



**AheevaCCS
Installation Procedure
Version 3.2.2**

April 2010

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Aheeva Technology

1400 Metcalfe Street, Suite 400

Montreal, Quebec

H3A 1X2, Canada

For Sales Offices and other contact information, visit our web site at
<http://www.aheeva.com>

About Aheeva Technologie

Build a more efficient, profitable business without outgrowing your call management system.

- Customize the system implementation to suit your current needs while allowing for expansion
- Take advantage of VoIP phones immediately or integrate them later
- Provide outstanding customer satisfaction and increase sales with inbound call management
- Optimize the profitability of outbound telemarketing campaigns
- Reach goals quickly by analyzing results in meaningful, comprehensive reports
- Motivate agents to achieve excellence by monitoring and recording calls
- Access your business remotely

Flexible, scalable implementation

Streamline the modular Aheeva CCS system to best fit your business needs. Select only the features and functionality you need for a fast, cost-effective initial implementation. Accommodate growth by adding functionality and licenses as needed.

Optional VoIP phones

For maximum savings and rapid deployment, take advantage of Aheeva Softphone. Designed with call center agents in mind, Aheeva Softphone provides an inexpensive way for businesses to get up and running with VoIP quickly. Aheeva Softphones run on your computer and provide all the features and functionality of regular phones with additional functionality. By turning your laptop into a telephone, Aheeva Softphone allows you to make calls from anywhere you have an Internet connection.

Superior customer service

Customers want fast, efficient service from knowledgeable agents. By using Interactive Voice Prompts (IVR) and pre-defined criteria, you can accurately route calls to the best available agent, eliminating transfers and delays. When one of your agents receives a call, the customer's information is displayed on screen, allowing the agent to immediately focus on the customer's needs without wasting time pulling up the file.

Optimized telemarketing campaigns

Increase the profitability of your telemarketing campaigns by controlling all aspects of your outbound calls. Built-in flexible filters and actions help you create the best prospect list for each campaign. **Multiple dialing methods keep agents busy without leaving calls abandoned.**

Invaluable business intelligence

Assess the productivity of every aspect of your call center business based on complete, current data. Review detailed, comprehensive performance measures in real time or on printed reports.

Powerful performance-measuring tools

Ensure that all of your agents have the information, skills, attitude and motivation to use their full potential to achieve your objectives. Live monitoring allows you to provide 'whisper' coaching for new agents or difficult situations. Recorded monitoring supplies a valuable source of information to prove compliance, resolve disputes, and evaluate training.

Remote management

Aheeva CCS is web-based, making your business available wherever you are with a laptop and an Internet connection. Monitor business activity and make adjustments easily, as if you were on-site.

Generate revenue with Aheeva CCS

- Optimize agent productivity
- Reduce training time
- Simplify management tasks
- Improve agent guidance and coaching
- Make telemarketing campaigns more profitable

Reduce costs with Aheeva CCS

- Minimize support costs
- Shrink operating costs
- Analyze data to pinpoint savings opportunities

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Objectives

This guide is built to provide a reliable reference to RPM installation for clients and potential users of the AheevaCCS Solution, V 3.2.2.

This guide starts with preliminary overview about the platform requirements and the minimum installation prerequisites to ensure a successful RPM Installation procedure.

Forwards, the guide moves to specify the installation steps for the Centos 5.4 Linux operating system. This is followed by the identification of the ports, firewalls, kernel source codes, and libraries. Afterwards, the installation procedure is launches, handling each section or component by itself.

The RPM Installation Guide is concluded by a toolkit section that helps the user verify whether or not all the required services are running, followed by the Installation Checklist that summarizes the attack points that are required in the installation.

1 Platform Requirements

1.1 Minimum Hardware Requirements

1.1.1 Agent's Station

Celeron 2.4GHz

OS: Windows XP

Headsets:

USB module: Plantronics DA55

Headset module: Plantronics H251N

NIC: off-board is suggested

Sound card: Not required if using Plantronics DA55

RAM: Minimum 512 MB

HD: 40GB Network

Bandwidth: 100 Mbps

1.1.2 Supervisor's Station

Celeron 2.4GHz

OS: Windows XP

Headsets:

USB module: Plantronics DA55

Headset module: Plantronics H251N

NIC: off-board is suggested

Sound card: Not required if using Plantronics DA55

RAM: Minimum 512 MB

HD: 40GB Network

Bandwidth: 100Mbps.

Note: Every call using ulaw, between the agent PC and an Asterisk server consumes 153 Kbps. Plus the bandwidth between the PC and a web server for any screen-popup and any other applications.

