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Application Server VTR

Administration Guide

Release 21.0

Document Version 1

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BroadWorks® Guide

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Release	Version	Reason for Change	Date	Author
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21.0	1	Updated copyright notice and trademarks. Edited changes.	October 14, 2014	Joan Renaud
21.0	1	Updated BroadSoft and BroadWorks logos. Published document.	October 22, 2014	Joan Renaud

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1 Summary of Changes

This section describes the changes to this document for each release and document version.

1.1 Changes for Release 21.0, Document Version 1

The document was updated for Release 21.0.

1.2 Changes for Release 20.0, Document Version 1

The document was created for Release 20.0.

2 About This Guide

The *BroadWorks Application Server VTR Administration Guide* is designed to assist system administrators with the Verify Translation and Routing (VTR) feature on the BroadWorks Application Server platform. This guide replaces, previously released feature description documents, with a single source of information, which will be kept up to date. While this guide describes VTR functionality, it also contains information on how to install, configure, and use the Xsi-VTR application.

This guide assumes administrators are familiar with the Session Initiation Protocol (SIP) and the call processing mechanism of the Application Server along with the available services and their configuration. For the Xsi-VTR application, it is assumed that the administrator is familiar with the BroadWorks Xtended Services Platform server and its management.

3 Verify Translation and Routing

Verify Translation and Routing (VTR) is a diagnostic tool that is designed to help an administrator execute call-processing simulations to better understand and test various configurations. The VTR tool allows an administrator to:

- Identify which specific rule allowed the detection of the originating user.
- Determine if the translation results are only for the Application Server or if they involve Network Server translations. This includes any kind of service triggered or network routing translations.
- Determine which originating services have executed.
- Determine which terminating services have executed.
- Determine the reason why a call attempt was blocked, and then by which service or policy.
- Determine what treatment was used, if applicable.
- Determine if a redirection occurred and its destination.

The VTR tool was introduced with the BroadWorks Application Server, Release 18 and was provided via patches for Release 17. While it is available to all system administrators having command line interface (CLI) access, it is possible to provide VTR access to service provider administrators and group administrators, if necessary.

The VTR tool is available through the CLI, the OCI-P interface, and a web application exposing a RESTful API on the Xtended Services Platform server. It is also accessible from the CommPilot web portal.

3.1 Test Calls

The VTR tool works by using simulated calls to gather information. A test call has the following characteristics:

- It is triggered by a short-form AS-VTR or an INVITE AS-VTR.
- It is short-lived, since the Application Server only gathers information related to this call until the final point is reached and the report is generated.
- Exercises external interfaces, if applicable, with the following exceptions that are inhibited:
  - Call Detail Report (CDR) generation
  - Per-call Simple Network Management Protocol (SNMP) notifications and alarms generation
  - Per-call SNMP performance counters generation
  - Client Application Protocol (CAP) and Xtended Services Interface (Xsi) notifications generation
  - Outgoing Session Initiation Protocol (SIP) signaling other than toward the Network Server
  - Media Gateway Control Protocol (MGCP) outgoing signaling
- It does **not** trigger Lawful Interception monitoring.

- It counts as usual in counting services such as Call Capacity Management (CCM) and Session Admission Control (SAC). As such, performing a test call can temporarily invalidate a user's ability to receive or start a call to/from a real device.
- It may not be linked to an endpoint, if the short form has been used without a line/port or for network originations.
- Test calls cannot be started on behalf of a virtual subscriber.

3.2 Final Points

In the context of a VTR test call, some events cause the test call to terminate when they occur. Such events are referred to as "final" points for the VTR. When a final point is reached, a report is generated and all test call resources are released.

The following events are final points:

- A call is allowed to terminate on a device. The resulting outgoing message can be reported.
- A call is blocked at setup time (originating or terminating side).
- A call is redirected by a service. This typically occurs for terminating-side services. The VTR report does not show the post-redirection information.
- A test call terminates to a virtual user destination, which is among the following:
  - Auto Attendant
  - BroadWorks Anywhere Portal
  - BroadWorks Voice Portal
  - Call Center or Hunt Group
  - Group Paging
  - Instant Group Call
  - Meet-Me Conferencing
  - Route Point
- The 10 seconds allowed, to process the test call internally, have elapsed.
- The originating side of the test call receives an *Alerting* event.

3.3 Disabled Interfaces for Test Calls

For a test call, some external interfaces are inhibited (messages are not actually sent outside of the Application Server) and other external interfaces work as usual, sending the required messages.

Disabled interfaces:

- Call detail record generation and all associated transport interfaces (Radius, Diameter, File, and so on)
- Call-related SNMP notifications and alarms
- Call client notifications (CAP, Xtended Services Interface)
- Outgoing SIP messages (other than towards the Network Server)
- Outgoing MGCP messages
- E-mail notifications

- Call logs output to the database or the Call Detail Server (CDS)
- Execution Server (XS) Open Client Interface (OCI) transactions toward the Profile Server (PS).

Other interfaces send and receive as usual, sending messages and gathering responses. The following are some examples:

- SIP signaling toward the Network Server for performing translations
- Simple Object Access Protocol (SOAP) interface for emergency routing and calling name retrieval
- SIP SUBSCRIBE in the context of Caller ID with NAMe (CNAM) service

3.4 User Migration

3.4.1 After Release 20 or if Patched With AP176191

User migration is prevented for test calls. Therefore, using the VTR tool on a secondary Application Server does not migrate an involved user from the primary Application Server to the secondary Application Server, unlike a real call.

3.4.2 Before Release 20 or Without AP176191

Executing a test call from the secondary Application Server, migrates any involved user from the primary Application Server to the secondary Application Server, if available. Therefore, it is strongly recommended to avoid performing test calls on a secondary server.

3.5 IP Multimedia Subsystem Considerations

If a VTR command is deferred to a VTRI command (transformed to an INVITE before being performed), the mandatory headers are added automatically for IP Multimedia Subsystem (IMS) originations. The added SIP headers are:

- Call Session Control Function (CSCF) Route
- P-Asserted-Identity
- P-Access-Network-Info

4 Interpret VTR Results

The VTR tool produces text output that is divided into various sections. Note, however, that various report parts shown as examples in this section can differ from release to release and from applied patches. The examples are provided to give an administrator a general idea about the contents in each section.

4.1 Parameters or SIP INVITE

The first part of the VTR result is always the SIP INVITE used to simulate the call or the parameters when no SIP INVITE is needed (in the case where the origination is a BroadWorks user). This section is not visible if a SIP INVITE is provided by the administrator.

SIP INVITE Example

A SIP INVITE is generated when the origination is set to a URL or Line/Port.

```
Using following SIP INVITE to run VTRI command with Lineport
-----------------------------------------------------
INVITE sip:5146998502@broadworks SIP/2.0
Via:SIP/2.0/UDP 127.0.0.1:5061;branch=vtr-unique-via-branch-32
From:"VTR Calling Name"<sip:north01@mtlasdev98.net>;tag=32
To:"VTR Called Name"<sip:5146998502@broadworks>
Call-ID:32
CSeq:32 INVITE
Contact:<sip:north01@127.0.0.1:5061>
Allow:ACK,BYE,CANCEL,INFO,INVITE,OPTIONS,PRACK,REGISTER,UPDATE
Content-Type:application/sdp
Content-Length:410
```

Parameters

Parameters are shown if the origination is set to the User ID or Phone (both *bwphone* and *pstnphone*).

```
Using following parameters to run short form VTR command
-----------------------------------------------------
VtrOriginationEvent
vtrKey                 34
origUserId             145535734
requestURI equivalent  5146998502@broadworks:5060
dialedDigits (initial) 5146998502
deviceEnpoint          5146998501@mtlasdev98.net
```

4.2 Originator Information

The originator information section shows information about the originating party.
If the originating party is a local BroadWorks user, then detailed information about the user is shown.

```
=====================================================
===========     ORIGINATOR INFO   ==================
=====================================================
[Orig-Id]   VTR Short form trigger.
[Orig-Id]   No Endpoint.
[Orig-Id]   Originating user type: BroadWorks
[Orig-Id]   User Info
[Orig-Id]   User Id                     = north01@mtlasdev98.net
[Orig-Id]   User Uid                    = 145535734
[Orig-Id]   Parent Id                   = North_as98
[Orig-Id]   ASCII First Name            = john1
[Orig-Id]   ASCII Last Name             = north
[Orig-Id]   Unicode First Name          = john1
```

```
[Orig-Id]   Unicode Last Name           = north
[Orig-Id]   Country Code                = 1
[Orig-Id]   User Type                   = BroadWorks Regular User
[Orig-Id]   (0) Address type            = main
[Orig-Id]   (0) dn                      = +15146998501
[Orig-Id]   (0) extension               = 501
[Orig-Id]   activeAsId                  = 1
[Orig-Id]   beingRemoved                = false
```

4.3 Originating Call Information

The originating call information section shows, in chronological order, the progression of events on the originator's side of the call. If the originating party is a BroadWorks user, then this is where the originating user's services can provide helpful information.

```
=====================================================
===========  ORIGINATING CALL INFO   ================
=====================================================
[Orig/CallServiceBus]       CallId is callhalf-12245:0
[Orig/CallServiceBus]        === Routing InvitationEvent on the Originating Call
bus ===

[Orig/CallServiceBus]       TranslationServiceOrigInstance has CONSUMED the event.
[Orig/CallServiceBus]       CallId is callhalf-12245:0
[Orig/CallServiceBus]        === Routing InvitationEvent on the Originating Call
bus ===

[Orig/CallServiceBus]       Resuming event processing after
TranslationServiceOrigInstance
[Orig/CallServiceBus]       CMServiceInstance has processed the event...continue
[Orig/CallServiceBus]       LNDServiceInstance has processed the event...continue
[Orig/CallServiceBus]       LocationControlServiceInstance has processed the
event...continue
[Orig/CallServiceBus/HCBOriginatorServiceInstance] HCBOriginatorServiceInstance
has processed the event...continue
[Orig/CallServiceBus/HCBOriginatorServiceInstance] Resolved remote address:
+15146998502
[Orig/CallServiceBus/HCBOriginatorServiceInstance] Validating Origination using
profile: No 512 (Hierarchical)
[Orig/CallServiceBus/HCBOriginatorServiceInstance] Evaluating criteria My Pattern
(allow)
[Orig/CallServiceBus/HCBOriginatorServiceInstance] No rules or no matches, using
default action:
[Orig/CallServiceBus/HCBOriginatorServiceInstance] allow

[Orig/CallServiceBus]       CallCenterAgentCallServiceInstance has processed the
event...continue
[Orig/CallServiceBus]       TreatmentsServiceInstance has processed the
event...continue
[Orig/CallServiceBus]       CFAlwaysFACServiceInstance has processed the
event...continue
[Orig/CallServiceBus]       CallWaitingFACServiceInstance has processed the
event...continue
[Orig/CallServiceBus]       VMServiceInstance has processed the event...continue
[Orig/CallServiceBus]       DNDFACServiceInstance has processed the
event...continue
[Orig/CallServiceBus]       EmergencyCallTimerServiceInstance has processed the
event...continue
[Orig/VTR_FINAL]    Triggering report.
```

4.4 Originating Translation Result

The originating translation result provides information about a translation requested from the BroadWorks Network Server. If a network translation is required, information is shown about the dial plan policy that was used and the SIP messages that were used.

```
=====================================================
===========  ORIGINATING TRANSLATION RESULT =========
=====================================================
[Orig-Xlation/DialPlanPolicy]       --Dial Plan Policy Information--
[Orig-Xlation/DialPlanPolicy]       requiresAccessCodeForPublicCalls = false
[Orig-Xlation/DialPlanPolicy]       allowE164PublicCalls             = false
[Orig-Xlation/DialPlanPolicy]       privateDigitMap                  =
[Orig-Xlation/DialPlanPolicy]       publicDigitMap                   = ([2-9]11|[0-
1][2-9]11|0[#T]|00|01[2-9]xx.[#T]|*xx|011x.[#T]|[0-1]xxxxxxx[#T]|[0-1][2-
9]xxxxxxxxx|[2-9]xxxxxxxxx|[2-9]xxxxxx[#T]|101xxxx.[#T]|11|[2-9][#T])
[Orig-Xlation/DialPlanPolicy]       preferE164FormatForCallbackSvcs  = false

[Orig-Xlation/NetworkUsagePolicy]   Network Usage Policy is - do not force all
calls to network -
[Orig-Xlation/TranslationManager]   Translation Client: Translation Service
Originating Side call Id is callhalf-12245:0
[Orig-Xlation/TranslationManager]     === TranslationResult ===
[Orig-Xlation/TranslationManager]   callType             Group
[Orig-Xlation/TranslationManager]   agentKey             +15146998502@192.168.8.107
[Orig-Xlation/TranslationManager]   originalAddress      5146998502@192.168.8.107
[Orig-Xlation/TranslationManager]   destination uid      156509070
[Orig-Xlation/TranslationManager]   isServiceCode        false
[Orig-Xlation/TranslationManager]   sc8Translated        false
[Orig-Xlation/TranslationManager]   sc100Translated      false
[Orig-Xlation/TranslationManager]   oacTranslated        false
[Orig-Xlation/TranslationManager]   intraSP              false
```

