Avaya Solution & Interoperability Test Lab

Application Notes for Komutel Kontact with Avaya Communication Server 1000 - Issue 1.0

Abstract

These Application Notes describe the steps required to integrate Komutel Kontact with Avaya Communication Server 1000. Komutel Kontact is a contact center solution for inbound call dispatch management tool for managing agents and distributing calls. In the compliance test, Komutel Kontact successfully connected to Communication Server via SIP trunk on Session Manager, distributed calls to available agents in the appropriate queue, and transferred calls to agent deskphone. In addition, Komutel Kontact used Busy Lamp Field (BLF) interface with Communication Server 1000 to obtain information of monitored extensions on Communication Server 1000.

Readers should pay attention to **Section 2**, in particular the scope of testing as outlined in **Section 2.1** as well as any observations noted in **Section 2.2**, to ensure that their own use cases are adequately covered by this scope and results.

Information in these Application Notes has been obtained through DevConnect compliance testing and additional technical discussions. Testing was conducted via the DevConnect Program at the Avaya Solution and Interoperability Test Lab.

PM; Reviewed:
SPOC 12/13/2016
Solution & Interoperability Test Lab Application Notes
©2016 Avaya Inc. All Rights Reserved.
1 of 29
Kontact_CS1K76

1. Introduction

These Application Notes describe the steps required to integrate Komutel Kontact with Avaya Communication Server 1000. Komutel Kontact is a contact center solution for inbound call dispatch management tool for managing agents and distributing calls. In the compliance test, Komutel Kontact successfully connected to Communication Server 1000 via Avaya Aura® Session Manager SIP trunk, distributed calls to available agents in the appropriate queue, and transferred calls to agent deskphone. Komutel Kontact also used Busy Lamp Field (BLF) interface with Communication Server 1000 to obtain information of monitored phones on Communication Server 1000.

Komutel Kontact server consists of two services: Komutel Call Distribution - Distribution des Appels Komutel DAK service which receives and handles calls via SIP trunks and the BLF interface is used to monitor the agent phone while Kontact provides a visual display of incoming calls and dispatches calls on agent desktop web-based application.

The agents were configured as phones on Communication Server 1000 with ACD functionality such as queuing, work modes, and announcements are provided by Kontact. Upon an incoming call from PSTN to Kontact, Kontact used BLF interface to determine agent's phone status on Communication Server 1000, if available then used SIP REFFER to perform blind transfer of call to the agent user on Communication Server 1000. If there is no available agent in the queue, call is placed in the queue, Kontact played pre-recorded announcements, hold music, and used collected DTMF digits to determine the route destination. If the agent's extension on Communication Server 1000 is not available, agent will see the call being placed in their queue on the Kontact Agent's page and other agent which belong the same queue also see this call in the queue on their page, therefore any agent in that queue can pick up the phone by click on the call in queue and their extension on Communication Server 1000 will ring or they can transfer the call to a destination on the PSTN by using the manual transfer button on the Agent's page.

2. General Test Approach and Test Results

The feature test cases were performed manually. Upon start of the Kontact application, the application automatically used BLF to query device name, requested device monitoring. The application also automatically used SIP to connect to Session Manager and registered for Kontact ACD routing.

For the manual part of the testing, incoming calls were made to the general routing Kontact. The Kontact server used query results and event reports to monitor agent states, and specified calls to be routed to available agents or to call treatment ACD. Manual call controls from both the agent telephones and the agent desktop computers were exercised to verify call control features such as answering and transferring of calls

The serviceability test cases were performed manually by disconnecting and reconnecting the Ethernet connection to the Kontact servers. The verification of tests included checking the proper states at the telephones, and of capturing and analyzing the BLF and SIP message traces from the Kontact server.

DevConnect Compliance Testing is conducted jointly by Avaya and DevConnect members. The jointly-defined test plan focuses on exercising APIs and/or standards-based interfaces pertinent to the interoperability of the tested products and their functionalities. DevConnect Compliance Testing is not intended to substitute full product performance or feature testing performed by DevConnect members, nor is it to be construed as an endorsement by Avaya of the suitability or completeness of a DevConnect member's solution.

2.1. Interoperability Compliance Testing

Interoperability compliance testing covered the following features and functionality:

- Successful SIP trunk connection from Kontact to Session Manager.
- Incoming PSTN call is routed correctly to Kontact.
- Manual transfer of call in a queue to a specified extension on Communication Server 1000 or the PSTN.
- Use of BLF to monitor agent phone status such as ringing, on call, on hold.
- Playing music on hold by Kontact.
- Playing announcement to queued calls periodically by Kontact.
- Verify overflow to a number or queue for timeout, max calls in queues, timeout if no agent ready and ratio of calls on Ready agent by Kontact.
- Tracking statistics such as abandoned calls and incoming/outgoing calls in the call log.
- Caller ID display on Kontact.
- Proper system recovery after restart of the Kontact server and loss of IP connectivity.

The serviceability testing focused on verifying the ability of Komutel to recover from adverse conditions, such as disconnecting/reconnecting the Ethernet connection to the Komutel server.

2.2. Test Results

All test cases passed with the following observations noted:

- During an active call, if the agent's PC is restarted, then Kontact will change the agent's status to "Not Ready".
- On the agent report there is no information for the caller (L1 and L2). This information is normally passed by BLF, but currently BLF does not provide it, so it shows as blank in the report.
- Call status of the second call will not be monitored by Kontact.
- The User Name and Password fields are not applicable for this SIP Trunk integration. They can be filled with any information.

2.3. Support

For technical support on Kontact, contact Komutel Support via phone, email, or website.
- **Phone:** (877) 225-9988
- **Email:** service@komutel.com
- **Web:** http://www.komutel.com/en/services/43/technical-support

3. Reference Configuration

The detailed administration of Communication Server 1000 resources is not the focus of these Application Notes and will not be described. Four DN were created for two Kontact servers, upon incoming call to selected Kontact DN, Kontact will distribute the call to available agent's extension.

As shown in **Figure 1** below Kontact server was deployed with BLF interface to Communication Server 1000. One SIP trunk connects Kontact to Session Manager.
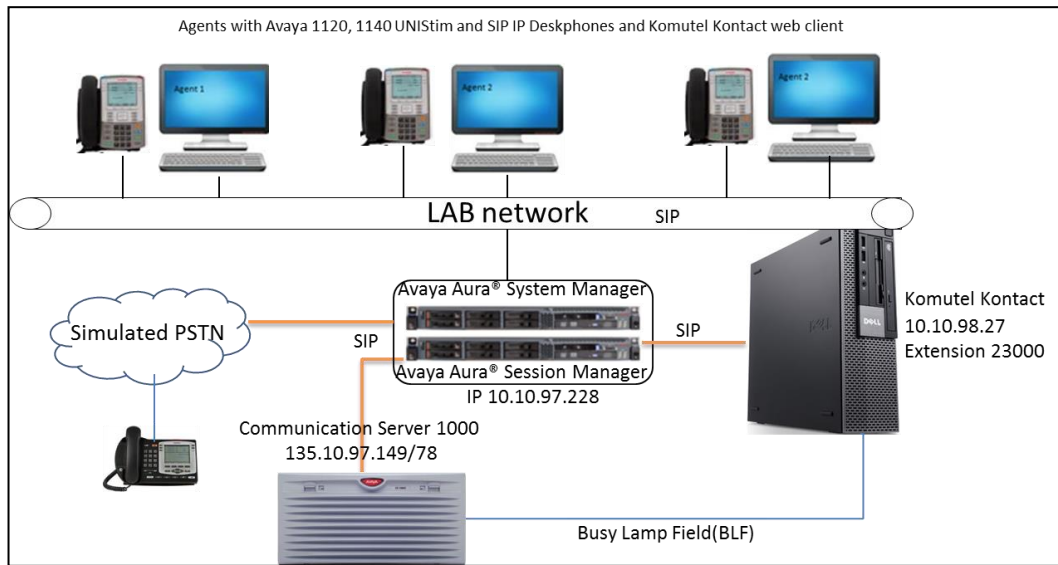

