
        action                             manipulate
        comparison-type                    case-sensitive
        msg-type                           request
        methods
        match-value new-
        value 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                               PAI_Header
        header-name                        P-Asserted-Identity
        action                             manipulate
        comparison-type                    case-sensitive
        msg-type                           any
        methods match-value
        new-value element-
        rule
                name                               PAI_Local_IP
                parameter-name
                type                               uri-host
                action                             replace
                match-val-type                     any
                comparison-type                    case-sensitive
                match-value                        customerb.com
                new-value                          $LOCAL_IP
header-rule
        name                               PPI_Header
        header-name                        P-Preferred-Identity
        action                             manipulate
        comparison-type                    case-sensitive
        msg-type                           any
        methods match-value
        new-value 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                               RPI_Header
        header-name                        Remote-Party-ID
        action                             manipulate
        comparison-type                    case-sensitive
        msg-type                           any
        methods
        match-value
```

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```
         new-value 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                              manipRURI
         header-name                       request-uri
         action                            manipulate
         comparison-type                   case-sensitive
         msg-type                          request
         methods                           INVITE
         match-value
         new-value element-
         rule
                  name                              modRURI
                  parameter-name
                  type                              uri-host
                  action                            replace
                  match-val-type                    any
                  comparison-type                   case-sensitive
                  match-value
                  new-value                         $REMOTE_IP
header-rule
         name                              manipDiversion
         header-name                       Diversion
         action                            manipulate
         comparison-type                   case-sensitive
         msg-type                          any
         methods                           INVITE
         match-value new-
         value element-rule
                  name                              Diversion
                  parameter-name
                  type                              uri-host
                  action                            replace
                  match-val-type                    any
                  comparison-type                   case-sensitive
                  match-value
                  new-value                         $LOCAL_IP
header-rule
         name                              storeXcontact
         header-name                       X-Contact
         action                            manipulate
         comparison-type                   case-sensitive
         msg-type                          request
         methods                           INVITE
         match-value
         new-value element-
         rule
                  name                              storeXcontact
                  parameter-name
                  type                              header-value
                  action                            store
                  match-val-type                    any
                  comparison-type                   case-sensitive
                  match-value                       (.*)
                  new-value
header-rule
```

```
        name                              replacecontact
        header-name                       Contact
        action                            manipulate
        comparison-type                   pattern-rule
        msg-type                          request
        methods                           INVITE
        match-value new-
        value element-rule
                name                              replacecontact
                parameter-name
                type                              uri-user
                action                            replace
                match-val-type                    any
                comparison-type                   pattern-rule
                match-value                       (.*)
                new-value                         $storeXcontact.$storeXcontact.$0
header-rule
        name                              delXcontact
        header-name                       X-Contact
        action                            delete
        comparison-type                   pattern-rule
        msg-type                          request
        methods                           INVITE
        match-value
        new-value
header-rule
        name                              manipv6contact
        header-name                       Contact
        action                            manipulate
        comparison-type                   case-sensitive
        msg-type                          reply
        methods
        match-value new-
        value element-rule
                name                              v6contact
                parameter-name
                type                              uri-host
                action                            replace
                match-val-type                    any
                comparison-type                   case-sensitive
                match-value                       customerb.com
                new-value                         $LOCAL_IP
header-rule
        name                              ReferredBy
        header-name                       Referred-By
        action                            manipulate
        comparison-type                   case-sensitive
        msg-type                          any
        methods
        match-value new-
        value 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
```

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```
        action                          manipulate
        comparison-type                 case-sensitive
        msg-type                        any
        methods match-value
        new-value element-
        rule
                name                                referto
                parameter-name
                type                                uri-host
                action                              replace
                match-val-type                      any
                comparison-type                     case-sensitive
                match-value
                new-value                           $REMOTE_IP
    last-modified-by                    admin@console
    last-modified-date                  2012-01-31 11:41:55
sip-manipulation
    name                            NAT_IP_rel
    description
    split-headers join-
    headers header-rule
        name                                Inbound_To
        header-name                         To
        action                              manipulate
        comparison-type                     case-sensitive
        msg-type                            request
        methods
        match-value new-
        value element-rule
                name                                To
                parameter-name
                type                                uri-host
                action                              replace
                match-val-type                      any
                comparison-type                     case-sensitive
                match-value                         $LOCAL_IP
                new-value                           customerb.com
    header-rule