4.5 Terminating Call Information

If the call has a valid termination party, information is shown about its identity and the events on the terminating service buses are shown. Similar to the originating call information section, this is where the various terminating user's services can provide helpful information.

```
=====================================================
===========  TERMINATING CALL INFO   ================
=====================================================
[Term/CallManagerServiceBus]        CallManagerId is callhalf-12249
[Term/CallManagerServiceBus]         === Routing TerminationEvent on the Call
Manager bus ===

[Term/Term-Id]      Terminating user type: BroadWorks
[Term/Term-Id]      User Info
[Term/Term-Id]      User Id                       = north02@mtlasdev98.net
[Term/Term-Id]      User Uid                      = 156509070
[Term/Term-Id]      Parent Id                     = North_as98
[Term/Term-Id]      ASCII First Name              = john2
[Term/Term-Id]      ASCII Last Name               = north
[Term/Term-Id]      Unicode First Name            = john2
[Term/Term-Id]      Unicode Last Name             = north
[Term/Term-Id]      Country Code                  = 1
[Term/Term-Id]      User Type                     = BroadWorks Regular User
[Term/Term-Id]      (0) Address type              = main
[Term/Term-Id]      (0) dn                        = +15146998502
[Term/Term-Id]      (0) extension                 = 502
[Term/Term-Id]      activeAsId                    = 1
[Term/Term-Id]      beingRemoved                  = false

[Term/CallServiceBus]       CallId is callhalf-12249:0
[Term/CallServiceBus]        === Routing InvitationEvent on the Terminating Call
bus ===
```

```
[Term/CallServiceBus]      TranslationServiceTermInstance has processed the
event...continue
[Term/CallServiceBus]      CMServiceInstance has processed the event...continue
[Term/CallServiceBus]      CallCenterAgentCallServiceInstance has processed the
event...continue
[Term/CallServiceBus/HCBTerminatorServiceInstance] HCBTerminatorServiceInstance
has processed the event...continue
[Term/CallServiceBus/HCBTerminatorServiceInstance] Validating Termination using
profile: No 512 (Hierarchical)
[Term/CallServiceBus/HCBTerminatorServiceInstance] Evaluating rule My Pattern
(allow)
[Term/CallServiceBus/HCBTerminatorServiceInstance] No rules or no matches, using
default action:
[Term/CallServiceBus/HCBTerminatorServiceInstance] allow

[Term/CallServiceBus]      LNRServiceInstance has processed the event...continue
[Term/CallServiceBus]      CFAlwaysTerminatorServiceInstance has processed the
event...continue
[Term/CallServiceBus]      DNDServiceInstance has processed the event...continue
[Term/CallServiceBus]      CallWaitingTerminatorServiceInstance has processed the
event...continue
[Term/CallServiceBus]      VMServiceInstance has processed the event...continue
[Term/CallServiceBus]      RedirectionServiceInstance has processed the
event...continue
[Term/CallManagerServiceBus]       CallManagerId is callhalf-12249
[Term/CallManagerServiceBus]        === Routing InvitationEvent on the Call
Manager bus ===

[Term/CallManagerServiceBus]       AccessRoutingServiceInstance has processed the
event...continue
[Term/CallManagerServiceBus]       CallCenterAgentServiceInstance has processed
the event...continue
[Term/CallManagerServiceBus]       FlashServiceInstance has processed the
event...continue
[Term/CallManagerServiceBus]       RingTimeoutServiceInstance has processed the
event...continue
[Term/SipINVITE]     Outgoing resulting INVITE for Endpoint Id: callhalf-12249:0
    udp 1086 Bytes OUT to 192.168.22.76:5060
    INVITE sip:5146998502@192.168.22.76 SIP/2.0
    Via:SIP/2.0/UDP 192.168.8.107;branch=z9hG4bKBroadWorks.-1su2jct-
192.168.22.76V5060-0-279009890-1746817493-1377095038147-
    From:"john1 north"<sip:501@192.168.8.107;user=phone>;tag=1746817493-
1377095038147-
    To:"john2 north"<sip:5146998502@mtlasdev98.net>
    Call-ID:BW10235814621081343063262 7@192.168.8.107
    CSeq:279009890 INVITE
    Contact:<sip:192.168.8.107:5060>
    Supported:100rel
    Allow:ACK,BYE,CANCEL,INFO,INVITE,OPTIONS,PRACK,REFER,NOTIFY,UPDATE
    Recv-Info:x-broadworks-client-session-info
    Accept:application/media_control+xml,application/sdp,multipart/mixed
    Max-Forwards:10
    Content-Type:application/sdp
    Content-Length:410

    v=0
    o=- 123 123 IN IP4 127.0.0.1
    s=-
    c=IN IP4 127.0.0.1
    t=0 0
    m=audio 16428 RTP/AVP 0 2 4 8 18 96 97 98 100 101
    a=rtpmap:0 PCMU/8000
    a=rtpmap:2 G726-32/8000
    a=rtpmap:4 G723/8000
    a=rtpmap:8 PCMA/8000
    a=rtpmap:18 G729a/8000
    a=rtpmap:96 G726-40/8000
    a=rtpmap:97 G726-24/8000
    a=rtpmap:98 G726-16/8000
```



```
    a=rtpmap:100 NSE/8000
    a=rtpmap:101 telephone-event/8000
    a=fmtp:101 0-15
    a=ptime:20
    a=sendrecv
```

4.6 Time Stamps

It can be helpful to match a VTR call with Execution logs. Note that the time at the beginning and the end of the test call are shown near the end of the VTR result.

```
==================================================
==========           TIMESTAMPS           =========
==================================================
[Timestamps]       Start time = 2013.08.21 10:23:58:134 EDT
[Timestamps]       End time   = 2013.08.21 10:23:58:150 EDT
```

4.7 Result

The result of the test call is shown at the end of each VTR report. The possible values for the result are:

- Allowed
- Blocked
- Redirected
- Timeout
- Media

```
==================================================
==========   RESULT: ALLOWED         ===============
==================================================
```

5 Access VTR through Command Line Interface

5.1 Command Line Interface Commands

There are two commands that are available from the Application Server command line interface (CLI) that provide access to the VTR tool as follows:

- *AS_CLI/ASDiagnostic/Diag/vtr*
- *AS_CLI/ASDiagnostic/Diag/vtri*

5.2 VTR Command

5.2.1 Description

The VTR command allows the administrator to specify the following parameters:

- Origination (Line/Port, BroadWorks phone number, PSTN phone number, User ID or URL)
- Destination
- Contact SIP header (optional)
- Diversion SIP header (optional)

The various origination types are defined the following table.

Origination Type	CLI Name	Description
Line/Port	linePort	When the Line/Port origination type is specified, the value provided is used “as is” in the SIP INVITE message created to simulate the call.
BroadWorks phone number	bwphone	A BroadWorks phone number can be provided to specify which user is originating the call in the simulation.
PSTN phone number	pstnphone	A PSTN phone number can be provided to simulate a network-originated call being sent to the Application Server.
User ID	userId	A BroadWorks User ID can be provided to simulate a call from a specific user on the Application Server.
URL	url	A SIP URL can be provided that is used “as is” in the SIP INVITE message created to simulate the call. The URL cannot be a BroadWorks User ID and therefore is always used to simulate a network origination.

Note that the destination type is automatically detected so it does not have to be specified.

5.2.2 Example

The following is an example from the CLI using an originating URL and a BroadWorks phone number as the destination.

```
AS_CLI/ASDiagnostic/Diag> vtr url foo@bar.com 5146998502
VTR Result:
 ------------------------------------------------------
Network URL provided. Acting as a network origination.  Using INVITE method
Using following SIP INVITE to run VTRI command with Lineport
 ------------------------------------------------------
INVITE sip:5146998502@broadworks SIP/2.0
Via:SIP/2.0/UDP 127.0.0.1:5061;branch=vtr-unique-via-branch-12
From:"VTR Calling Name"<sip:foo@bar.com>;tag=12
To:"VTR Called Name"<sip:5146998502@broadworks>
```

```
Call-ID:12
CSeq:12 INVITE
Contact:<sip:foo@127.0.0.1:5061>
Allow:ACK,BYE,CANCEL,INFO,INVITE,OPTIONS,PRACK,REGISTER,UPDATE
Content-Type:application/sdp
Content-Length:410

v=0
o=- 123 123 IN IP4 127.0.0.1
s=-
c=IN IP4 127.0.0.1
t=0 0
m=audio 16428 RTP/AVP 0 2 4 8 18 96 97 98 100 101
a=rtpmap:0 PCMU/8000
a=rtpmap:2 G726-32/8000
a=rtpmap:4 G723/8000
a=rtpmap:8 PCMA/8000
a=rtpmap:18 G729a/8000
a=rtpmap:96 G726-40/8000
a=rtpmap:97 G726-24/8000
a=rtpmap:98 G726-16/8000
a=rtpmap:100 NSE/8000
a=rtpmap:101 telephone-event/8000
a=fmtp:101 0-15
a=ptime:20
a=sendrecv



=====================================================
===========     ORIGINATOR INFO   ==================
=====================================================
[Orig-Id]       Using Sip FROM to find user endpoint: "VTR Calling
Name"<sip:foo@bar.com>
[Orig-Id]       Endpoint Session Key is: callhalf-941:0
[Orig-Id]       Originating user type: PSTN generic user

[Orig-Id/CallingPartyE164Normalization] callingPartyE164Normalization:
systemCountryCode


=====================================================
===========  ORIGINATING CALL INFO   ================
=====================================================
[Orig/CallManagerServiceBus]    CallManagerId is callhalf-941
[Orig/CallManagerServiceBus]     === Routing ConnectRequestEvent on the Call
Manager bus ===

[Orig/CallManagerServiceBus]    AnswerConfirmationServiceInstance has processed the
event...continue
[Orig/CallServiceBus]   CallId is callhalf-941:0
[Orig/CallServiceBus]    === Routing InvitationEvent on the Originating Call bus
===

[Orig/CallServiceBus]   CMServiceInstance has processed the event...continue
[Orig/CallServiceBus]   TreatmentsServiceInstance has processed the
event...continue
[Orig/CallServiceBus]   NetworkProgressionServiceInstance has processed the
event...continue
[Orig/VTR_FINAL]        Triggering report.


=====================================================
===========  ORIGINATING TRANSLATION RESULT =========
=====================================================
[Orig-Xlation]  Originating Translation result information has not been populated


=====================================================
===========  TERMINATING CALL INFO   ================
```

```
==================================================
[Term/CallManagerServiceBus]    CallManagerId is callhalf-943
[Term/CallManagerServiceBus]     === Routing TerminationEvent on the Call Manager
bus ===

[Term/Term-Id]  Terminating user type: BroadWorks
[Term/Term-Id]  User Info
[Term/Term-Id]  User Id                       = north02@mtlasdev98.net
[Term/Term-Id]  User Uid                      = 118038185
[Term/Term-Id]  Parent Id                     = North_as98
[Term/Term-Id]  ASCII First Name              = john2
[Term/Term-Id]  ASCII Last Name               = north
[Term/Term-Id]  Unicode First Name            = john2
[Term/Term-Id]  Unicode Last Name             = north
[Term/Term-Id]  Country Code                  = 1
[Term/Term-Id]  User Type                     = BroadWorks Regular User
[Term/Term-Id]  (0) Address type              = main
[Term/Term-Id]  (0) dn                        = +15146998502
[Term/Term-Id]  (0) extension                 = 502
[Term/Term-Id]  activeAsId                    = 1
[Term/Term-Id]  beingRemoved                  = false

[Term/CallServiceBus]   CallId is callhalf-943:0
[Term/CallServiceBus]    === Routing InvitationEvent on the Terminating Call bus
===

[Term/CallServiceBus]   TranslationServiceTermInstance has processed the
event...continue
[Term/CallServiceBus]   CMServiceInstance has processed the event...continue
[Term/CallServiceBus]   LNRServiceInstance has processed the event...continue
[Term/CallServiceBus]   CFAlwaysTerminatorServiceInstance has processed the
event...continue
[Term/CallServiceBus]   DNDServiceInstance has processed the event...continue
[Term/CallServiceBus]   CallWaitingTerminatorServiceInstance has processed the
event...continue
[Term/CallServiceBus]   VMServiceInstance has processed the event...continue
[Term/CallServiceBus]   RedirectionServiceInstance has processed the
event...continue
[Term/CallManagerServiceBus]    CallManagerId is callhalf-943
[Term/CallManagerServiceBus]     === Routing InvitationEvent on the Call Manager
bus ===

[Term/CallManagerServiceBus]    AccessRoutingServiceInstance has processed the
event...continue
[Term/CallManagerServiceBus]    FlashServiceInstance has processed the
event...continue
[Term/CallManagerServiceBus]    RingTimeoutServiceInstance has processed the
event...continue
[Term/SipINVITE]         Outgoing resulting INVITE for Endpoint Id: callhalf-943:0
    udp 1028 Bytes OUT to 192.168.22.76:5060
    INVITE sip:5146998502@192.168.22.76 SIP/2.0
    Via:SIP/2.0/UDP 192.168.8.107;branch=z9hG4bKBroadWorks.-1su2jct-
192.168.22.76V5060-0-755677342-38203239-1375900889402-
    From:"VTR Calling Name"<sip:foo@bar.com>;tag=38203239-1375900889402-
    To:"john2 north"<sip:5146998502@mtlasdev98.net>
    Call-ID:BW144129402070813-654650461@192.168.8.107
    CSeq:755677342 INVITE
    Contact:<sip:192.168.8.107:5060>
    Allow:ACK,BYE,CANCEL,INFO,INVITE,OPTIONS,PRACK,REFER,NOTIFY,UPDATE
    Accept:application/media_control+xml,application/sdp,multipart/mixed
    Supported:
    Max-Forwards:10
    Content-Type:application/sdp
    Content-Length:417

    v=0
    o=BroadWorks 237 1 IN IP4 127.0.0.1
    s=-
    c=IN IP4 127.0.0.1
    t=0 0
```



```
    m=audio 16428 RTP/AVP 0 2 4 8 18 96 97 98 100 101
    a=rtpmap:0 PCMU/8000
    a=rtpmap:2 G726-32/8000
    a=rtpmap:4 G723/8000
    a=rtpmap:8 PCMA/8000
    a=rtpmap:18 G729a/8000
    a=rtpmap:96 G726-40/8000
    a=rtpmap:97 G726-24/8000
    a=rtpmap:98 G726-16/8000
    a=rtpmap:100 NSE/8000
    a=rtpmap:101 telephone-event/8000
    a=fmtp:101 0-15
    a=ptime:20
    a=sendrecv



=====================================================
==========           TIMESTAMPS            =========
=====================================================
[Timestamps]    Start time = 2013.08.07 14:41:29:390 EDT
[Timestamps]    End time   = 2013.08.07 14:41:29:405 EDT



=====================================================
==========   RESULT: ALLOWED         ===============
=====================================================
```

5.3 VTRI Command

5.3.1 Description

The VTRI command allows an administrator to enter a SIP INVITE message. The message can be manually typed or pasted directly into the CLI. To detect that a SIP message is completed, a new line containing only a “dot” must be typed.