Figure 1: Compliance Testing Configuration

4. Equipment and Software Validated

The following equipment and software were used for the sample configuration provided:

Equipment/Software	Release/Version
Avaya Communication Server 1000	7.65SP8
Avaya Aura Session Manager	7.0.1SP1
Avaya Aura System Manager	7.0.1.1
Avaya 1120E IP Deskphone (SIP)	4.4.26
Avaya 1120 and 1140E IP Deskphones (UNIStim)	5.5.7
Komutel Kloud Kontact installed on Windows Server 2008 SP1 at Main site: • Komutel Kontact BLF Agent Service • Komutel Kontact DAK Service	1.5.4.2 (27713) 2.2.0.19289 1.4.3.28907
Komutel Kontact client is a web base client accessed via Internet Explorer browser on agent's Windows 10 desktop PC	IE 11.0 Window 10 Pro 1511

5. Configure Avaya Aura® System Manager

It is assumed that Session Manager and System Manager have been installed and that network connectivity exists between the two platforms. All the configuration items required as part of the initial Session Manager installation have already been defined. This includes items such as certain SIP domains, locations, SIP entities and Session Manager itself.

This section provides the procedures for configuring SIP trunk connection from Session Manager to Komutel Kontact. It is assumed that the SIP trunk from Communication Server 1000 to Session Manager is already in place and will not be discussed in this section. This section includes the following:

- Administer Komutel Kontact SIP Entity
- Administer Entity Link
- Routing Policy
- Dial Pattern

Configuration is accomplished by accessing the browser-based GUI of System Manager using the URL "https://<ip-address>/SMGR", where <ip-address> is the IP address or FNDN of System Manager. Enter the appropriated credential and click **Log On** to logon System Manager.
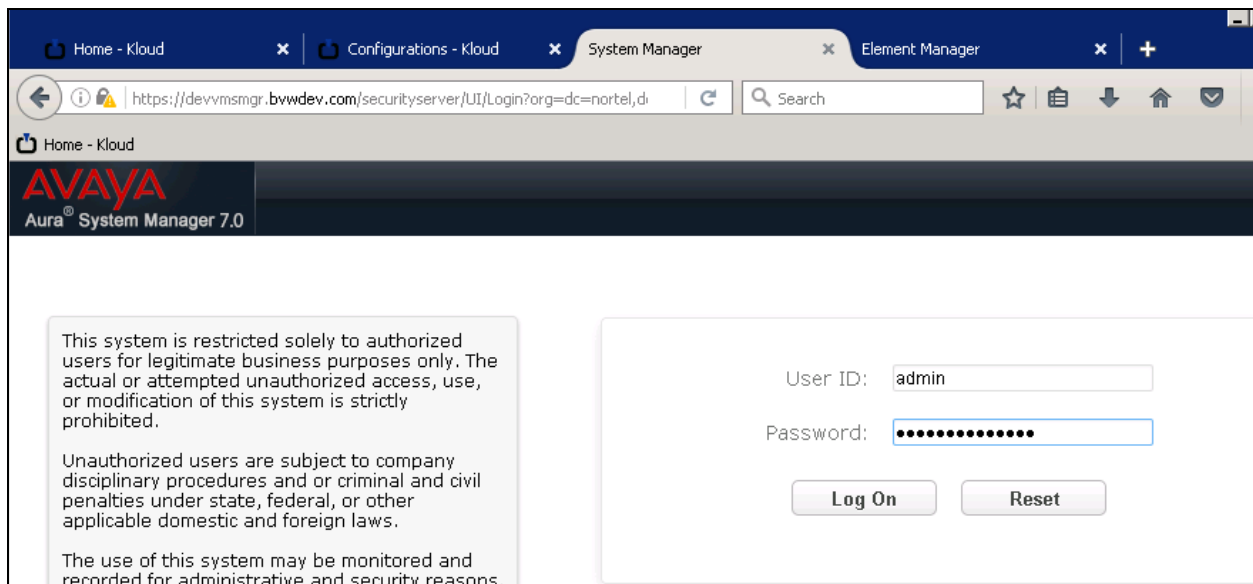
5.1. Administer Komutel Kontact SIP Entity

In **System Manager**, select **Elements → Routing → SIP Entities**, click **New** to create new SIP entity and enter information as shown in below screenshot for Kontact during compliance test. Click **Commit** to add new or save changes to existing entity.

5.2. Administer Entity Link

Click on **Entity Links** to create entity link from Session Manager to Kontact. Enter the following information:
- **Name**: Enter any descriptive name, example DevvmSM_komutel.
- **SIP Entity 1**: Select Session Manager SIP Entity.
- **Protocol**: Select UDP.
- **Port**: Enter 5060.
- **SIP Entity 2**: Select Komutel SIP Entity.
- **Port**: Enter 5060.

Click **Commit** to submit a new link or to save changes on existing link.

5.3. Administer Routing Policy

Select **Routing Policies**, click **New** to create a new routing policy. Below are routing details used for the compliance test:

- **Name**: Enter any descriptive name, example: RouteToKomutel.
- **Retries**: Enter any number for retry, example 0.
- **SIP Entity as Destination:** Click on **Select** button and select the Komutel entity created in **Section 5.2**, click **OK** to add entity to routing table as display in screenshot below.

Click **Commit** to submit changes.

5.4. Administer Dial Pattern

Select **Dial Pattern,** click on **New** to add a new dial pattern to route the call to Komutel. Enter the following information:

- **Pattern**: Enter any available dial pattern, for example 23 is the number used during compliance test to route the call to Komutel.
- **Min**: Enter the Minimum digit for dialing plan, for example 5.
- **Max**: Enter Maximum digit for dialing plan, for example 10.
- **SIP Domain**: Select appropriated existing domain name in the list, example bvwdev.com.
- **Note**: Enter any descriptive note for this dialing plan.
- **Originating Locations and Routing Policies**: click **Add** button to select **Origination** and **Routing Policy** in **Originating Location** page (not shown), click **Select** to add detail to **Dial Pattern** page.

Click **Commit** to submit changes.

6. Configure Avaya Communication Server 1000

This section provides the procedures for configuring an Avaya IP Softphone in the Communication Server 1000 which is used for the BLF interface. Note that these Application Notes presents the sample configuration used in the compliance test, and that the actual configuration may vary based on customer needs. For more information configuration, see reference [1].

For detailed information on installation and configuration for Communication Server 1000, refer to **[1]**. Connect to the Communication Server 1000 using via SSH and access the command line interface (CLI) by entering the proper credentials (not shown).