        name                                Inbound_From
        header-name                         From
        action                              manipulate
        comparison-type                     case-sensitive
        msg-type                            request
        methods
        match-value new-
        value element-rule
                name                                From
                parameter-name
                type                                uri-host
                action                              replace
                match-val-type                      any
                comparison-type                     case-sensitive
                match-value
                new-value                           $LOCAL_IP
    header-rule
        name                                Inbound_PAI_direct
        header-name                         P-Asserted-Identity
        action                              manipulate
        comparison-type                     case-sensitive
        msg-type                            request
        methods
```

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```
                match-value new-
                value element-rule
                        name                                    modPAI
                        parameter-name
                        type                                    uri-host
                        action                                  replace
                        match-val-type                          any
                        comparison-type                         case-sensitive
                        match-value                             $REMOTE_IP
                        new-value                               customerb.com
        last-modified-by                        admin@console
        last-modified-date                      2012-01-31 11:44:29
sip-manipulation
        name                            storecontact
        description
        split-headers join-
        headers header-rule
                name                                    strcon
                header-name                             Contact
                action                                  manipulate
                comparison-type                         case-sensitive
                msg-type                                request
                methods                                 INVITE
                match-value
                new-value element-
                rule
                        name                                    strval
                        parameter-name
                        type                                    uri-user
                        action                                  store
                        match-val-type                          any
                        comparison-type                         case-sensitive
                        match-value                             (.*)
                        new-value
        header-rule
                name                                    addXcontact
                header-name                             X-Contact
                action                                  add
                comparison-type                         pattern-rule
                msg-type                                request
                methods                                 INVITE
                match-value new-
                value element-rule
                        name                                    addX
                        parameter-name
                        type                                    header-value
                        action                                  replace
                        match-val-type                          any
                        comparison-type                         pattern-rule
                        match-value
                        new-value                               $strcon.$strval.$0
        last-modified-by                        admin@console
        last-modified-date                      2011-02-25 12:32:32
sip-manipulation
        name                            ChangeSubState
        description split-
        headers join-headers
        header-rule
                name                                    Subscription_State
                header-name                             Subscription-State
                action                                  manipulate
```

```
            comparison-type                     case-sensitive
            msg-type                            request
            methods                             NOTIFY
            match-value new-
            value element-rule
                    name                                value
                    parameter-name
                    type                                header-value
                    action                              replace
                    match-val-type                      any
                    comparison-type                     pattern-rule
                    match-value                         terminated
                    new-value                           active;expires=1
        last-modified-by                    admin@console
        last-modified-date                 2011-02-28 12:30:25
steering-pool
        ip-address                            135.25.242.195
        start-port                         16384
        end-port                           32767
        realm-id                           AvayaCM
        network-interface
        last-modified-by                   admin@console
        last-modified-date                 2011-11-01 09:27:23
steering-pool
        ip-address                         fdbd:7d50:bbe2:5c19:192:168:101:13
        start-port                         16384
        end-port                           32767
        realm-id                           ATT
        network-interface
        last-modified-by                   admin@console
        last-modified-date                 2011-02-23 10:41:52
system-config
        hostname description
        location
        mib-system-contact
        mib-system-name
        mib-system-location
        snmp-enabled                       enabled
        enable-snmp-auth-traps             disabled
        enable-snmp-syslog-notify           disabled
        enable-snmp-monitor-traps           disabled
        enable-env-monitor-traps    disabled   snmp-
        syslog-his-table-length     1
        snmp-syslog-level                  WARNING
        system-log-level                   WARNING
        syslog-server
                address                            10.10.10.85
                port                               514
                facility                           5
        process-log-level                  NOTICE
        process-log-ip-address             0.0.0.0
        process-log-port                   0
        collect
                sample-interval                    5
                push-interval                      15
                boot-state                         disabled
                start-time                         now
                end-time                           never
                red-collect-state                  disabled
                red-max-trans                      1000
                red-sync-start-time                5000
                red-sync-comp-time                 1000
                push-success-trap-state            disabled
```

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```
call-trace                    disabled
internal-trace                disabled
log-filter                    all
default-gateway               135.25.242.193
restart                       enabled
exceptions
telnet-timeout                0
console-timeout               0
remote-control                enabled
cli-audit-trail               enabled
link-redundancy-state         disabled
source-routing                enabled
cli-more                      disabled
terminal-height               24
debug-timeout                 0
trap-event-lifetime           0
default-v6-gateway            fdbd:7d50:bbe2:5c19:192:168:101:1
ipv6-support                  enabled
cleanup-time-of-day           00:00
last-modified-by              admin@console
last-modified-date            2011-11-01 09:28:35
```

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