NOTE: The empty lines between the lines of the SIP message are automatically added by the CLI. This is expected behavior and they do not affect the parsing of the SIP message.

5.3.2 Example

The following is an example from the CLI using a SIP INVITE generated by the VTR example in the previous section.

```
AS_CLI/ASDiagnostic/Diag> vtri
Enter a SIP message. When complete, enter a single period (.) on a line to start
verifying the translation.



INVITE sip:5146998502@broadworks SIP/2.0

Via:SIP/2.0/UDP 127.0.0.1:5061;branch=vtr-unique-via-branch-12

From:"VTR Calling Name"<sip:foo@bar.com>;tag=12

To:"VTR Called Name"<sip:5146998502@broadworks>

Call-ID:12

CSeq:12 INVITE
```

```
Contact:<sip:foo@127.0.0.1:5061>

Allow:ACK,BYE,CANCEL,INFO,INVITE,OPTIONS,PRACK,REGISTER,UPDATE

Content-Type:application/sdp

Content-Length:410


v=0

o=- 123 123 IN IP4 127.0.0.1

s=-

c=IN IP4 127.0.0.1

t=0 0

m=audio 16428 RTP/AVP 0 2 4 8 18 96 97 98 100 101

a=rtpmap:0 PCMU/8000

a=rtpmap:2 G726-32/8000

a=rtpmap:4 G723/8000

a=rtpmap:8 PCMA/8000

a=rtpmap:18 G729a/8000

a=rtpmap:96 G726-40/8000

a=rtpmap:97 G726-24/8000

a=rtpmap:98 G726-16/8000

a=rtpmap:100 NSE/8000

a=rtpmap:101 telephone-event/8000

a=fmtp:101 0-15

a=ptime:20

a=sendrecv

.
   ---------------------- Validating Translation and Routing ----------------------

VTR Result:
 ------------------------------------------------------
======================================================
===========     ORIGINATOR INFO   ==================
======================================================
[Orig-Id]       Using Sip FROM to find user endpoint: "VTR Calling
Name"<sip:foo@bar.com>
[Orig-Id]       Endpoint Session Key is: callhalf-1023:0
[Orig-Id]       Originating user type: PSTN generic user

[Orig-Id/CallingPartyE164Normalization] callingPartyE164Normalization:
systemCountryCode


======================================================
===========  ORIGINATING CALL INFO   ================
======================================================
[Orig/CallManagerServiceBus]    CallManagerId is callhalf-1023
```

```
[Orig/CallManagerServiceBus]     === Routing ConnectRequestEvent on the Call
Manager bus ===

[Orig/CallManagerServiceBus]    AnswerConfirmationServiceInstance has processed the
event...continue
[Orig/CallServiceBus]   CallId is callhalf-1023:0
[Orig/CallServiceBus]    === Routing InvitationEvent on the Originating Call bus
===

[Orig/CallServiceBus]   CMServiceInstance has processed the event...continue
[Orig/CallServiceBus]   TreatmentsServiceInstance has processed the
event...continue
[Orig/CallServiceBus]   NetworkProgressionServiceInstance has processed the
event...continue
[Orig/VTR_FINAL]        Triggering report.


==================================================
==========  ORIGINATING TRANSLATION RESULT =========
==================================================
[Orig-Xlation]  Originating Translation result information has not been populated


==================================================
==========  TERMINATING CALL INFO   ===============
==================================================
[Term/CallManagerServiceBus]    CallManagerId is callhalf-1025
[Term/CallManagerServiceBus]     === Routing TerminationEvent on the Call Manager
bus ===

[Term/Term-Id]  Terminating user type: BroadWorks
[Term/Term-Id]  User Info
[Term/Term-Id]  User Id                     = north02@mtlasdev98.net
[Term/Term-Id]  User Uid                    = 118038185
[Term/Term-Id]  Parent Id                   = North_as98
[Term/Term-Id]  ASCII First Name            = john2
[Term/Term-Id]  ASCII Last Name             = north
[Term/Term-Id]  Unicode First Name          = john2
[Term/Term-Id]  Unicode Last Name           = north
[Term/Term-Id]  Country Code                = 1
[Term/Term-Id]  User Type                   = BroadWorks Regular User
[Term/Term-Id]  (0) Address type            = main
[Term/Term-Id]  (0) dn                      = +15146998502
[Term/Term-Id]  (0) extension               = 502
[Term/Term-Id]  activeAsId                  = 1
[Term/Term-Id]  beingRemoved                = false

[Term/CallServiceBus]   CallId is callhalf-1025:0
[Term/CallServiceBus]    === Routing InvitationEvent on the Terminating Call bus
===

[Term/CallServiceBus]   TranslationServiceTermInstance has processed the
event...continue
[Term/CallServiceBus]   CMServiceInstance has processed the event...continue
[Term/CallServiceBus]   LNRServiceInstance has processed the event...continue
[Term/CallServiceBus]   CFAlwaysTerminatorServiceInstance has processed the
event...continue
[Term/CallServiceBus]   DNDServiceInstance has processed the event...continue
[Term/CallServiceBus]   CallWaitingTerminatorServiceInstance has processed the
event...continue
[Term/CallServiceBus]   VMServiceInstance has processed the event...continue
[Term/CallServiceBus]   RedirectionServiceInstance has processed the
event...continue
[Term/CallManagerServiceBus]    CallManagerId is callhalf-1025
[Term/CallManagerServiceBus]     === Routing InvitationEvent on the Call Manager
bus ===

[Term/CallManagerServiceBus]    AccessRoutingServiceInstance has processed the
event...continue
```



```
[Term/CallManagerServiceBus]    FlashServiceInstance has processed the
event...continue
[Term/CallManagerServiceBus]    RingTimeoutServiceInstance has processed the
event...continue
[Term/SipINVITE]         Outgoing resulting INVITE for Endpoint Id: callhalf-1025:0
    udp 1031 Bytes OUT to 192.168.22.76:5060
    INVITE sip:5146998502@192.168.22.76 SIP/2.0
    Via:SIP/2.0/UDP 192.168.8.107;branch=z9hG4bKBroadWorks.-1su2jct-
192.168.22.76V5060-0-756123969-1119918589-1375901782657-
    From:"VTR Calling Name"<sip:foo@bar.com>;tag=1119918589-1375901782657-
    To:"john2 north"<sip:5146998502@mtlasdev98.net>
    Call-ID:BW1456226570708138810081250@192.168.8.107
    CSeq:756123969 INVITE
    Contact:<sip:192.168.8.107:5060>
    Allow:ACK,BYE,CANCEL,INFO,INVITE,OPTIONS,PRACK,REFER,NOTIFY,UPDATE
    Accept:application/media_control+xml,application/sdp,multipart/mixed
    Supported:
    Max-Forwards:10
    Content-Type:application/sdp
    Content-Length:417

    v=0
    o=BroadWorks 258 1 IN IP4 127.0.0.1
    s=-
    c=IN IP4 127.0.0.1
    t=0 0
    m=audio 16428 RTP/AVP 0 2 4 8 18 96 97 98 100 101
    a=rtpmap:0 PCMU/8000
    a=rtpmap:2 G726-32/8000
    a=rtpmap:4 G723/8000
    a=rtpmap:8 PCMA/8000
    a=rtpmap:18 G729a/8000
    a=rtpmap:96 G726-40/8000
    a=rtpmap:97 G726-24/8000
    a=rtpmap:98 G726-16/8000
    a=rtpmap:100 NSE/8000
    a=rtpmap:101 telephone-event/8000
    a=fmtp:101 0-15
    a=ptime:20
    a=sendrecv



==================================================
==========           TIMESTAMPS           =========
==================================================
[Timestamps]    Start time = 2013.08.07 14:56:22:646 EDT
[Timestamps]    End time   = 2013.08.07 14:56:22:659 EDT



==================================================
==========   RESULT: ALLOWED         ==============
==================================================
```

6 Access VTR through BroadWorks CommPilot

The VTR tool is also accessible from the BroadWorks CommPilot web portal. It is available from the *Utilities* menu option and it can be used by group administrators, service provider administrators, and system administrators.

To authorize a group administrator to use the web portal *Verify Translation and Routing* page, the *Verify Translation and Routing Access* must be set to "Full Access" on the selected administrator's policy page. The default value is "No access".

To authorize a system provider administrator to use the web portal *Verify Translation and Routing* page, the *Verify Translation and Routing Access* must be set to "Full Access" on the selected administrator's policy page. The default value is "No access".

Several limitations have been put in place to limit the information available to group and service provider administrators. They are as follows:

- A group administrator cannot view call information about another group's user. Therefore, parts of the VTR result may be replaced by a message indicating that the administrator is not allowed to view this information.
- A service provider administrator cannot view call information about another service provider's user. Therefore, parts of the VTR result may be replaced by a message indicating that the administrator is not allowed to view this information.

If an administrator has access to the VTR tool, the **Verify Translations and Routing** link is visible as shown in the following figure.

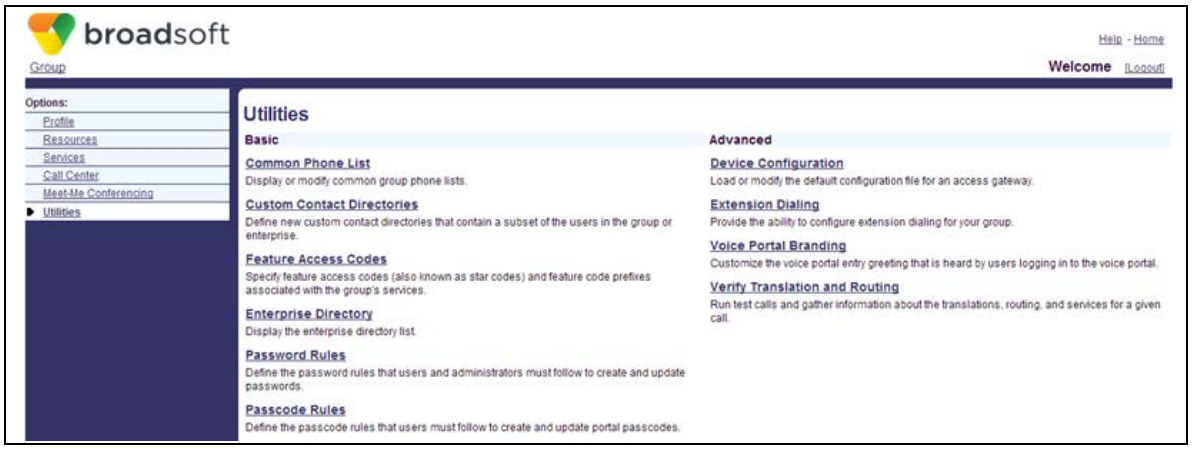

Figure 1 VTR Link on Group Utilities Page

NOTE: The VTR access policy is only available on BroadWorks Release 20 or higher. For more information, see section 9 *Differences between Release 20 and Prior Releases*.

From the *Verify Translation and Routing* page, the administrator fills in a form to create a VTR request. Once the form is filled, the link **Execute VTR request** is clicked to send the request. The VTR result is then displayed in the box on the same page. Clicking **OK** returns the user to the previous page.

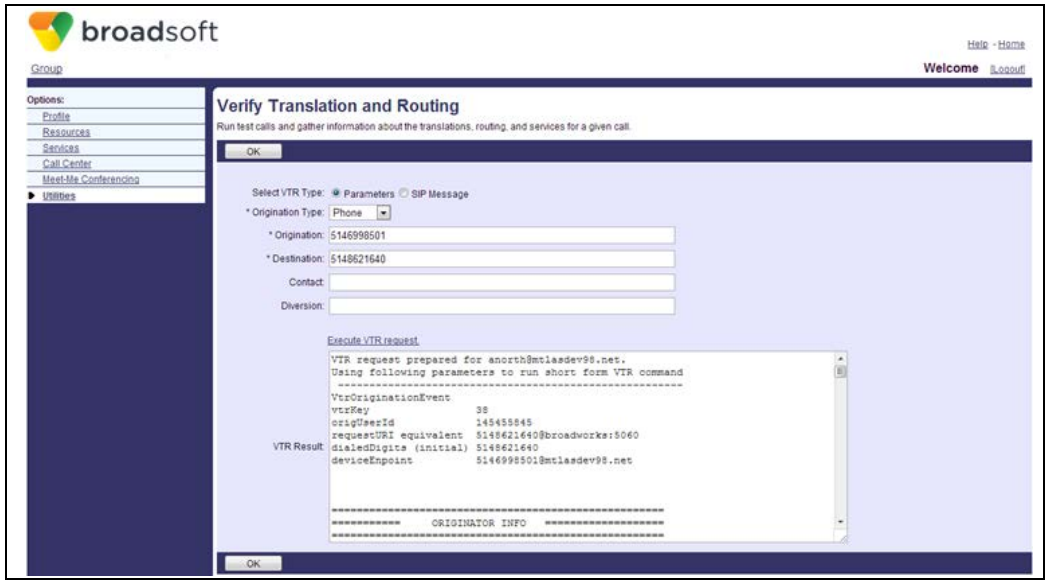

Figure 2 Verify Translation and Routing Page

The same page can also be used to create a VTR-simulated call from a SIP INVITE (VTRI) that is provided. To do so, the administrator must select "SIP Message" as the VTR type.