Overlay 11 (**LD 11**) in CLI is used to configure an IP Softphone. Prompts in red shown in **Figures 1**, **2** and **3** below need to be configured by the user. The rest of the values remain at default. In **Figure 1**, the Key Expansion Module (**KEM**) was configured since it would be used to configure the BFS keys required for monitoring other extensions.

```
REQ: prt
TYPE: 2050pc
TN    96 0 0 1
DATE
PAGE
DES
MODEL_NAME
EMULATED
KEM_RANGE
DES  2050PC
TN   096 0 00 01   VIRTUAL
TYPE 2050PC
CDEN 8D
CTYP XDLC
CUST 0
NUID
NHTN
KEM  3
CFG_ZONE 00001
CUR_ZONE 00001
MRT
ERL
ECL  0
FDN
TGAR 0
LDN  NO
NCOS 7
SGRP 0
RNPG 0
SCI  0
SSU
LNRS 16
XLST
SCPW
CAC_MFC 0
```

Figure 1: Configuring an IP Softphone

In **Figure 2,** the Class of Service (**CLS**) Key Expansion Module (**KEM3**) were configured for compliance testing.

```
CLS   UNR FBA WTA LPR MTD FNA HTA TDD HFA CRPD
      MWA LMPN RMMD SMWD AAD IMD XHD IRD NID OLD VCE DRG1
      POD SLKD CCSA-CSI SWD LNA CNDA
      CFTD SFA MRD DDV CNID CDCA MSID DAPA BFEA RCBD
      ICDA CDMD LLCN MCTD CLBD AUTU
      GPUD DPUD DNDA CFXA ARHD CLTD ASCD
      CPFA CPTA ABDA CFHD FICD NAID BUZZ AGRD MOAD
      UDI RCC HBTD AHA IPND DDGA NAMA MIND PRSD NRWD NRCD NROD
      DRDD EXR0
      USMD USRD ULAD CCBD RTDD RBDD RBHD PGND OCBD FLXD FTTC DNDY DNO3 MCBN
      FDSD NOVD VOLA VOUD CDMR PRED RECD MCDD T87D SBMD
      KEM3 MSNV FRA  PKCH MUTA MWTD DVLD CROD ELCD VMSA
CPND_LANG ENG
```

Figure 2: Class of Service configured during compliance testing

In **Figure 3**, Key 34 to 37 are **BFS** keys configured so that an extension could be monitored by the Kontact. The key numbers 34, 35, 36, and 37 are needed for configuring Kontact in **Section 7.4**.

```
AACS YES
ACQ  AS: AST-DN
ASID 16
SFNB  1  2  3  4  5  6  7  8  11  12  13  18  21  22  23  24  25  26  28  29  31  33
34  35  36  37  38  39
SFRB  32  33  34  35  36  37  38  39
USFB  1  2  3  4  5  6  7  9  10  11  12  13  14  15
CALB  0  1  3  4  5  6  8  9  10  11  12
FCTB
ITNA NO
DGRP
MLWU_LANG 0
MLNG ENG
DNDR 0
KEY  00 SCR 54001 0     MARP
        CPND
          CPND_LANG ROMAN
            NAME Komutel SIT2
            XPLN 23
            DISPLAY_FMT FIRST,LAST
     02 RMK
     26 CPN
KEM 1 PAGE 0
     34 SCR 54336 0     MARP
        CPND
          CPND_LANG ROMAN
            NAME DN 54008
            XPLN 23
            DISPLAY_FMT FIRST,LAST
     35 SCR 54353 0     MARP
        CPND
          CPND_LANG ROMAN
            NAME 51001, 51001
            XPLN 23
            DISPLAY_FMT LAST,FIRST
     36 SCR 54337 0
        CPND
          CPND_LANG ROMAN
            NAME Phuong, Nguyen
            XPLN 23
            DISPLAY_FMT FIRST,LAST
     37 SCR 54004 0
KEM 2 PAGE 0 : NO KEYS CONFIGURED
KEM 3 PAGE 0 : NO KEYS CONFIGURED
DATE  7 NOV 2016
```

Figure 3: Single Call Ringing and BFS Keys Configuration

7. Configure Komutel Kontact

This section provides the procedures for configuring Komutel Kontact. All SIP configuration for Kontact server 1 and 2 is configured via Kontact server 1 Kloud web page, except that BLF agent service is configured separately on each Kontact server. The procedures include the following areas:

- Administer BLF Agent Configuration
- Administer Kontact Phone System
- Configure Queues
- Configure Phone Profile for Agents
- Configure Agents
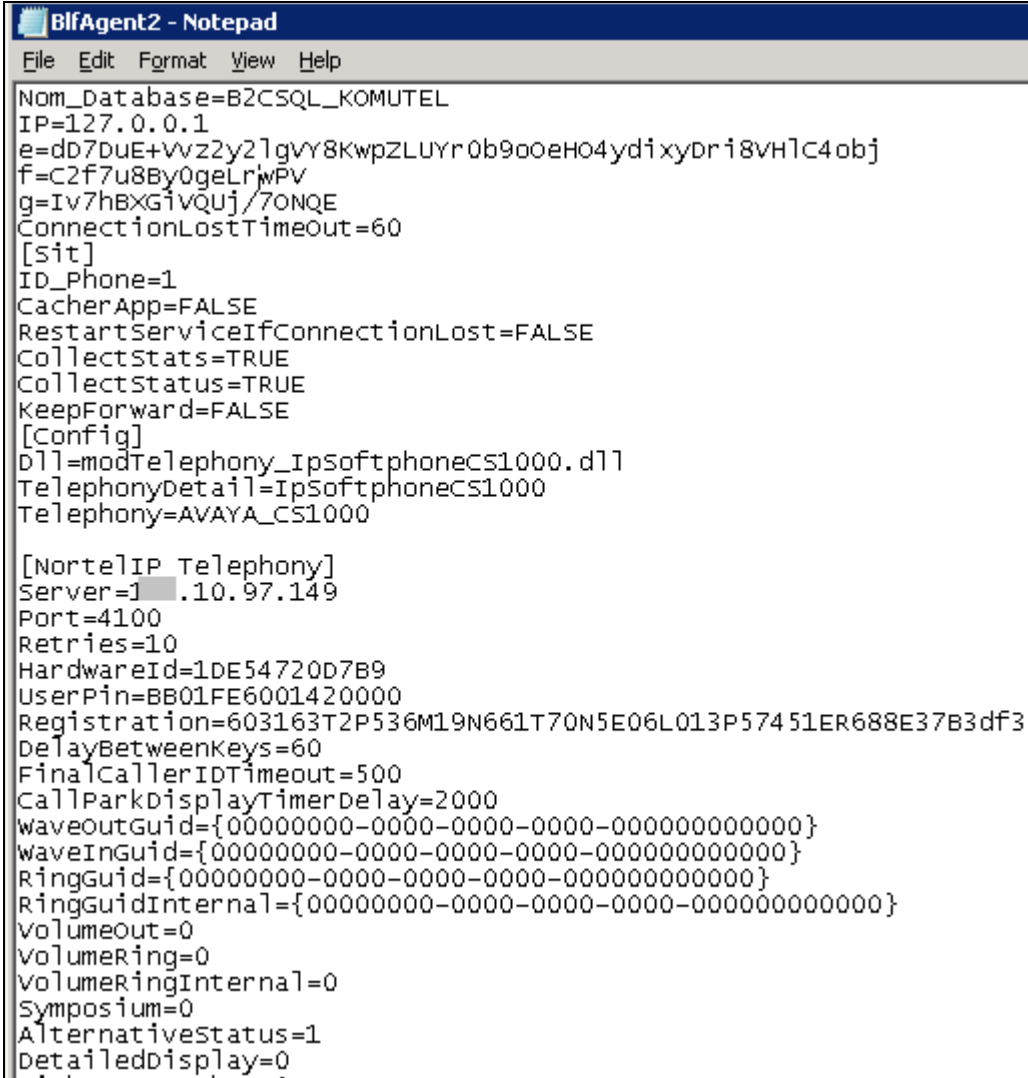
It is assumed that the Kontact server, applications and database, were successfully installed on a PC by Komutel Administrator.

7.1. Configure BLF Agent Configuration

This section will describe the steps to configure BLF Agent to monitor Agent phones.

In BLFAgent2.ini file, enter the following information of softphone created in **Section 6**.

- **Server**: Enter information of Communication Server 1000, in this case this is the IP address of UNIStim and SIPLine Node 510 which is 10.10.97.149.
- **Port**: Enter default value is 4100.
- **Hardware ID**: Enter Hardware ID of TN softphone created in **Section 6**, TN 96 0 0 1.
- **UserPin**: Enter UserPin of softphone created in **Section 6**, TN 96 0 0 1.