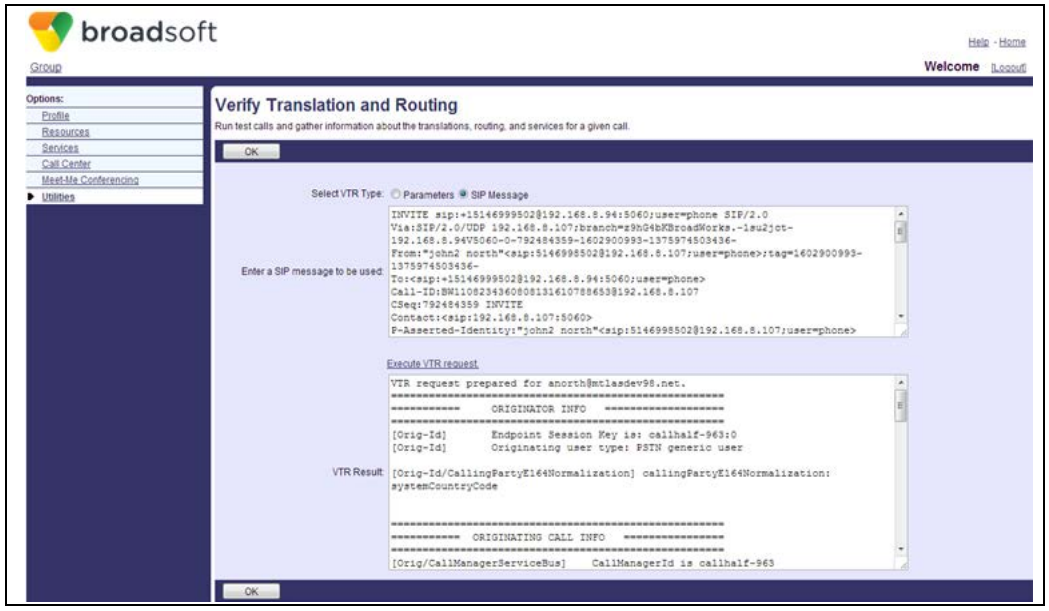

Figure 3 VTR Using a SIP INVITE Message

NOTE: When using a SIP Message with VTR, make sure that there are no spaces at the beginning of the lines because indented SIP messages are not parsed correctly.

6.1 Use VTR from System Administrator Account

The VTR tool is always available to system administrators. It is accessible from the *Utilities* page.

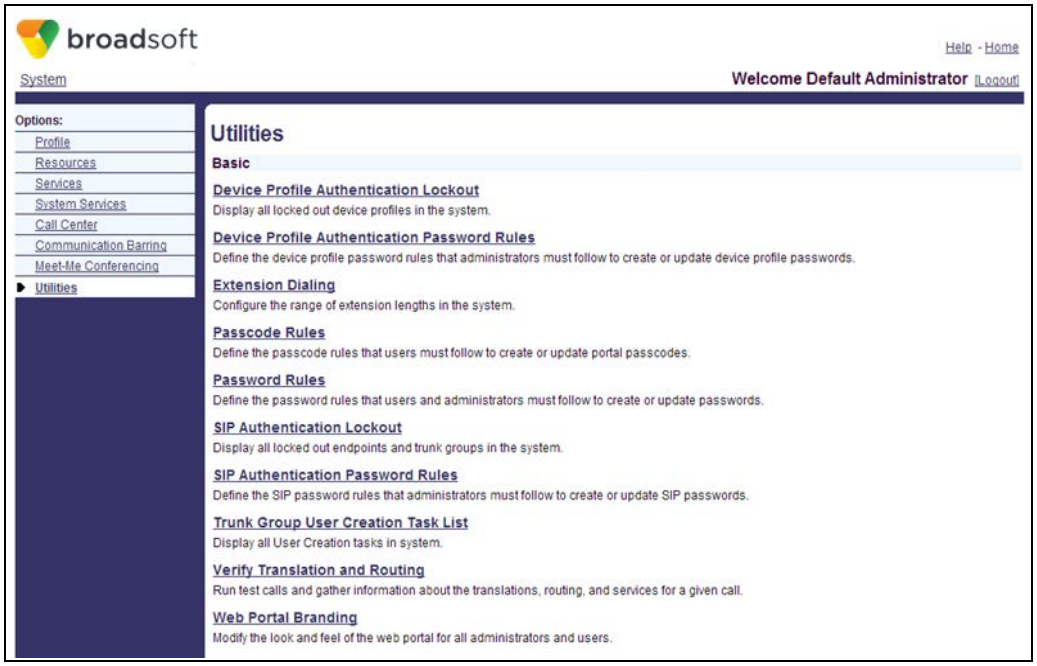

Figure 4 System Administrator Utilities Web Portal Page

6.2 Use VTR from Service Provider Administrator Account

The VTR tool is available to service provider administrators, who have been specifically authorized. The Verify Translation and Routing Access policy is available on the administrator's policy page.

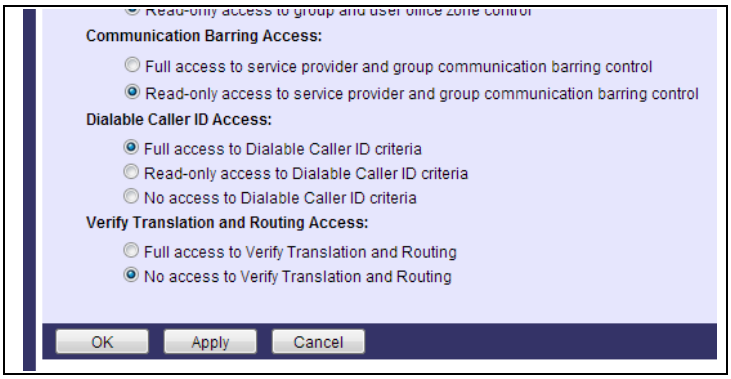

Figure 5 Service Provider Administrator Policy Page

When the administrator has been granted access to Verify Translation and Routing, a new link to access the *Verify Translation and Routing* page becomes available from the service provider administrator's *Utilities* page.

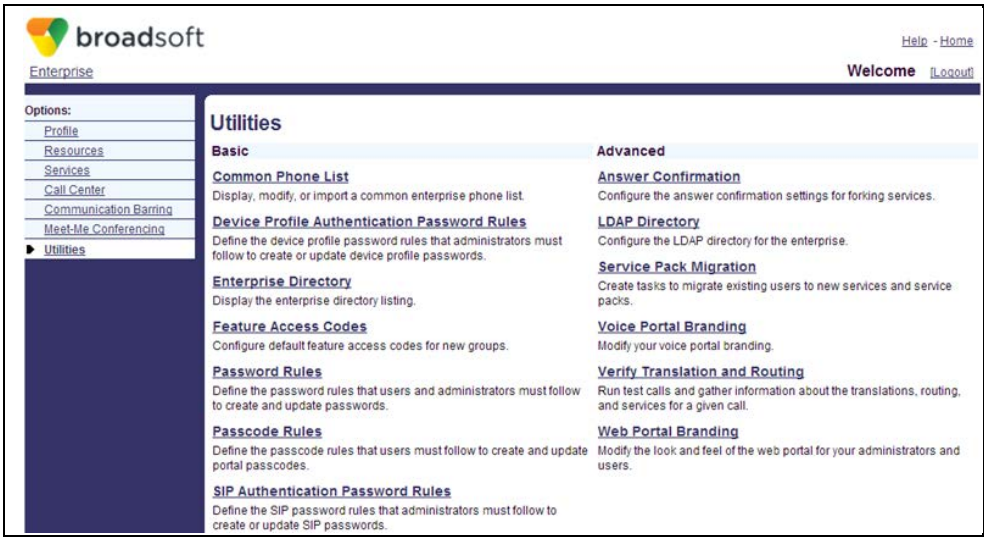

Figure 6 Enterprise Administrator Utilities Page

NOTE: For security and privacy reasons, a service provider administrator cannot view service details (originating call information or terminating call information) for users who are not part of the service provider account that they manage.

6.3 Use VTR from Group Administrator Account

The VTR tool is available to group administrators who have been specifically authorized. The Verify Translation and Routing Access policy is available on the group administrator's policy page.

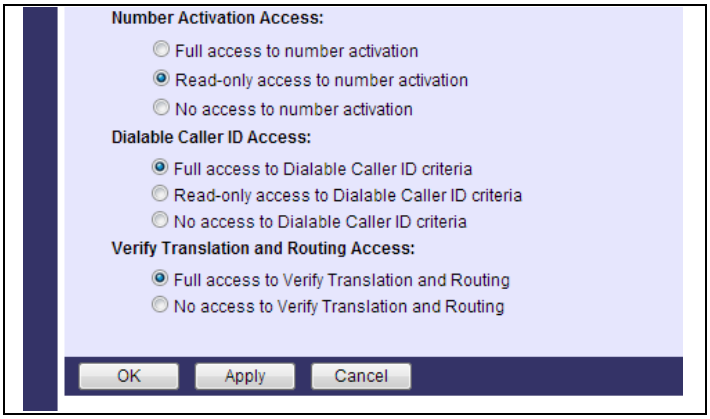

Figure 7 Group Administrator Policy Page

When a group administrator has been granted access to Verify Translation and Routing, a new link to access the *Verify Translation and Routing* page becomes available on the group administrator's *Utilities* page.

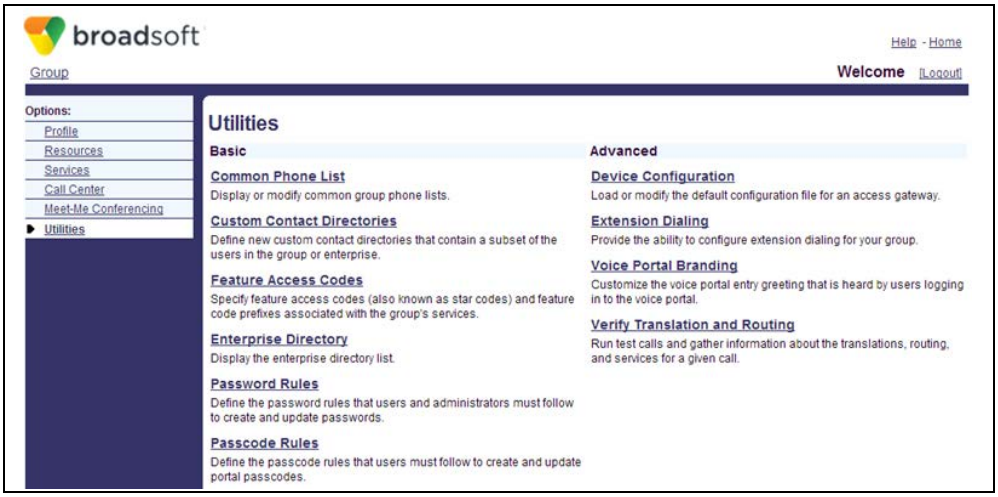

Figure 8 Group Administrator Utilities Page

NOTE: For security and privacy reasons, a group administrator cannot view service details (originating call information or terminating call information) for users who are not part of the group that they manage.

7 Access VTR through Open Client Server

By using the BroadWorks Open Client Server (OCI), a third-party application can send VTR requests and receive VTR responses. The published schema contains XML types that can be used to send and receive VTR requests.

While the types documented in the schema match the VTR parameters available from the CLI, the “phone” type represents both a BroadWorks phone number and a PSTN phone number. When the phone origination is used, the VTR tool automatically detects if the number matches a known user.

Note that the OCI-P commands used to verify and modify the administrators’ policies are omitted from this guide.

NOTE: Do not forget to “escape” XML control characters that may be in values, especially those in a SIP message.