In BLF Agent configuration, enter Communication Server 1000 information as following:

- **IP**: Enter Communication Server 1000 IP address.
- **Port**: Enter Port 4100.
- **Hardware ID**: Enter Hardware ID of softphone created in **Section 6** TN 96 0 0 1.
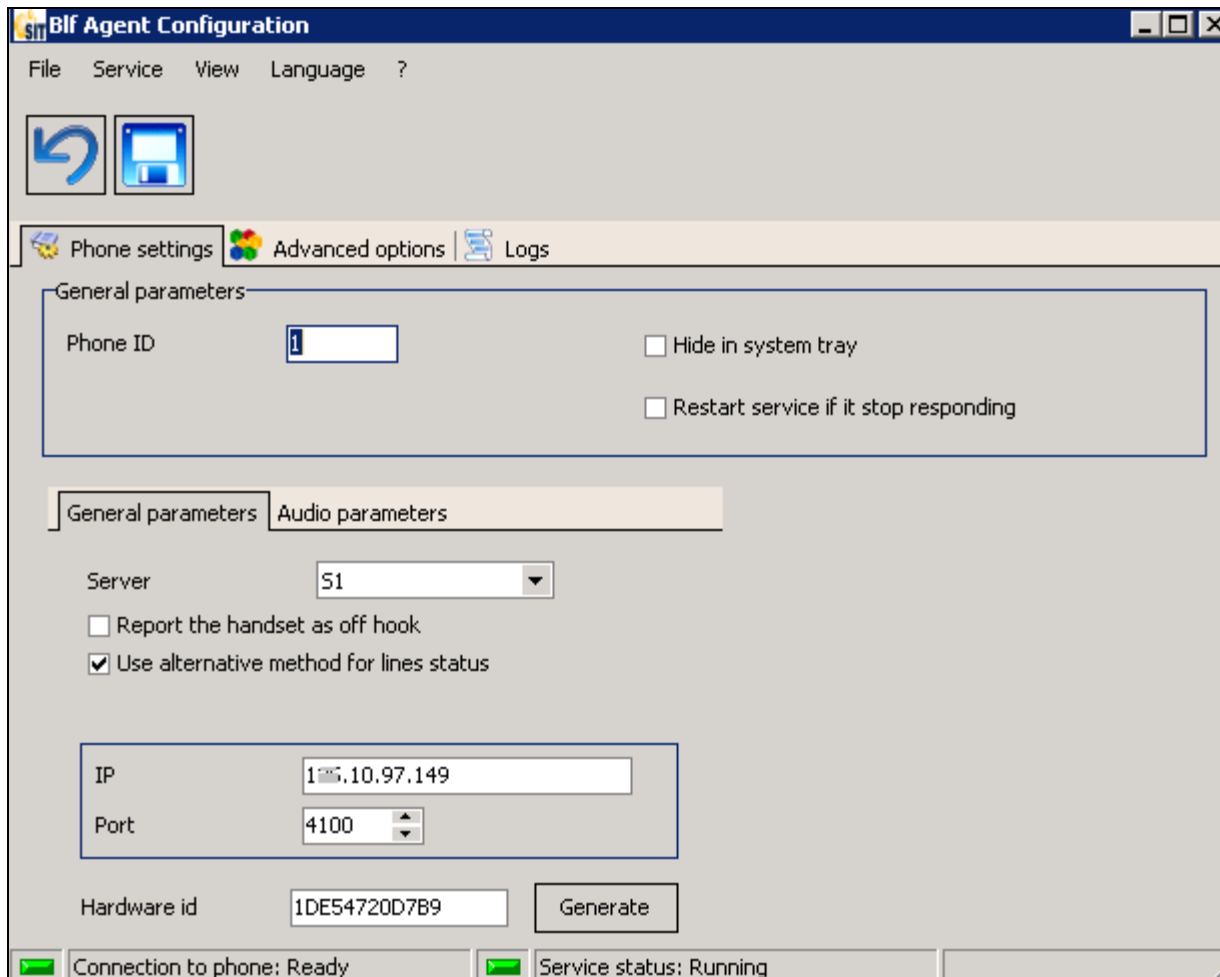
From the moment Kontact receives information from TN 96 0 0 1 Kontact knows the statuses of each phone lines setup on keys 34 to 37. These keys also need to be set up in Presence ID for each respective phone profiles on Kontact.

Take note of **Phone ID** as shown in above screenshot, in this case it is 1 to use later in **Section 7.4.**

Verify **Connect to phone: Ready** and **Service status: Running**, at bottom of the window, these statuses indicate Kontact successfully connect to Communication Server 1000 and obtain extensions status reside on BLF keys.

7.2. Administer Kontact Phone System

From a web browser, access the page **http://KontactServer1name:81**, and log in with the appropriate admin credentials. This will launch the Kloud admin web interface. Select the **Configuration** tab and then click on the **Configurations** link (not shown). In the configuration page, select **Kontact → Phone System** to verify the Kontact server information as displayed in the screenshot:

- **Phone system:** Select SIP Trunk.
- **User Name:** This is redundant field Komutel will update interface later, for compliance test just type in any name so Kontact will not request enter user name and password.
- **Password:** Same note as user Name.
- **Domain:** Enter appropriated domain name, in this case bvwdev.com.
- **Proxy:** Enter Session Manager IP Address.
- **DN configuration**: Enter desired DNs start with 23xxx as configured in **Section 5.4.**

Click **Save** to save changes.

Click on the **Recorded announcements** and **Music on hold** tabs to manage different audio files for announcement and music on hold so that selected announcement or music can be played while a caller is in queue. This configuration is not shown in these Application Notes, it is assumed that list of announcement and audio are already in place. Detail of how audio file and announcement are assigned to each queue is described in **Section 7.3**.

Select **Kontact → General** to manage general information for Kontact, below is the setup used for the compliance test.
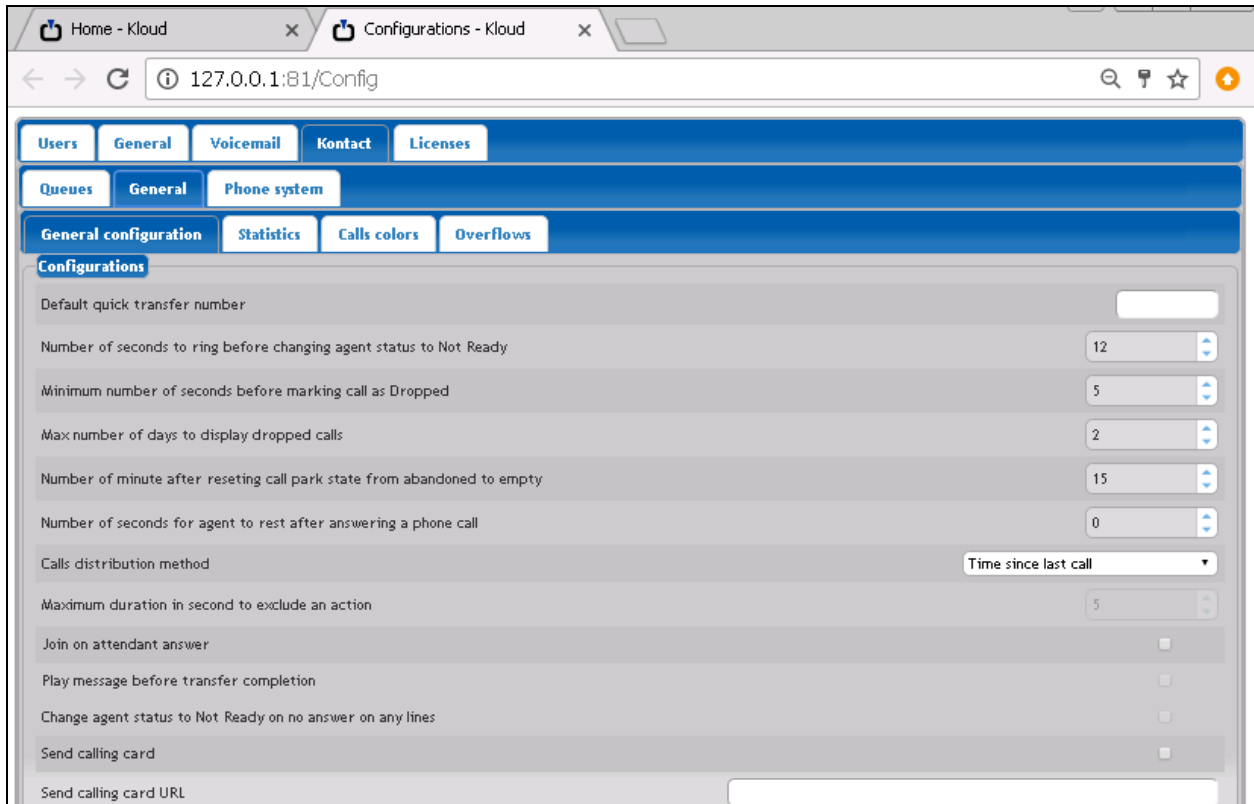
7.3. Configure Queues