7.1 OCI-P Commands

7.1.1 SystemVerifyTranslationAndRoutingRequest

Authorization level: Group

XML schema file: OCISchemaSystem.xsd

```
  <xs:complexType name="SystemVerifyTranslationAndRoutingRequest">
    <xs:annotation>
      <xs:appinfo>
        <asDataModeSupported>true</asDataModeSupported>
        <hssDataModeSupported>false</hssDataModeSupported>
      </xs:appinfo>
      <xs:documentation>
        Represents a Verify Translation and Routing request which can be either a
request containing parameters or a request containing a SIP message. Returns a
SystemVerifyTranslationAndRoutingResponse or ErrorResponse.
      </xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="core:OCIRequest">
        <xs:choice>
          <xs:element name="parameters"
type="VerifyTranslationAndRoutingParameters"/>
          <xs:element name="sipMessage" type="xs:string"/>
        </xs:choice>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>

  <xs:complexType name="SystemVerifyTranslationAndRoutingResponse">
    <xs:annotation>
      <xs:appinfo>
        <asDataModeSupported>true</asDataModeSupported>
        <hssDataModeSupported>false</hssDataModeSupported>
      </xs:appinfo>
      <xs:documentation>
        Represents a Verify Translation and Routing Test Call Result.
      </xs:documentation>
    </xs:annotation>
    <xs:complexContent>
      <xs:extension base="core:OCIDataResponse">
        <xs:sequence>
          <xs:element name="result" type="xs:string">
            <xs:annotation>
```



```
            <xs:documentation>
              The Verify Translation and Routing log created by the request.
            </xs:documentation>
          </xs:annotation>
        </xs:element>
      </xs:sequence>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

7.2 OCI-P Data Types

To create an XML representation of the VTR parameters and components, new data types were introduced.

7.2.1 VerifyTranslationAndRoutingDestination

XML schema file: OCISchemaDataTypes.xsd

```
<xs:simpleType name="VerifyTranslationAndRoutingDestination">
  <xs:annotation>
    <xs:documentation>
      Verification Translation and Routing destination
      value. Represents the called user, number or URI.
    </xs:documentation>
  </xs:annotation>
  <xs:restriction base="xs:token">
    <xs:minLength value="1" />
    <xs:maxLength value="500" />
  </xs:restriction>
</xs:simpleType>
```

7.2.2 VerifyTranslationAndRoutingOrigination

XML schema file: OCISchemaDataTypes.xsd

```
<xs:complexType name="VerifyTranslationAndRoutingOrigination">
  <xs:annotation>
    <xs:documentation>
      Verification Translation and Routing origination
      value.
    </xs:documentation>
  </xs:annotation>
  <xs:choice>
    <xs:element name="linePort" type="AccessDeviceEndpointLinePort" />
    <xs:element name="phone" type="DN" />
    <xs:element name="userId" type="UserId" />
    <xs:element name="url" type="URL" />
  </xs:choice>
</xs:complexType>
```

7.2.3 VerifyTranslationAndRoutingParameters

XML schema file: OCISchemaDataTypes.xsd

```
<xs:complexType name="VerifyTranslationAndRoutingParameters">
  <xs:annotation>
    <xs:documentation>
      Verification Translation and Routing parameters
      for creating a Verify Translation and Routing request from
      parameters.
    </xs:documentation>
  </xs:annotation>
  <xs:sequence>
```

```
          <xs:element name="origination"
type="VerifyTranslationAndRoutingOrigination"/>
          <xs:element name="destination"
type="VerifyTranslationAndRoutingDestination"/>
          <xs:element name="contact" type="URL" minOccurs="0"/>
          <xs:element name="diversion" type="URL" minOccurs="0"/>
    </xs:sequence>
  </xs:complexType>
```

7.2.4 URL

XML schema file: OCISchemaDataTypes.xsd

```
  <xs:simpleType name="URL">
    <xs:annotation>
      <xs:appinfo>
        <bwAppInfo bwtag="_8c14430b101f483d9ac6ed47f3dd1e9c"/>
      </xs:appinfo>
      <xs:documentation>URL.</xs:documentation>
    </xs:annotation>
    <xs:restriction base="xs:token">
      <xs:minLength value="1"/>
      <xs:maxLength value="256"/>
    </xs:restriction>
  </xs:simpleType>
```

7.3 Send VTR Request through OCI

The following is a complete example of a VTR request sent through OCI, followed by the OCI response containing the VTR result.

Request

```
<?xml version="1.0" encoding="UTF-8"?>
<BroadsoftDocument protocol="OCI" xmlns="C"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <userId xmlns="">admin@broadworks</userId>
  <command xsi:type="SystemVerifyTranslationAndRoutingRequest" xmlns="">
    <parameters>
      <origination>
        <phone>5146998501</phone>
      </origination>
      <destination>502</destination>
    </parameters>
  </command>
</BroadsoftDocument>
```

Response

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<BroadsoftDocument protocol="OCI" xmlns="C"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <userId xmlns="">admin@broadworks</userId>
  <command echo="" xsi:type="SystemVerifyTranslationAndRoutingResponse" xmlns="">
    <Result>VTR request prepared for admin.
Using following parameters to run short form VTR command
 ------------------------------------------------------
VtrOriginationEvent
vtrKey                6
origUserId            145535734
requestURI equivalent 502@broadworks:5060
dialedDigits (initial) 502
deviceEnpoint         5146998501@mtlasdev98.net



==================================================
```

```
===========     ORIGINATOR INFO   ==================
=====================================================
[Orig-Id]   VTR Short form trigger.
[Orig-Id]   No Endpoint.
[Orig-Id]   Originating user type: BroadWorks
[Orig-Id]   User Info
[Orig-Id]   User Id                     = north01@mtlasdev98.net
[Orig-Id]   User Uid                    = 145535734
[Orig-Id]   Parent Id                   = North_as98
[Orig-Id]   ASCII First Name            = john1
[Orig-Id]   ASCII Last Name             = north
[Orig-Id]   Unicode First Name          = john1
[Orig-Id]   Unicode Last Name           = north
[Orig-Id]   Country Code                = 1
[Orig-Id]   User Type                   = BroadWorks Regular User
[Orig-Id]   (0) Address type            = main
[Orig-Id]   (0) dn                      = +15146998501
[Orig-Id]   (0) extension               = 501
[Orig-Id]   activeAsId                  = 1
[Orig-Id]   beingRemoved                = false



=====================================================
===========  ORIGINATING CALL INFO   ================
=====================================================
[Orig/CallServiceBus]       CallId is callhalf-5691:0
[Orig/CallServiceBus]        === Routing InvitationEvent on the Originating Call
bus ===

[Orig/CallServiceBus]       TranslationServiceOrigInstance has CONSUMED the event.
[Orig/CallServiceBus]       CallId is callhalf-5691:0
[Orig/CallServiceBus]        === Routing InvitationEvent on the Originating Call
bus ===

[Orig/CallServiceBus]       Resuming event processing after
TranslationServiceOrigInstance
[Orig/CallServiceBus]       CMServiceInstance has processed the event...continue
[Orig/CallServiceBus]       LNDServiceInstance has processed the event...continue
[Orig/CallServiceBus]       LocationControlServiceInstance has processed the
event...continue
[Orig/CallServiceBus/HCBOriginatorServiceInstance] HCBOriginatorServiceInstance
has processed the event...continue
[Orig/CallServiceBus/HCBOriginatorServiceInstance] Resolved remote address:
+15146998502
[Orig/CallServiceBus/HCBOriginatorServiceInstance] Validating Origination using
profile: No 512 (Hierarchical)
[Orig/CallServiceBus/HCBOriginatorServiceInstance] Evaluating criteria My Pattern
(allow)
[Orig/CallServiceBus/HCBOriginatorServiceInstance] No rules or no matches, using
default action:
[Orig/CallServiceBus/HCBOriginatorServiceInstance] allow

[Orig/CallServiceBus]       CallCenterAgentCallServiceInstance has processed the
event...continue
[Orig/CallServiceBus]       TreatmentsServiceInstance has processed the
event...continue
[Orig/CallServiceBus]       CFAlwaysFACServiceInstance has processed the
event...continue
[Orig/CallServiceBus]       CallWaitingFACServiceInstance has processed the
event...continue
[Orig/CallServiceBus]       VMServiceInstance has processed the event...continue
[Orig/CallServiceBus]       DNDFACServiceInstance has processed the
event...continue
[Orig/CallServiceBus]       EmergencyCallTimerServiceInstance has processed the
event...continue
[Orig/VTR_FINAL]    Triggering report.


=====================================================
```

```
===========  ORIGINATING TRANSLATION RESULT =========
====================================================
[Orig-Xlation/DialPlanPolicy]       --Dial Plan Policy Information--
[Orig-Xlation/DialPlanPolicy]       requiresAccessCodeForPublicCalls = false
[Orig-Xlation/DialPlanPolicy]       allowE164PublicCalls             = false
[Orig-Xlation/DialPlanPolicy]       privateDigitMap                  =
[Orig-Xlation/DialPlanPolicy]       publicDigitMap                   = ([2-9]11|[0-
1][2-9]11|0[#T]|00|01[2-9]xx.[#T]|*xx|011x.[#T]|[0-1]xxxxxxx[#T]|[0-1][2-
9]xxxxxxxxx|[2-9]xxxxxxxxx|[2-9]xxxxxx[#T]|101xxxx.[#T]|11|[2-9][#T])
[Orig-Xlation/DialPlanPolicy]       preferE164FormatForCallbackSvcs  = false

[Orig-Xlation/NetworkUsagePolicy]   Network Usage Policy is - do not force all
calls to network -
[Orig-Xlation/TranslationManager]   Translation Client: Translation Service
Originating Side call Id is callhalf-5691:0
[Orig-Xlation/TranslationManager]     === TranslationResult ===
[Orig-Xlation/TranslationManager]   callType             Group
[Orig-Xlation/TranslationManager]   agentKey             502@192.168.8.107
[Orig-Xlation/TranslationManager]   originalAddress      502@192.168.8.107
[Orig-Xlation/TranslationManager]   dgcAlternateAddress  502
[Orig-Xlation/TranslationManager]   destination uid      156509070
[Orig-Xlation/TranslationManager]   isServiceCode        false
[Orig-Xlation/TranslationManager]   sc8Translated        false
[Orig-Xlation/TranslationManager]   sc100Translated      false
[Orig-Xlation/TranslationManager]   oacTranslated        false
[Orig-Xlation/TranslationManager]   intraSP              false



====================================================
===========  TERMINATING CALL INFO   ================
====================================================
[Term/CallManagerServiceBus]        CallManagerId is callhalf-5695
[Term/CallManagerServiceBus]         === Routing TerminationEvent on the Call
Manager bus ===

[Term/Term-Id]      Terminating user type: BroadWorks
[Term/Term-Id]      User Info
[Term/Term-Id]      User Id                      = north02@mtlasdev98.net
[Term/Term-Id]      User Uid                     = 156509070
[Term/Term-Id]      Parent Id                    = North_as98
[Term/Term-Id]      ASCII First Name             = john2
[Term/Term-Id]      ASCII Last Name              = north
[Term/Term-Id]      Unicode First Name           = john2
[Term/Term-Id]      Unicode Last Name            = north
[Term/Term-Id]      Country Code                 = 1
[Term/Term-Id]      User Type                    = BroadWorks Regular User
[Term/Term-Id]      (0) Address type             = main
[Term/Term-Id]      (0) dn                       = +15146998502
[Term/Term-Id]      (0) extension                = 502
[Term/Term-Id]      activeAsId                   = 1
[Term/Term-Id]      beingRemoved                 = false

[Term/CallServiceBus]       CallId is callhalf-5695:0
[Term/CallServiceBus]        === Routing InvitationEvent on the Terminating Call
bus ===

[Term/CallServiceBus]       TranslationServiceTermInstance has processed the
event...continue
[Term/CallServiceBus]       CMServiceInstance has processed the event...continue
[Term/CallServiceBus]       CallCenterAgentCallServiceInstance has processed the
event...continue
[Term/CallServiceBus/HCBTerminatorServiceInstance]  HCBTerminatorServiceInstance
has processed the event...continue
[Term/CallServiceBus/HCBTerminatorServiceInstance]  Validating Termination using
profile: No 512 (Hierarchical)
[Term/CallServiceBus/HCBTerminatorServiceInstance]  Evaluating rule My Pattern
(allow)
[Term/CallServiceBus/HCBTerminatorServiceInstance]  No rules or no matches, using
default action:
```



```
[Term/CallServiceBus/HCBTerminatorServiceInstance] allow

[Term/CallServiceBus]       LNRServiceInstance has processed the event...continue
[Term/CallServiceBus]       CFAlwaysTerminatorServiceInstance has processed the
event...continue
[Term/CallServiceBus]       DNDServiceInstance has processed the event...continue
[Term/CallServiceBus]       CallWaitingTerminatorServiceInstance has processed the
event...continue
[Term/CallServiceBus]       VMServiceInstance has processed the event...continue
[Term/CallServiceBus]       RedirectionServiceInstance has processed the
event...continue
[Term/CallManagerServiceBus]        CallManagerId is callhalf-5695
[Term/CallManagerServiceBus]         === Routing InvitationEvent on the Call
Manager bus ===

[Term/CallManagerServiceBus]        AccessRoutingServiceInstance has processed the
event...continue
[Term/CallManagerServiceBus]        CallCenterAgentServiceInstance has processed
the event...continue
[Term/CallManagerServiceBus]        FlashServiceInstance has processed the
event...continue
[Term/CallManagerServiceBus]        RingTimeoutServiceInstance has processed the
event...continue
[Term/SipINVITE]     Outgoing resulting INVITE for Endpoint Id: callhalf-5695:0
    udp 1087 Bytes OUT to 192.168.22.76:5060
    INVITE sip:5146998502@192.168.22.76 SIP/2.0
    Via:SIP/2.0/UDP 192.168.8.107;branch=z9hG4bKBroadWorks.-1su2jct-
192.168.22.76V5060-0-233594068-1337738683-1377004206502-
    From:"john1 north"&lt;sip:501@192.168.8.107;user=phone>;tag=1337738683-
1377004206502-
    To:"john2 north"&lt;sip:5146998502@mtlasdev98.net>
    Call-ID:BW091006501200813141735758@192.168.8.107
    CSeq:233594068 INVITE
    Contact:&lt;sip:192.168.8.107:5060>
    Supported:100rel
    Allow:ACK,BYE,CANCEL,INFO,INVITE,OPTIONS,PRACK,REFER,NOTIFY,UPDATE
    Recv-Info:x-broadworks-client-session-info
    Accept:application/media_control+xml,application/sdp,multipart/mixed
    Max-Forwards:10
    Content-Type:application/sdp
    Content-Length:410

    v=0
    o=- 123 123 IN IP4 127.0.0.1
    s=-
    c=IN IP4 127.0.0.1
    t=0 0
    m=audio 16428 RTP/AVP 0 2 4 8 18 96 97 98 100 101
    a=rtpmap:0 PCMU/8000
    a=rtpmap:2 G726-32/8000
    a=rtpmap:4 G723/8000
    a=rtpmap:8 PCMA/8000
    a=rtpmap:18 G729a/8000
    a=rtpmap:96 G726-40/8000
    a=rtpmap:97 G726-24/8000
    a=rtpmap:98 G726-16/8000
    a=rtpmap:100 NSE/8000
    a=rtpmap:101 telephone-event/8000
    a=fmtp:101 0-15
    a=ptime:20
    a=sendrecv



==================================================
==========           TIMESTAMPS           =========
==================================================
[Timestamps]        Start time = 2013.08.20 09:10:06:490 EDT
[Timestamps]        End time   = 2013.08.20 09:10:06:504 EDT
```

```
==================================================
===========   RESULT: ALLOWED         ===============
==================================================</Result>
  </command>
</BroadsoftDocument>
```

7.4 Send VTRI Request through OCI

Request

```
<?xml version="1.0" encoding="UTF-8"?>
<BroadsoftDocument protocol="OCI" xmlns="C"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <userId xmlns="">admin@broadworks</userId>
  <command xsi:type="SystemVerifyTranslationAndRoutingRequest" xmlns="">
    <sipMessage>
INVITE sip:502@mtlasdev98.net;user=phone SIP/2.0
Via: SIP/2.0/UDP 192.168.22.76;branch=z9hG4bKf14b43b523149900
From: "North01" &lt;sip:5146998501@mtlasdev98.net&gt;;tag=D2334FAB-F946D944
To: &lt;sip:502@mtlasdev98.net;user=phone&gt;
CSeq: 1 INVITE
Call-ID: a312e9d7-a9d561a9-fa6829ea@192.168.22.76
Contact: &lt;sip:5146998501@192.168.22.76&gt;
Allow: INVITE, ACK, BYE, CANCEL, OPTIONS, INFO, MESSAGE, SUBSCRIBE, NOTIFY, PRACK,
UPDATE, REFER
User-Agent: PolycomSoundPointIP-SPIP_501-UA/3.1.7.0134
Accept-Language: en
Supported: 100rel,replaces
Allow-Events: talk,hold,conference
Max-Forwards: 70
Content-Type: application/sdp
Content-Length: 272

v=0
o=- 1355474052 1355474052 IN IP4 192.168.22.76
s=Polycom IP Phone
c=IN IP4 192.168.22.76
t=0 0
a=sendrecv
m=audio 2224 RTP/AVP 0 8 18 101
a=rtpmap:0 PCMU/8000
a=rtpmap:8 PCMA/8000
a=rtpmap:18 G729/8000
a=fmtp:18 annexb=no
a=rtpmap:101 telephone-event/8000</sipMessage>
  </command>
</BroadsoftDocument>
```

Response

```
<?xml version="1.0" encoding="ISO-8859-1"?>
   <BroadsoftDocument protocol="OCI" xmlns="C"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
      <userId xmlns="">admin@broadworks      </userId>
      <command echo="" xsi:type="SystemVerifyTranslationAndRoutingResponse"
xmlns="">
         <Result>VTR request prepared for admin.
==================================================
===========     ORIGINATOR INFO   ================
==================================================
[Orig-Id]   Using Sip FROM to find user endpoint:
"North01"&lt;sip:5146998501@mtlasdev98.net>
[Orig-Id]   Device Endpoint identified 5146998501@mtlasdev98.net
[Orig-Id]   BW user identified: endpoint address is  5146998501@mtlasdev98.net
userUid: 145535734
```

```
[Orig-Id]   Endpoint Session Key is: callhalf-5867:0
[Orig-Id]   Originating user type: BroadWorks
[Orig-Id]   User Info
[Orig-Id]   User Id                       = north01@mtlasdev98.net
[Orig-Id]   User Uid                      = 145535734
[Orig-Id]   Parent Id                     = North_as98
[Orig-Id]   ASCII First Name              = john1
[Orig-Id]   ASCII Last Name               = north
[Orig-Id]   Unicode First Name            = john1
[Orig-Id]   Unicode Last Name             = north
[Orig-Id]   Country Code                  = 1
[Orig-Id]   User Type                     = BroadWorks Regular User
[Orig-Id]   (0) Address type              = main
[Orig-Id]   (0) dn                        = +15146998501
[Orig-Id]   (0) extension                 = 501
[Orig-Id]   activeAsId                    = 1
[Orig-Id]   beingRemoved                  = false

[Orig-Id/CallingPartyE164Normalization]    callingPartyE164Normalization:
systemCountryCode


=====================================================
===========  ORIGINATING CALL INFO   ================
=====================================================
[Orig/CallManagerServiceBus]       CallManagerId is callhalf-5867
[Orig/CallManagerServiceBus]        === Routing ConnectRequestEvent on the Call
Manager bus ===

[Orig/CallManagerServiceBus]       AnswerConfirmationServiceInstance has processed
the event...continue
[Orig/CallManagerServiceBus]       ConferenceServiceInstance has processed the
event...continue
[Orig/CallServiceBus]      CallId is callhalf-5867:0
[Orig/CallServiceBus]       === Routing InvitationEvent on the Originating Call
bus ===

[Orig/CallServiceBus]      TranslationServiceOrigInstance has CONSUMED the event.
[Orig/CallServiceBus]      CallId is callhalf-5867:0
[Orig/CallServiceBus]       === Routing InvitationEvent on the Originating Call
bus ===

[Orig/CallServiceBus]      Resuming event processing after
TranslationServiceOrigInstance
[Orig/CallServiceBus]      CMServiceInstance has processed the event...continue
[Orig/CallServiceBus]      LNDServiceInstance has processed the event...continue
[Orig/CallServiceBus]      LocationControlServiceInstance has processed the
event...continue
[Orig/CallServiceBus/HCBOriginatorServiceInstance] HCBOriginatorServiceInstance
has processed the event...continue
[Orig/CallServiceBus/HCBOriginatorServiceInstance] Resolved remote address:
+15146998502
[Orig/CallServiceBus/HCBOriginatorServiceInstance] Validating Origination using
profile: No 512 (Hierarchical)
[Orig/CallServiceBus/HCBOriginatorServiceInstance] Evaluating criteria My Pattern
(allow)
[Orig/CallServiceBus/HCBOriginatorServiceInstance] No rules or no matches, using
default action:
[Orig/CallServiceBus/HCBOriginatorServiceInstance] allow

[Orig/CallServiceBus]      CallCenterAgentCallServiceInstance has processed the
event...continue
[Orig/CallServiceBus]      TreatmentsServiceInstance has processed the
event...continue
[Orig/CallServiceBus]      CFAlwaysFACServiceInstance has processed the
event...continue
[Orig/CallServiceBus]      CallWaitingFACServiceInstance has processed the
event...continue
[Orig/CallServiceBus]      VMServiceInstance has processed the event...continue
```



```
[Orig/CallServiceBus]      DNDFACServiceInstance has processed the
event...continue
[Orig/CallServiceBus]      EmergencyCallTimerServiceInstance has processed the
event...continue
[Orig/VTR_FINAL]    Triggering report.


=====================================================
===========  ORIGINATING TRANSLATION RESULT =========
=====================================================
[Orig-Xlation/DialPlanPolicy]      --Dial Plan Policy Information--
[Orig-Xlation/DialPlanPolicy]      requiresAccessCodeForPublicCalls = false
[Orig-Xlation/DialPlanPolicy]      allowE164PublicCalls             = false
[Orig-Xlation/DialPlanPolicy]      privateDigitMap                  =
[Orig-Xlation/DialPlanPolicy]      publicDigitMap                   = ([2-9]11|[0-
1][2-9]11|0[#T]|00|01[2-9]xx.[#T]|*xx|011x.[#T]|[0-1]xxxxxxx[#T]|[0-1][2-
9]xxxxxxxxx|[2-9]xxxxxxxxx|[2-9]xxxxxx[#T]|101xxxx.[#T]|11|[2-9][#T])
[Orig-Xlation/DialPlanPolicy]      preferE164FormatForCallbackSvcs  = false

[Orig-Xlation/NetworkUsagePolicy]   Network Usage Policy is - do not force all
calls to network -
[Orig-Xlation/TranslationManager]   Translation Client: Translation Service
Originating Side call Id is callhalf-5867:0
[Orig-Xlation/TranslationManager]     === TranslationResult ===
[Orig-Xlation/TranslationManager]   callType             Group
[Orig-Xlation/TranslationManager]   agentKey             502@192.168.8.107
[Orig-Xlation/TranslationManager]   originalAddress      502@192.168.8.107
[Orig-Xlation/TranslationManager]   dgcAlternateAddress  502
[Orig-Xlation/TranslationManager]   destination uid      156509070
[Orig-Xlation/TranslationManager]   isServiceCode        false
[Orig-Xlation/TranslationManager]   sc8Translated        false
[Orig-Xlation/TranslationManager]   sc100Translated      false
[Orig-Xlation/TranslationManager]   oacTranslated        false
[Orig-Xlation/TranslationManager]   intraSP              false



=====================================================
===========  TERMINATING CALL INFO   ================
=====================================================
[Term/CallManagerServiceBus]       CallManagerId is callhalf-5871
[Term/CallManagerServiceBus]        === Routing TerminationEvent on the Call
Manager bus ===

[Term/Term-Id]      Terminating user type: BroadWorks
[Term/Term-Id]      User Info
[Term/Term-Id]      User Id                      = north02@mtlasdev98.net
[Term/Term-Id]      User Uid                     = 156509070
[Term/Term-Id]      Parent Id                    = North_as98
[Term/Term-Id]      ASCII First Name             = john2
[Term/Term-Id]      ASCII Last Name              = north
[Term/Term-Id]      Unicode First Name           = john2
[Term/Term-Id]      Unicode Last Name            = north
[Term/Term-Id]      Country Code                 = 1
[Term/Term-Id]      User Type                    = BroadWorks Regular User
[Term/Term-Id]      (0) Address type             = main
[Term/Term-Id]      (0) dn                       = +15146998502
[Term/Term-Id]      (0) extension                = 502
[Term/Term-Id]      activeAsId                   = 1
[Term/Term-Id]      beingRemoved                 = false

[Term/CallServiceBus]      CallId is callhalf-5871:0
[Term/CallServiceBus]       === Routing InvitationEvent on the Terminating Call
bus ===

[Term/CallServiceBus]      TranslationServiceTermInstance has processed the
event...continue
[Term/CallServiceBus]      CMServiceInstance has processed the event...continue
[Term/CallServiceBus]      CallCenterAgentCallServiceInstance has processed the
event...continue
```



```
[Term/CallServiceBus/HCBTerminatorServiceInstance] HCBTerminatorServiceInstance
has processed the event...continue
[Term/CallServiceBus/HCBTerminatorServiceInstance] Validating Termination using
profile: No 512 (Hierarchical)
[Term/CallServiceBus/HCBTerminatorServiceInstance] Evaluating rule My Pattern
(allow)
[Term/CallServiceBus/HCBTerminatorServiceInstance] No rules or no matches, using
default action:
[Term/CallServiceBus/HCBTerminatorServiceInstance] allow

[Term/CallServiceBus]       LNRServiceInstance has processed the event...continue
[Term/CallServiceBus]       CFAlwaysTerminatorServiceInstance has processed the
event...continue
[Term/CallServiceBus]       DNDServiceInstance has processed the event...continue
[Term/CallServiceBus]       CallWaitingTerminatorServiceInstance has processed the
event...continue
[Term/CallServiceBus]       VMServiceInstance has processed the event...continue
[Term/CallServiceBus]       RedirectionServiceInstance has processed the
event...continue
[Term/CallManagerServiceBus]        CallManagerId is callhalf-5871
[Term/CallManagerServiceBus]         === Routing InvitationEvent on the Call
Manager bus ===

[Term/CallManagerServiceBus]        AccessRoutingServiceInstance has processed the
event...continue
[Term/CallManagerServiceBus]        CallCenterAgentServiceInstance has processed
the event...continue
[Term/CallManagerServiceBus]        FlashServiceInstance has processed the
event...continue
[Term/CallManagerServiceBus]        RingTimeoutServiceInstance has processed the
event...continue
[Term/SipINVITE]     Outgoing resulting INVITE for Endpoint Id: callhalf-5871:0
    udp 925 Bytes OUT to 192.168.22.76:5060&#13;
    INVITE sip:5146998502@192.168.22.76 SIP/2.0&#13;
    Via:SIP/2.0/UDP 192.168.8.107;branch=z9hG4bKBroadWorks.-1su2jct-
192.168.22.76V5060-0-234501946-113625969-1377006022258-&#13;
    From:"john1 north"&lt;sip:501@192.168.8.107;user=phone> ;tag=113625969-
1377006022258-&#13;
    To:"john2 north"&lt;sip:5146998502@mtlasdev98.net>&#13;
    Call-ID:BW094022258200813336357477@192.168.8.107&#13;
    CSeq:234501946 INVITE&#13;
    Contact:&lt;sip:192.168.8.107:5060>&#13;
    Supported:100rel&#13;
    Allow:ACK,BYE,CANCEL,INFO,INVITE,OPTIONS,PRACK,REFER,NOTIFY,UPDATE&#13;
    Recv-Info:x-broadworks-client-session-info&#13;
    Accept:application/media_control+xml,application/sdp,multipart/mixed&#13;
    Max-Forwards:10&#13;
    Content-Type:application/sdp&#13;
    Content-Length:251&#13;
    &#13;
    v=0&#13;
    o=BroadWorks 1464 1 IN IP4 192.168.22.76&#13;
    s=-&#13;
    c=IN IP4 192.168.22.76&#13;
    t=0 0&#13;
    a=sendrecv&#13;
    m=audio 2224 RTP/AVP 0 8 18 101&#13;
    a=rtpmap:0 PCMU/8000&#13;
    a=rtpmap:8 PCMA/8000&#13;
    a=rtpmap:18 G729/8000&#13;
    a=fmtp:18 annexb=no&#13;
    a=rtpmap:101 telephone-event/8000&#13;



==================================================
==========           TIMESTAMPS           =========
==================================================
[Timestamps]        Start time = 2013.08.20 09:40:22:247 EDT
```



```
[Timestamps]        End time   = 2013.08.20 09:40:22:260 EDT



==================================================
===========   RESULT: ALLOWED         ===============
==================================================
</Result>
      </command>
</BroadsoftDocument>
```

8 Xsi-VTR Application

The Xsi-VTR application is also provided with the Xtended Services Platform (Xsp) server to allow third-party applications to use the VTR tool through HTTP. Once the web application has been deployed, requests can be sent through HTTP GET or HTTP POST messages. The response returned by the web application is the content of the VTR result.