Select **Kontact → Queues → Call**. This tab shows the current list of call queues for Kontact. Four queues were created and linked to Kontact DN. Click on the "+" plus sign to add a new queue.
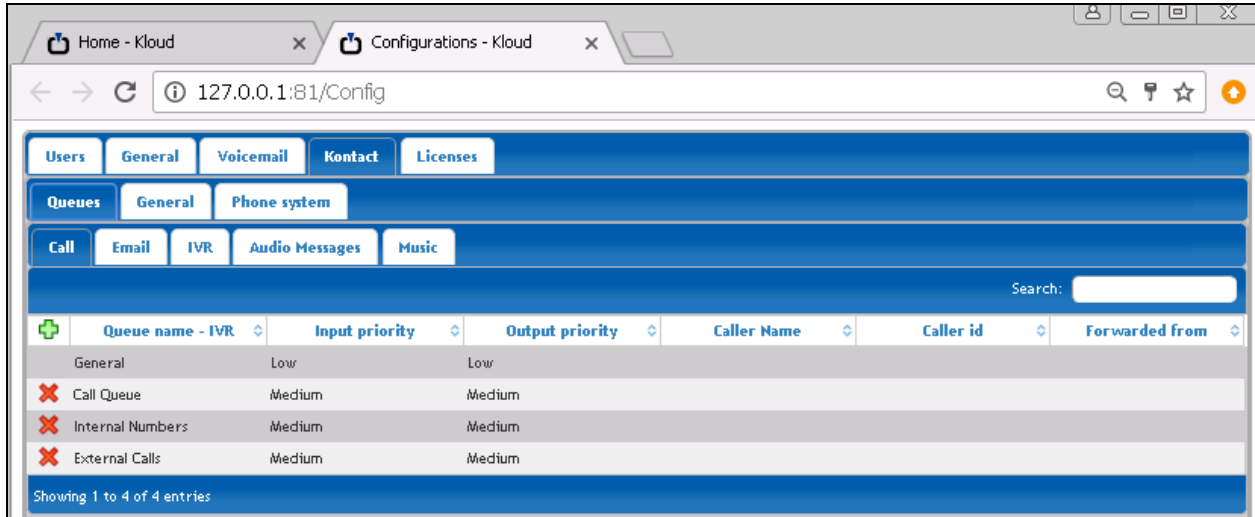
Below is an example of General queue on Kontact link to DN 23000 configured in **Section 7.2.**
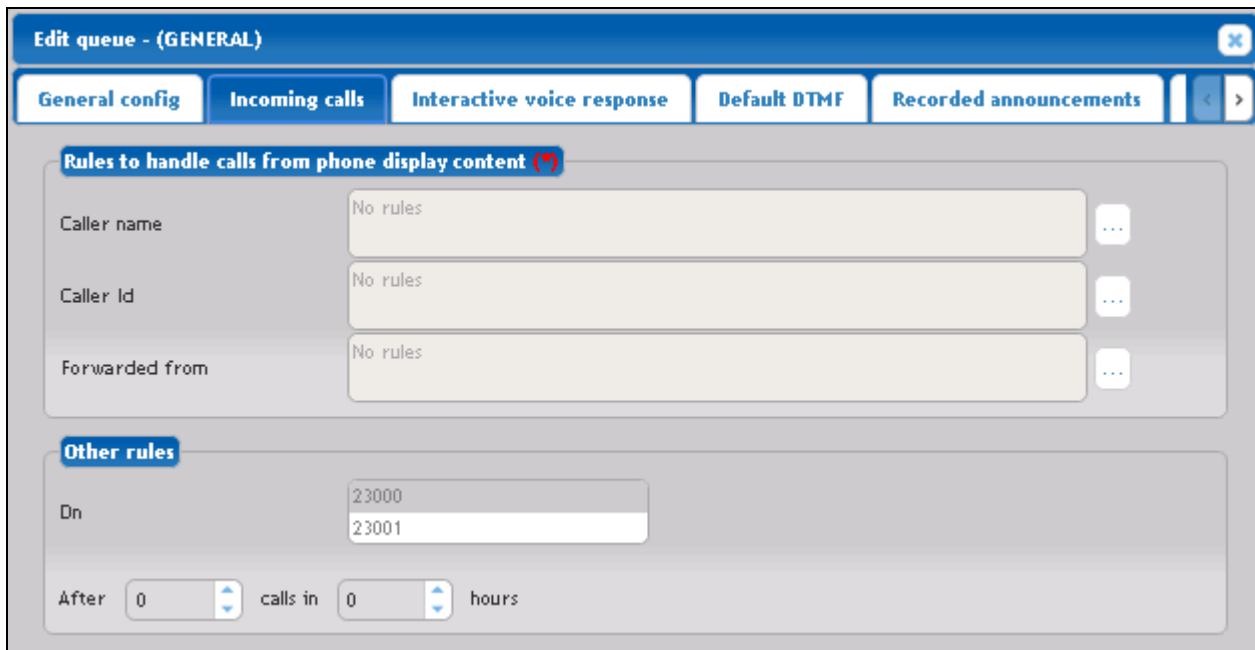
Click on **Default DTFM** tab to manage how call is routed when incoming call user press selected key, below is an example used in compliance test:

PM; Reviewed:
SPOC 12/13/2016

Solution & Interoperability Test Lab Application Notes
©2016 Avaya Inc. All Rights Reserved.