Note that in this section, the application context (URL of the application) is identified as **<context>**.

8.1 Functional Description

The Xsi-VTR is a web application that runs on the BroadWorks Xtended Services Platform server. Xsi-VTR is responsible for authenticating and relaying VTR requests to the BroadWorks Application Server.

Once an HTTP request has been received from a remote application and it has been successfully authenticated, the request is then sent to the BroadWorks Application Server where it is processed and an appropriate response is generated.

8.2 Access Web Application API

The Xsi-VTR application can be used to send both VTR and VTRI requests. All requests must be sent to the context URL of *<context>/vtrQueries*. If the request is a VTR request using parameters, it must be sent using the HTTP GET method to *<context>/vtrQueries/vtr*. If the request is a VTRI request (using a SIP message instead of parameters), then it must be sent using the HTTP POST method to *<context>/vtrQueries/vtri*.

The Xsi-VTR application always sends the response encoded in UTF-8 unless the request provides a character encoding specified in the Content-Type HTTP header.

8.2.1 Send VTR Request

To send a VTR request using the Xsi-VTR application, follow these steps.

1) Set the target URL to the Xsi-VTR application and match the VTR command path (for example, http://myserver/com.broadsoft.xsi-vtr/vtrQueries/vtr).

2) Set the required parameters (and note that all names and values are case sensitive).

Parameter Name	Expected Values	Optional/ Mandatory	Description
origType	linePort, phone, userId, url	Mandatory	This determines which type of origination is selected for a VTR request.
origValue		Mandatory	This is the origination value as text. It is parsed according to the *origType* specified.
destination		Mandatory	This is the destination value as text.
contact		Optional	This is the contact parameter to be used in the VTR request. This parameter is optional.
diversion		Optional	This is the diversion parameter to be used in the VTR request. This parameter is optional.

3) Set the message mode to use the HTTP GET method (which is the default web browser behavior).

4) Send the message to the server. For example, the complete URL along with the parameters could be similar to this: http://myserver.com/com.broadsoft.xsi-vtr/vtrQueries/vtr?origType=phone&origValue=5146998501&destination=502.

5) The server replies with a text response containing the VTR report.

Example:

```
GET /com.broadsoft.xsi-
vtr/vtrQueries/vtr?origType=phone&origValue=5146998501&destination=502 HTTP/1.1
Host: 192.168.0.100
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
Cookie: JSESSIONID=284C8BA4916C767ABFA020801D9CFD4A
Cache-Control: max-age=0
```

8.2.2 Send VTRI Request

Sending a VTRI request is different than sending a VTR request. Since the SIP INVITE provided may be larger than the available parameter space, it must be sent using the HTTP POST method, in the HTTP body. The default maximum SIP message length is set to "65535" characters, which can be changed by editing the *maxMessageSize* general setting, available in the Xsi-VTR CLI context.

1) Set the target URL to the Xsi-VTR application and match the VTR command path (for example, http://myserver/com.broadsoft.xsi-vtr/vtrQueries/vtri).

2) Set the message mode to use the HTTP POST method.

3) Set the POST body to contain the SIP message to be used by the VTR request.

4) The server replies with a text response containing the VTR report.

Example:

```
POST /com.broadsoft.xsi-vtr/vtrQueries/vtri HTTP/1.1
Host: 192.168.0.100
Accept: text/html, */*; q=0.01
Content-Type: text/plain; charset=UTF-8
Content-Length: 914
Cookie: JSESSIONID=284C8BA4916C767ABFA020801D9CFD4A
Pragma: no-cache
Cache-Control: no-cache

INVITE sip:502@mtlasdev98.net;user=phone SIP/2.0
Via: SIP/2.0/UDP 192.168.22.76;branch=z9hG4bKf14b43b523149900
From: "North01" <sip:5146998501@mtlasdev98.net>;tag=D2334FAB-F946D944
To: <sip:502@mtlasdev98.net;user=phone>
CSeq: 1 INVITE
Call-ID: a312e9d7-a9d561a9-fa6829ea@192.168.22.76
Contact: <sip:5146998501@192.168.22.76>
Allow: INVITE, ACK, BYE, CANCEL, OPTIONS, INFO, MESSAGE, SUBSCRIBE, NOTIFY, PRACK,
UPDATE, REFER
User-Agent: PolycomSoundPointIP-SPIP_501-UA/3.1.7.0134
Accept-Language: en
Supported: 100rel,replaces
Allow-Events: talk,hold,conference
Max-Forwards: 70
Content-Type: application/sdp
Content-Length: 272

v=0
o=- 1355474052 1355474052 IN IP4 192.168.22.76
s=Polycom IP Phone
c=IN IP4 192.168.22.76
t=0 0
a=sendrecv
m=audio 2224 RTP/AVP 0 8 18 101
```



```
a=rtpmap:0 PCMU/8000
a=rtpmap:8 PCMA/8000
a=rtpmap:18 G729/8000
a=fmtp:18 annexb=no
a=rtpmap:101 telephone-event/8000
```

8.3 Xsi-VTR Error Codes

The following error codes may be encountered while using Xsi-VTR:

- 400 Bad Request
- 404 Wrong URI
- 405 Method not allowed
- 413 SIP message size exceeded
- 500 Internal server error on a communication issue between servers

The code 413 (SIP message size exceeded) is encountered only when using the VTRI command.

The code 400 (Bad Request) can mean that a parameter is invalid or has an invalid value, or that the SIP message is missing, depending if VTR or VTRI was used.

8.4 Configure Xsi-VTR

This section describes how to configure the Xsi-VTR on the BroadWorks Xtended Services Platform (Xsp) server. Before using the Xsi-VTR, the Xtended Services Platform server must be configured to communicate properly with the BroadWorks Application Server. For more information on how to configure the servers, see section 4 in the *BroadWorks Xtended Services Interface Configuration Guide* [1].

8.4.1 Version Check and Deploy

8.4.1.1 Introduction

Starting with Release 20.0, the Xsi-VTR web application comes pre-installed on the Xtended Services Platform server as a managed web application. Enhancements and software fixes are delivered through the standard BroadWorks software delivery and patching process for the Xtended Services Platform server. For more information, see the *BroadWorks Software Management Guide* [2].

There are two main installation/upgrade scenarios:

- Fresh installation or upgrade from Release 20.0 and higher
- Upgrade from a pre-Release 20.0 version

8.4.1.1.1 Fresh Installation or Upgrade from Release 20.0 and Higher

When upgrading the Xtended Services Platform server to Release 20.0, the managed Xsi-VTR web application is automatically upgraded retaining its deployment state.

After an upgrade or fresh installation, if the Xsi-VTR web application had not been deployed already, then to deploy it, follow the instructions in the *BroadWorks Xtended Services Platform Configuration Guide* [3]. The major steps for this are:

- Activate the Xsi-VTR with the proper context path.
- Configure any parameters appropriately on the new version.
- Deploy the current version of the Xsi-VTR.

8.4.1.1.2 Upgrade from Pre-Release 20.0 Version

After upgrading the Xtended Services Platform server to Release 20.0 from a pre-Release 20.0 version, the managed Xsi-VTR web application must be activated and deployed in replacement of the previously deployed version of the Xsi-VTR web application. This is a one-time maintenance operation. Once the managed web application is deployed, the introduction of new functionality or fixes does not require the re-deployment of the web application. The new functionality or fixes are applied as soon as the server is upgraded or patched.

NOTE: During an upgrade to Release 21.0, the configuration values of the current version of the Xsi-VTR are not copied to the managed version of the Xsi-VTR. The logging subsystem of the managed version of the Xsi-VTR is different from the previous version and its configuration is always set to the default values after an upgrade. The configuration of the logging subsystem should be validated when activating the web application. The general settings should be updated for the managed application if they were previously changed, if applicable.

The following steps describe the procedure to upgrade from an unmanaged version of the Xsi-VTR, (in this example, 1.1) to a managed version of the Xsi-VTR (in this example, 20.0_1.438).

1) Check the version of the Xsi-VTR web application currently deployed on all Xtended Services Platform servers by issuing the *get versions current* command at the Xtended Services Platform CLI level as shown in the following example.

```
XSP_CLI/Maintenance/ManagedObjects> get versions current
XSP version Rel_20.0_1.438

Built  Mon Aug 12 03:12:52 EDT 2013
- BASE revision 419834
- XSP revision 419834


Applications Info:
- WebContainer version 20.0_1.438
- Xsi-Actions version 20.0_1.438 context path /com.broadsoft.xsi-actions
- Xsi-Events version 20.0_1.438 context path /com.broadsoft.xsi-events
- Xsi-MMTel version 20.0_1.438 context path /Xsi-MMTel
- Xsi-VTR version 20.0_1.438 context path /com.broadsoft.xsi-vtr

Patching Info:
  Active Patches: 0
```

2) Check the version of the managed Xsi-VTR web application installed on the Xtended Services Platform server by issuing the *get versions all* command at the Xtended Services Platform CLI level as shown in the following example.

```
XSP_CLI/Maintenance/ManagedObjects> get versions all
  Identity     Version  Install Date  Status
=============================================
       XSP  20.0_1.438  Aug 12, 2013  Active

1 entry found.

* Applications:
                        Name     Version     Status
=======================================================
               BWCallCenter     20.0.13     Active
                   BWOCTabs         3.2     Active
                 BWPXSAastra         2.5     Active
            BWPhoneXtension         2.5     Active
             BWReceptionist     20.0.15     Active
```

```
                Bria-Webapp         3.3     Active
              BroadworksDms  20.0_1.438     Active
       BusinessCommunicator         1.3     Active
                  CommPilot  20.0_1.438     Active
             CommPilot-XS-TAS  20.0_1.438     Active
  CustomMediaFilesRetrieval  20.0_1.438     Active
       DeviceManagementTFTP  20.0_1.438     Active
                FlashPolicy  20.0_1.438     Active
          ModeratorClientApp      20.0.3     Active
                    OCIFiles  20.0_1.438     Active
                OCIOverSoap  20.0_1.438     Active
            OpenClientServer  20.0_1.438     Active
             PublicReporting  20.0_1.438     Active
               RatingFunction  20.0_1.438     Active
                   UC-Connect  20.0_1.438     Active
                WebContainer  20.0_1.438     Active
                 Xsi-Actions  20.0_1.438     Active
          Xsi-Actions-XS-TAS  20.0_1.438  Installed
                  Xsi-Events  20.0_1.438     Active
           Xsi-Events-XS-TAS  20.0_1.438  Installed
                   Xsi-MMTel  20.0_1.438     Active
            Xsi-MMTel-XS-TAS  20.0_1.438  Installed
                     Xsi-VTR         1.1     Active
                     Xsi-VTR  20.0_1.438  Installed


28 entries found.

* Third Party Software:
  Third Party      Version  Status
================================
         perl       5.14.1  active
         java  jdk1.7.0_21  active
     openldap      2.4.26c  active
      openssl       1.0.1e  active
       apache       2.2.24  active
       tomcat       6.0.36  active

6 entries found.

SWManager Version: 419554
```

3) Review the Xsi-VTR entries and note the active version number and the installed managed. For example, from the outputs above, the active version of Xsi-VTR is 1.1 and the installed managed version of Xsi-VTR is 20.0_1.438.

4) To undeploy the previous version of the Xsi-VTR and deploy the managed version of the Xsi-VTR, follow the instructions in the *BroadWorks Xtended Services Platform Configuration Guide* [3]. The major steps are:

   – Undeploy the previous version.

   – Deactivate the previous version.

   – Activate the new version at the same context path.

   – Configure any parameters appropriately on the new version.

   – Deploy the new version.

   – Uninstall the previous version after testing the new version.

NOTE: Uninstalling the previous version is not mandatory, but it is recommended to keep the list of applications as manageable as possible.

5) After deploying the Xsi-VTR, the web application can be tested by using the provided test page, which can be retrieved by visiting the context URL followed by "/test". For example, a test URL on a fictional server could be: http://xsp.myserver.com/com.broadsoft.xsi-vtr/test.

8.4.2 Xsi-VTR Default Configuration and Modification

The following Xsi-VTR parameters can be configured using the Xtended Services Platform CLI. Default values for each parameter are also listed.

All parameters are available from the *XSP_CLI/Applications/Xsi-VTR* CLI level.

Example:

```
XSP_CLI/Applications/Xsi-VTR> ?
This level is used to configure the general settings of the XSI-VTR application.

Commands:
    0)  GeneralSettings : go to level GeneralSettings
    1)          Logging : go to level Logging

  h (help),  e (exit),  q (quit),  r (read),  w (write),  t (tree),
  c (config),  cd (cd),  a (alias),  hi (history),  p (pause),  re (repeat), k
(keyboardHelp)
```

8.4.2.1 Parameter Values

Each subsection lists the CLI context where parameters are found. At each context, use the BroadWorks CLI "get" command to view the default value text string, or any modified value that has been set. Use the CLI "set" command to change the value.