20 of 29
Kontact_CS1K76

Click on **Recorded announcements** tab to select recorded announcements in **Available recorded announcements** and click on (↓) icon to add it to **Associated recorded announcements**, as show below with recorded **IVR.mp3** selected for the General queue:
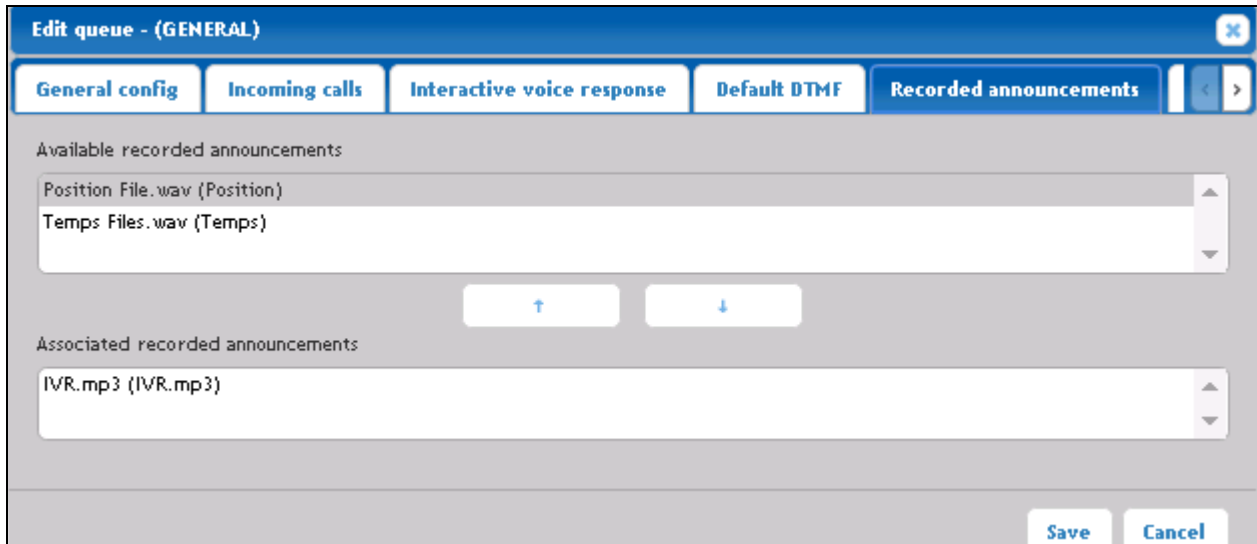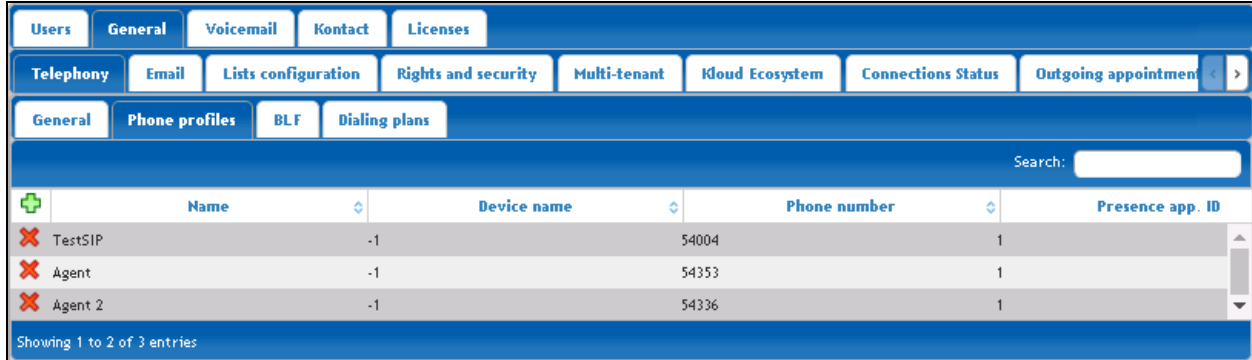
Click on **Music on hold** tab to manage music on hold:
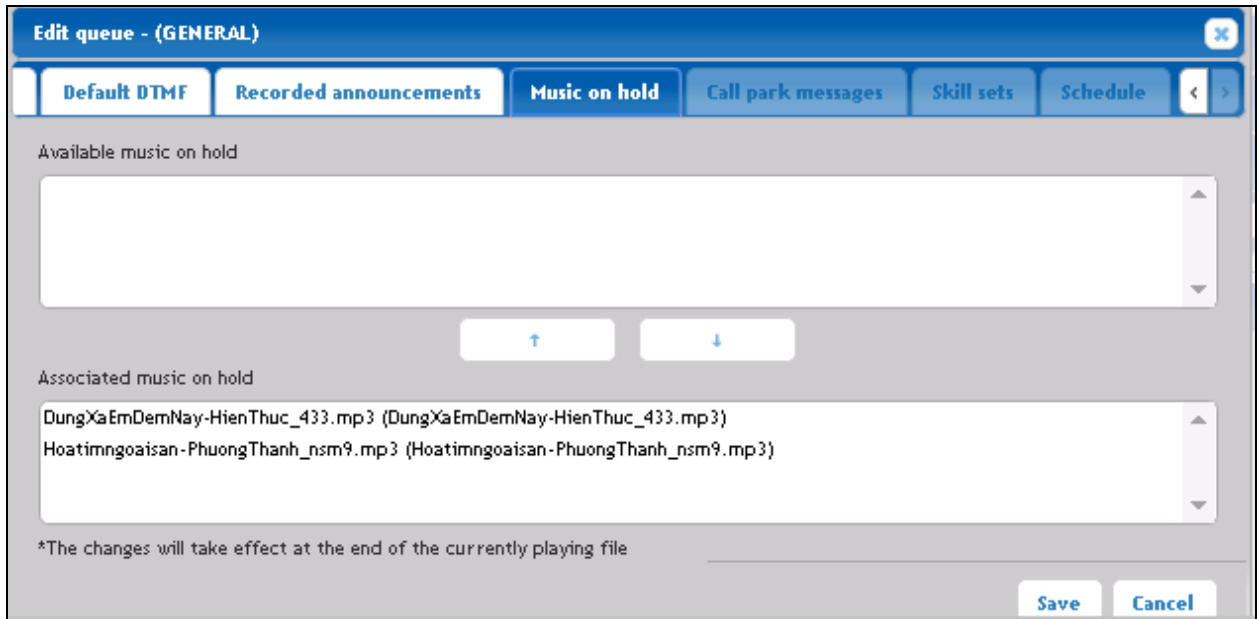
Click **Save** to save changes.

7.4. Configure Phone Profile for Agents

Select **General → Telephony → Phone profiles**. This tab shows the current list of phone profile for Kontact.
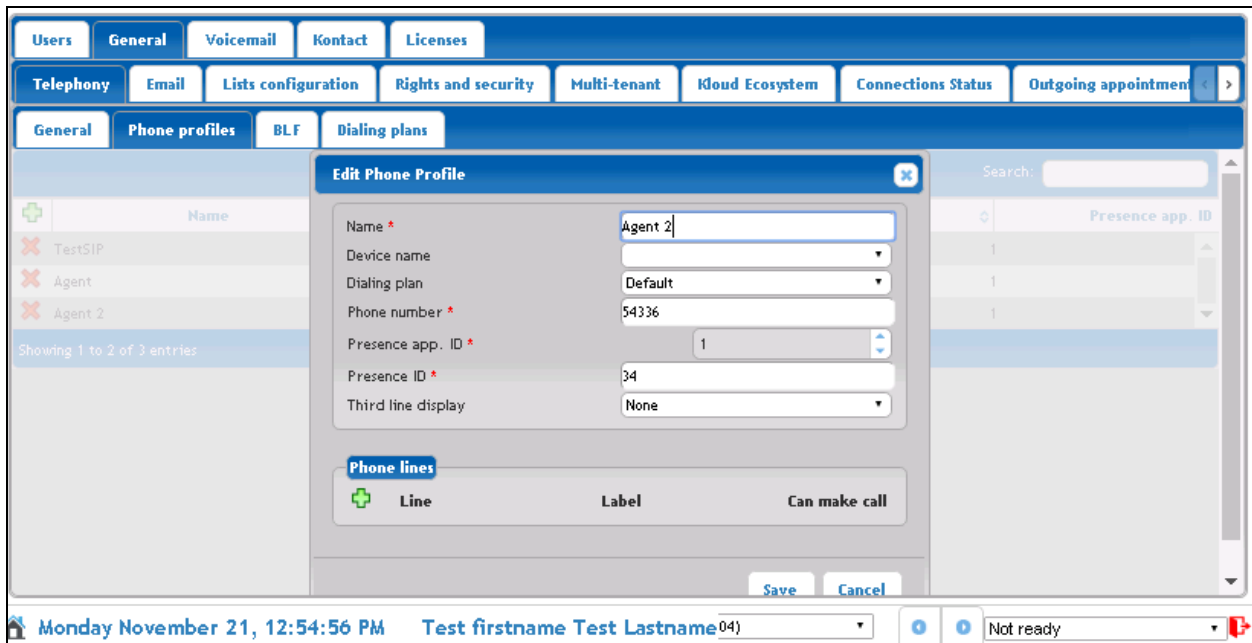
Click on the "+" plus sign to add new phone profile with following information.

- **Name**: Enter any descriptive name.
- **Phone number**: Extension of agent's physical phone on Communication Server 1000.
- **Presence app.ID**: Enter appropriate Phone ID listed in **Section 7.1.**
- **Presence ID**: Enter BLF key where station located, in this case it is 34 as configured in **Section 6**.

7.5. Configure Agents
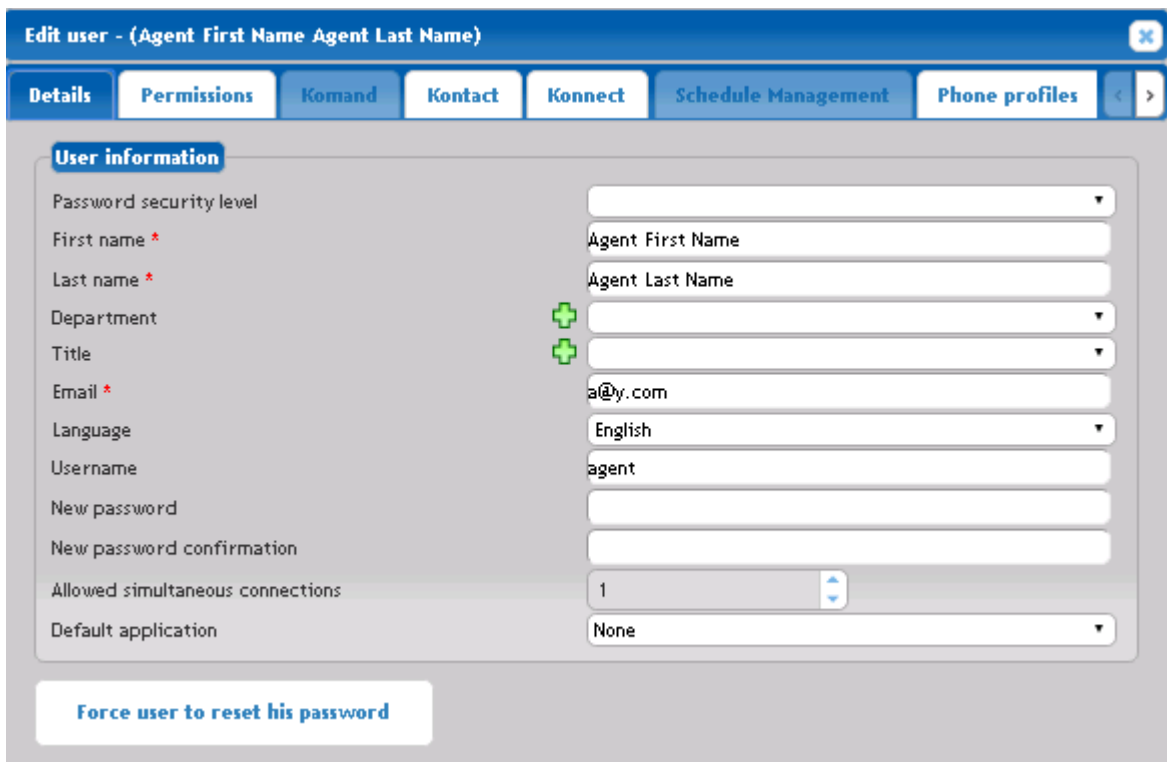
Next, configure agent and its extension that will be monitored by Kontact. Repeat these steps for each agent and extension to be monitored. In the **Configurations** page (not shown), select **User** tab. It shows the current list of agents in the system.

Click on the "+" plus sign to add new agent. The following screen shows the **User information** fields populated for an agent previously configured.

Select the **Phone profiles** tab to add phone number for this agent:

- **Associated phone profiles**: Select phone profile and click (→) to add extension to.
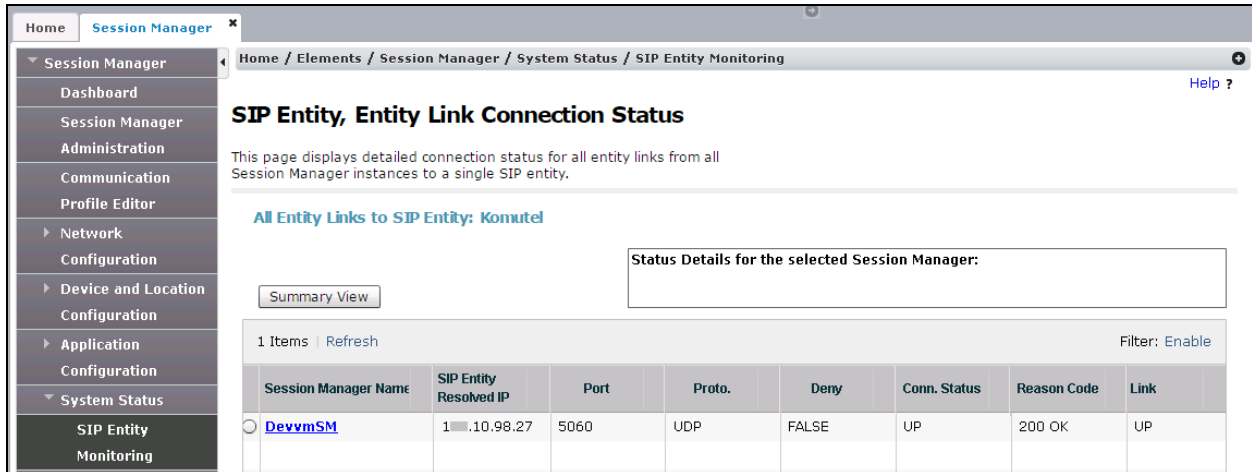- **Phone system**: From the dropdown list, select appropriated profile as shown below.

Click **Save** to save changes.

8. Verification Steps

This section provides the tests that can be performed to verify proper configuration of the Komutel Kontact with Communication Server 1000 and Session Manager.

Verify status of SIP trunk from Kontact to Session Manager is UP. In Session Manager tab, select **System Status → SIP Entity Monitoring** and verify the SIP trunk is UP as shown below.

PM; Reviewed:
SPOC 12/13/2016

Solution & Interoperability Test Lab Application Notes
©2016 Avaya Inc. All Rights Reserved.