8.4.2.1.1 XSP_CLI/Applications/Xsi-VTR/GeneralSettings

Parameter	Default Value	Description
maxMessageSize	65535	This parameter specifies the maximum SIP message size that can included in POST data. Values: 1 through 2147483647

8.4.2.1.2 XSP_CLI/Applications/Xsi-VTR/Logging

Parameter	Default Value	Description
Enabled	True	Globally enables or disables logging for the application.
severity	Info	Provides the default minimum log level severity for the application.
priority	5	Specifies the priority at which the logging thread runs (1 being the lowest priority and 5 the highest).
maxQueueSize	50000	Specifies the size of the logging queue.
showThreadName	True	Specifies whether the thread name is shown for individual log records.

8.4.2.1.1 XSP_CLI/Applications/Xsi-VTR/Logging/InputChannel

The application defines multiple logging input channels. Each input channel can be configured independently.

Parameter	Default Value	Description
enabled	True	Enables or disables logging for a specific *InputChannel*.
severity	Info	Defines the minimum log level severity for a specific *InputChannel*.

8.4.2.1.2 XSP_CLI/Applications/Xsi-VTR/Logging/OutputChannel

The application defines multiple logging output channels. Each output channel can be configured as described in the following table.

Parameter	Default Value	Description
enabled	True	Enables or disables logging for a specific *OutputChannel*.
directory	/var/broadworks/logs/xsp/	Defines the minimum log level severity for a specific *OutputChannel*.
filePrefix	XsiVTRLog	Defines the prefix of the log files.
fileSizeInMB	30	Defines the maximum size of a log file.
numberOfFiles	200	Defines the maximum number of log files kept before old log files are deleted.

8.5 Use Test Page

The *Xsi-VTR Test Page*, bundled with the Xsi-VTR application, is used to create the VTR and VTRI requests as well as to view the results. The test page uses JavaScript to interact with the web application so that it behaves like a sample use of the application. The test page can be accessed by pointing a web browser to the address of the Xsi-VTR application context and adding "/test" (for example, http://myserver/com.broadsoft.xsi-vtr/test).

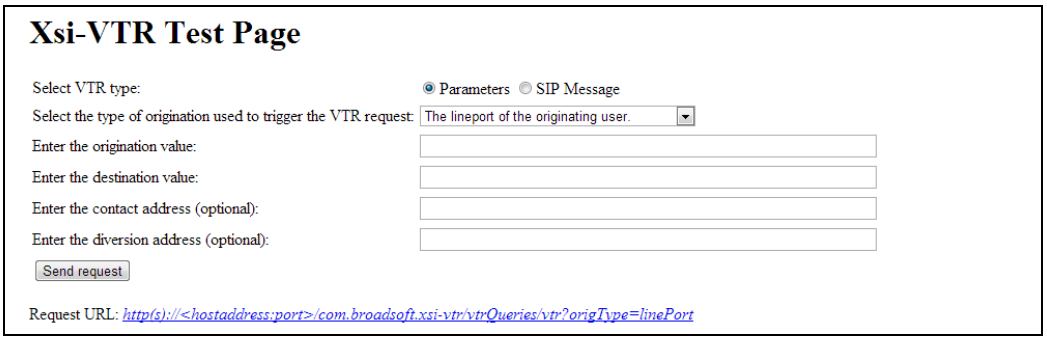

Figure 9 Xsi-VTR Test Page

The *Xsi-VTR Test Page* includes a form that is used by the administrator to enter each parameter. However, to use a SIP message, the VTR type is changed, which changes the form to include a text area that is used to paste in the SIP message. In *Parameters* mode, the link after *Request URL* is updated automatically to show how the parameters are managed.

If a parameter is entered that contains an incorrect value, then a red notification appears on the side informing the administrator that the parameter was invalid. When the **Send Request** button is clicked, the VTR request is sent to the Application Server, which sends back the VTR result that appears below the button on the test page.

The following validation errors are possible:

- "Length must be between 1 and x", where x is "23" for the phone, "80" is for the Line/Port, "161" is for the User ID, and "256" is for the URL.
- "Must contain an @", when there is no "@" in a Line/Port, User ID, or URL origination.
- "Must be a valid phone number", when the phone type contains characters that are not used in phone numbers (for example, "@").

Note that when testing the Xsi-VTR application with erroneous values is intentional, that is, when it is a valid use case, the validation errors can be ignored and the **Send** button can be clicked.

8.6 Authentication

8.6.1 Basic HTTP Authentication

When navigating to the *Xsi-VTR Test Page* or using the web application directly through a web browser, an authentication popup appears for the administrator to enter credentials. Note that the authentication mechanism is not set up to support directory number (DN) authentication. However, a user name, domain, and password are required. (Since this feature targets administrators, it is likely that administrators' accounts do not have a DN.)

The basic authentication mechanism is described in *RFC 1945* [4].

8.6.2 External Authentication Agent Support

User authentication can also be performed by an external password or policy server. The Xtended Services Platform can be configured either to use an embedded agent or to use a Web-based Authentication Server (WAS). For more information, see the *BroadWorks External Portal Integration Guide* [5].

8.7 HTTP Headers

HTTP request headers important for the Xsi-VTR, include the following:

- **Authorization** – Contains the user credentials.
- **Content-type** – Specifies a *charset* parameter that can be used to modify the character encoding of the response. The content type used in the response is always set to "text/plain" as an indication that the response contains the raw text of the response, keeping the CLI formatting.

9 Differences between Release 20.0 and Prior Releases

The VTR functionality is available for earlier releases through patches. The Xsi-VTR application, along with the OCI-P commands, are available for Releases 17, 17.sp2, 17.sp4, 18, 18.sp1, 19, and 19.sp1 through patches and downloads. This section describes the differences between the patched functionality and the functionality bundled with BroadWorks Release 20.0. The patches are named "AP176191".

9.1 OCI-P Changes

When using a BroadWorks release below Release 20.0, the VTR request is not available to group administrators. In addition, there is not a service provider administrator policy to control (per administrator) the VTR access rights. However, a container option is available to allow all service provider administrators the right to execute VTR requests.

The container option is described as follows:

- Name – bw.ocip.allowVtr
- Accepted values – "true" or "false" (case-insensitive)
- Container – Provisioning

When upgrading to Release 20.0, the value of the container option, if present, becomes the VTR access policy for all current service provider administrators. Administrators, who are added after an upgrade, do not have VTR access, unless provided manually by a system administrator.

9.2 Xsi-VTR Web Application

In BroadWorks Release 20, the Xsi-VTR application comes pre-installed on the Xtended Services Platform server. Prior to Release 20, an unmanaged version of Xsi-VTR must be manually installed, activated, and deployed.

The unmanaged version of Xsi-VTR is available from xchange.broadsoft.com. To accommodate the differences found on the Xtended Services Platform logging system, two versions are available:

- Version 1.0 of the Xsi-VTR must be used for Releases 17, 17.sp2, and 17.sp4.
- Version 1.1 of the Xsi-VTR must be used for Releases 18, 18.sp1, 19, and 19.sp1.

NOTE: Although there is no functional difference between 1.0 and 1.1, using the wrong version may result in the application not working correctly.

When upgrading to Release 20.0, the unmanaged version can be safely uninstalled and the managed version bundled with Release 20.0 can be activated and deployed as a replacement. Using the managed version ensures that in the future it is updated automatically. For more information, see section *8.4 Configure Xsi-VTR*.

9.3 User Migration

When using a redundant Application Server configuration, VTR test calls do not migrate users when using Release 20.0 or higher, or after having applied AP176191 patches. Prior to applying AP176191 patches, VTR test calls on the secondary Application Server migrate involved users from the primary server to the secondary server.

Appendix A: List of Services Supporting VTR

The following list of services can provide extraneous information, such as their settings when being triggered by a VTR-simulated call. If a service is not on the list, it may not have been modified yet to provide extra information for VTR calls.

- Auto Attendant
- BroadWorks Anywhere
- BroadWorks Mobility
- Calling Name Retrieval
- Call Center
- Communication Barring (all types)
- Custom Ringback
- Find-me/Follow-me
- Group Paging
- Hunt Group
- Incoming Call Policies
- Instant Group Call
- Intercept Group (intercept originator)
- Meet Me Conferencing
- Call Processing Policies (outgoing call policies)
- Remote Office
- Route Point
- Sequential Ringing
- Shared Call Appearance
- Simultaneous Ringing
- Trunk Group
- Two-Stage Dialing
- Voice Messaging (voice mail retrieval)

NOTE: Since VTR results for these services are subject to change due to different patches being applied, examples have not been included in this guide.

Acronyms and Abbreviations

This section lists the acronyms and abbreviations found in this document. The acronyms and abbreviations are listed in alphabetical order along with their meanings.

AAC	Account/Authorization Code
ABNF	Augmented Backus-Naur Form
ACD	Automatic Call Distribution
ACL	Access Control List
ACR	Anonymous Call Rejection
Admin	Administrator
AMS	Access Mediation Server
API	Application Programming Interface
AS	Application Server
AVP	Attribute Value Pair
BCCT	BroadWorks Common Communication Transport
BW	BroadWorks
CAP	Client Application Protocol
CBF	Communication Barring – Fixed
CCRS	Call Center Reporting Server
CDR	Call Detail Record
CDS	Call Detail Server
CFA	Call Forwarding Always
CFB	Call Forwarding Busy
CFNA	Call Forwarding No Answer
CFNR	Call Forwarding Not Reachable
CFS	Call Forwarding Selective
CLI	Command Line Interface
CLID	Calling Line ID
CORBA	Common Object Request Broker Architecture
CPL	Call Processing Language
CPU	Central Processing Unit
CRS	Call Recording Server
CS	Conferencing Server
CSCF	Call Session Control Function
CSTA	Computer Supported Telecommunications Applications
CSV	Comma Separated Value

CTI	Computer Telephony Integration
CWT	Call Waiting Tone
dBm	The power ratio in decibel (dB) of the measured power referenced to one milliwatt (mW).
Dbmo	The level of a signal as specified in dBmO, is the level of that signal (in dBm) as measured at the reference point of the network.
DBS	Database Server
DN	Directory Number
DND	Do Not Disturb
DPUBI	Directed Call Pickup with Barge-in
EMS	Element Management System
EOCP	Enhanced Outgoing Calling Plan
EV	ExtraView
FAC	Feature Access Code
FQDN	Fully Qualified Domain Name
FR	Feature Request
FS	Functional Specification
FTP	File Transfer Protocol
HCB	Hierarchical Communication Barring
HTML	Hypertext Markup Language
HTTP	Hypertext Transfer Protocol
Hz	Hertz
ICP	Incoming Calling Plan
IMAP	Internet Message Access Protocol
IMS	IP Multimedia Subsystem
IP	Internet Protocol
IVR	Interactive Voice Response
LO	Local
LPS	Local Premium Service
LSSGR	LATA Switching Systems Generic Requirements
MB	Megabyte
MGCP	Media Gateway Control Protocol
MIB	Management Information Base
MOC	Microsoft Office Communications
MR	Market Request
MS	Media Server
NCOS	Network Class of Service

NE	Network Element
NS	Network Server
NSSync	Network Server Synchronization
OAM&P	Operations, Administration, Management, and Provisioning
OCI	Open Client Interface
OCI-C	Open Client Interface-Call Control
OCI-P	Open Client Interface-Provisioning
OCI-R	Open Client Interface-Reporting
OCP	Outgoing Calling Plan
OCS	Open Client Server
ODP	Outgoing Digit Plan
OID	Object Identifier
OOTB	Out-of-the-Blue
OS	Operating System
OSS	Operations Support System
PBX	Private Branch Exchange
PCV	P-Charging-Vector
PDF	Portable Document Format
PM	Performance Measurement
PSTN	Public Switched Telephone Network
PTT	Push To Talk
RAM	Random Access Memory
RFC	Request for Comments
RTP	Real-Time Transport Protocol
SAC	Session Admission Control
SBC	Session Border Controller
SCA	Shared Call Appearance
SCA	Selective Call Acceptance
SCR	Selective Call Rejection
SDR	Session Data Replication
SIP	Session Initiation Protocol
SMAP	Software Management Application Protocol
SMDI	Simplified Message Desk Interface
SMPP	Short Message Peer-to-Peer Protocol
SMS-C	Short Message Service Center
SMTP	Simple Mail Transfer Protocol

SNMP	Simple Network Management Protocol
SOAP	Simple Object Access Protocol
SP	Service Pack
SRV	Service Locator
SSH	Secure Shell
TAS	Telephony Application Server
TCP/IP	Transmission Control Protocol/Internet Protocol
TDM	Time Division Multiplexing
TO	Toll
TPS	Toll Premium Services
URI	Uniform Resource Identifier
URL	Uniform Resource Locator
VMS	Voice Mail System
VoIP	Voice Over Internet Protocol
VTR	Verify Translation and Routing
WebDAV	Web-based Distributed Authoring and Versioning
WS	Web Server
XML	eXtensible Markup Language
XS	Execution Server
XSD	XML Schema Definition
Xsi	Xtended Services Interface
Xsp	Xtended Services Platform

References

[1] BroadSoft, Inc. 2014. *BroadWorks Xtended Services Interface Configuration Guide, Release 21.0*. Available from the BroadSoft Xchange at xchange.broadsoft.com.

[2] BroadSoft, Inc. 2014. *BroadWorks Software Management Guide, Release 21.0.* Available from the BroadSoft Xchange at xchange.broadsoft.com.

[3] BroadSoft, Inc. 2014. *BroadWorks Xtended Services Platform Configuration Guide, Release 10.0*. Available from the BroadSoft Xchange at xchange.broadsoft.com.

[4] Berners-Lee, T., Fielding, R. and H. Frystyk, "Hypertext Transfer Protocol -- HTTP/1.0", RFC 1945, May 1996. Available from http://www.isi.edu/in-notes/rfc1945.txt.

[5] BroadSoft, Inc. 2014. *BroadWorks External Portal Integration Guide, Release 21.0*. Available from the BroadSoft Xchange at xchange.broadsoft.com.