25 of 29
Kontact_CS1K76

Log an agent into Komutel Kloud from a web browser by accessing the page
http://KontactServer1name:81, using the agent username and password configured in **Section 7.5** and select the **Kontact** link (not shown). In the **Queues** tab, all queues will be displayed for the logged in agent. In the screen shown below, agent is ready, and all of the queues are in the **Ready** state as indicated by the green circle by the queue name.
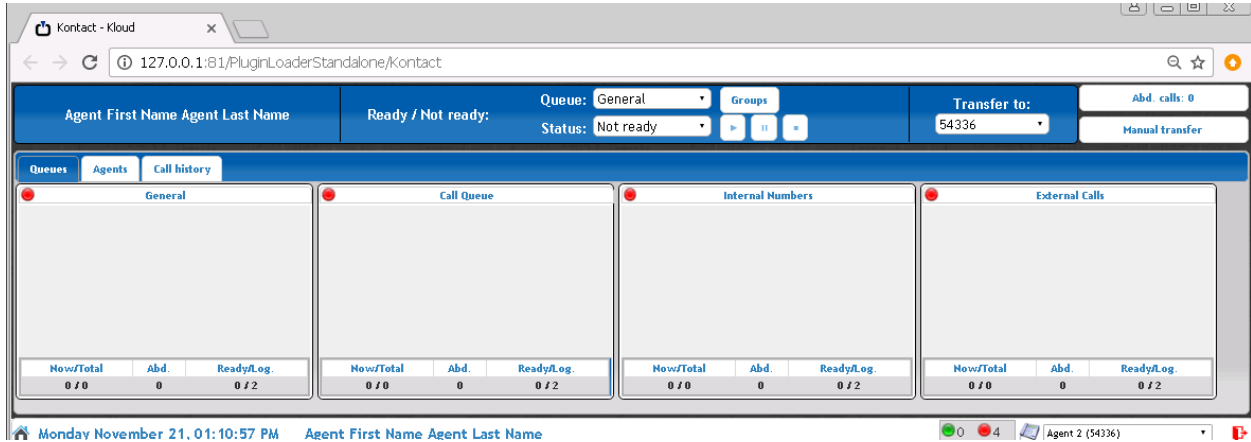
Click on the **Agents** tab, all of the configured agents are displayed as shown below. In order for an agent to become available to handle an incoming call, the agent's state must be set to *Ready*.
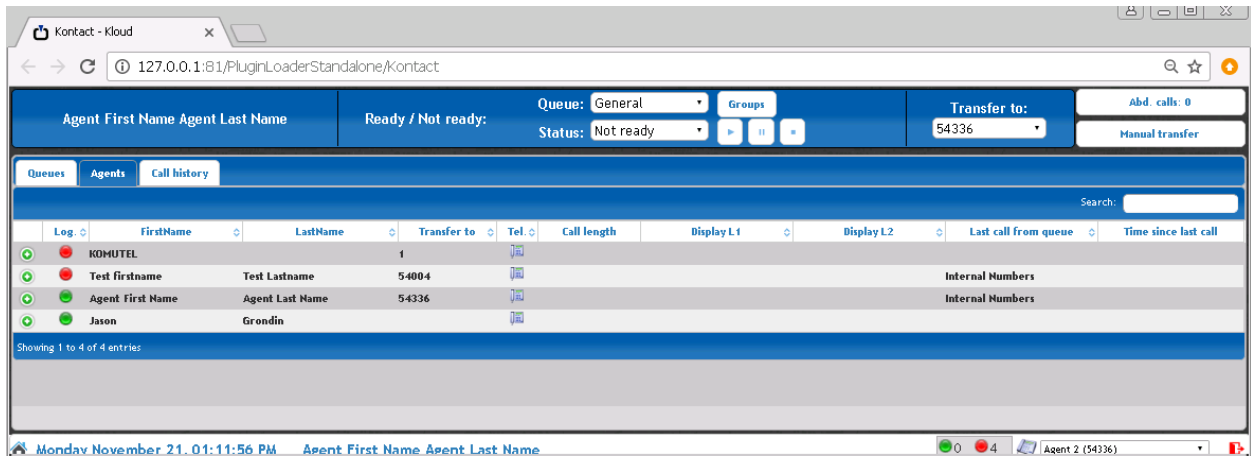
Place a call to a queue that has no available agents and verify that the call is successfully queued as shown below in the **Queues** tab. In this example, a call is queued for the InternalNumber queue and the caller ID is also displayed. The queued call can also be manual transferred to another internal or external number by entering number in the **Transfer to** field and clicking on the queued call in orange.
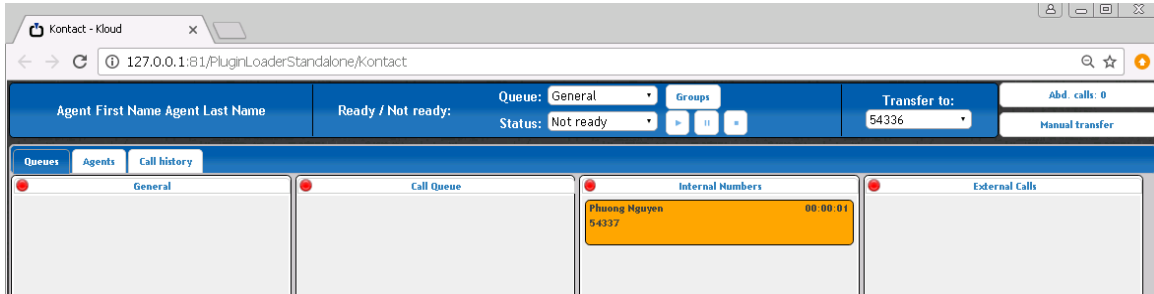
Make agent ready for InternalNumber queue by selecting **Ready** in **Status** dropdown list, verify phone 54336 is ringing and agent pick up the phone, 2-way talk path is established. Phone icon turns green as shown below in the **Agents** tab.
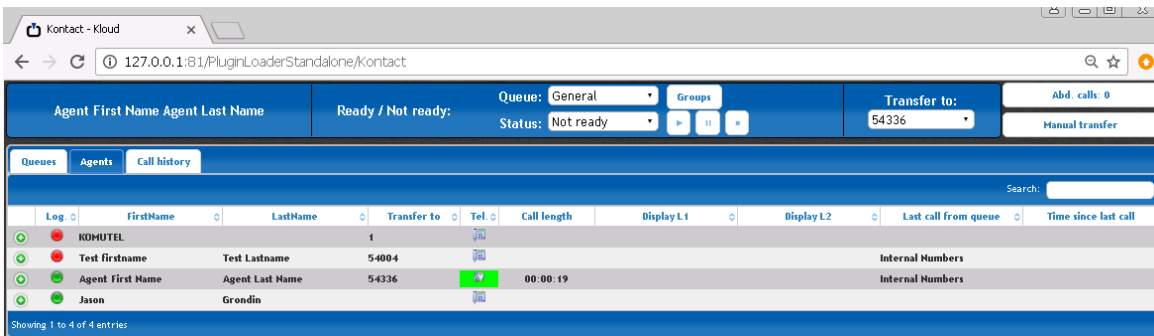
9. Conclusion

These Application Notes have described the administration steps required to integrate the Komutel Kontact with Avaya Communication Server 1000 and Session Manager. Komutel Kontact was able to distribute incoming calls to available agents on Avaya Communication Server 1000. All test cases passed with observations noted in **Section 2.2**.

10. References

This section references the Avaya documentation relevant to these Application Notes. The following Avaya product documentation is available at http://support.avaya.com and Komutel documents are available upon request.

[1] Avaya Communication Server 1000 Co-resident Call Server and Signaling Server
  Fundamentals Release 7.6 NN43001-509 Issue 04.04 June 2016.
[2] Avaya Communication Server 1000 Linux Platform Base and Applications Installation and
  Commissioning Release 7.6 NN43001-315 Issue 06.08 June 2016.
[3] Avaya Communication Server 1000 Element Manager System Reference.
[4] Administration Release 7.6 NN43001-632 Issue 06.08 November 2016.

Contact Komutel for document reference.

©2016 Avaya Inc. All Rights Reserved.
Avaya and the Avaya Logo are trademarks of Avaya Inc. All trademarks identified by ® and ™ are registered trademarks or trademarks, respectively, of Avaya Inc. All other trademarks are the property of their respective owners. The information provided in these Application Notes is subject to change without notice. The configurations, technical data, and recommendations provided in these Application Notes are believed to be accurate and dependable, but are presented without express or implied warranty. Users are responsible for their application of any products specified in these Application Notes.

Please e-mail any questions or comments pertaining to these Application Notes along with the full title name and filename, located in the lower right corner, directly to the Avaya DevConnect Program at devconnect@avaya.com.