1.1.3 Servers

- **aheevaCTI**
 - Dual Core Xeon Processor 4MB Cache, 3.00GHz, 1333MHz FSB
 - 4GB RAM
 - 300 GB hard drive RAID preferred
- **aheevaAsterisk**
 - Up to 50 Outbound/blended or 100 Inbound Users per server.
 - Dual Core Xeon Processor 4MB Cache, 3.00GHz, 1333MHz FSB
 - 2GB RAM
 - 80GB hard drive RAID preferred

1.1.4 Telecommunications

T1, E1, PRI, analog lines or VoIP connections set up in advance with your provider.

1.2 Minimum Software Requirements

1.2.1 Agent's Station

Windows XP for agent's StarPhone.

Microsoft Internet Explorer 7 + Java JRE 1.6.0_17.

Internet Explorer 8 may be used and require **compatibility** mode.

1.2.2 Supervisor's Station

Windows XP for supervisor's station.

Microsoft Internet Explorer 7 + Java JRE 1.6.0_17.

Internet Explorer 8 may be used and require **compatibility** mode.

1.2.3 Servers

CentOS 5.4 for all servers: aheevaCTI, aheevaAsterisk, aheevaRecordServer, MySQL 5.0.x, and Apache Tomcat servers.

Note: All AheevaCCS components can be installed on the same physical server or can be distributed on dedicated servers with **exception** of Asterisk PBX which should be installed on a **dedicated server**.

1.3 AheevaCCS Dependencies

- Apache Tomcat Servlet/JSP Container version 5.5.x
Java runtime environment
(SDK version `jdk-6u6-linux-i586` for server) and (`jre-6u6-linux-i586-p-s` for linux workstations)
- MySQL RDBMS version 5.0.x
- PHP server

All the above dependencies are available from their respective Web sites.

The RPM provided by AheevaCCS includes the above mentioned components, except PHP and MySQL which will be installed as part of CentOS 5.4.

2 What's in AheevaCCS 3.2 package?

2.1 AheevaManager

- aheevaManager modules.
- apache-tomcat-5.5.17.tar.gz
- jdk-1_5_0_06-linux-i586.bin
- java.sh
- my.cnf

2.2 AheevaCTI

- aheevaCTI (binary file of aheevaCTI)
- ahcli (aheevaCTI command-line interface)
- customserver
- serverCfg.xml (configuration file)

2.3 AheevaRecordServer

- aheeva.pem
- recordserver (binary file of aheevaRecordServer)
- recordServerCfg.xml (configuration file)

2.4 AheevaSQL

- aheevacti_dbSchema.sql
- cfg_language.sql
- template_outbound_data.sql

2.5 AheevaAsterisk

- Zaptel-1.4
- Libpri-1.4
- Asterisk-1.4

2.6 AheevaEncryptionServer

- perl-Crypt-CBC-2.24-1.e15.rf.noarch.rpm
- Crypt-OpenSSL-AES-0.01.tar.gz
- encryptionInstall.sh

3 Centos 5.4 Linux installation

The following is a step-by-step installation procedure that is applied to Linux CentOS 5.4. It can be used as a reference when installing a different version of the operating system.

Start with a fresh CentOS installation on the server and follow the procedure below: (It's important that you change your boot sequence so that you can boot from a CD).

Screen	Action
Install linux	Type: linux text'
CD found (test media)	Skip
Welcome to Centos	OK
Choose Language	English
Keyboard Type	U.S English
Partitioning Type> choose "Remove ALL Partitions"	OK
WARNING Are you sure you want to do this?	YES
Review and modify layout?	NO
Network Configuration choose eth0	EDIT
Network Configuration ETH0 Choose 1- activate on boot 2- IPV4	OK
IPV4 configuration for ETH0 Choose MANUAL enter IP and netmask	OK
Network configuration	OK
Enter the GATEWAY, DNS1 and DNS2 IP's	OK
Host Name Configuration > choose MANUAL and enter the HOSTNAME (your company name)	OK
Time Zone configuration> choose your Time Zone	OK
Root Password > enter the password that you will use	OK
Package Selection> DESELECT all entries	OK
Installation to begin	
UPON completion	Remove the CD > reboot
Login screen	Log on as root

Installation details can be found in `/root/install.log`

Please use the provided checklist for installation. You will find it on page 38 of this manual.

- **Date-Set Up**

Clients must set their date properly during installation using:

```

rdate -s time-a.nist.gov
    
```

Or

```

ntpdate
    
```

Then execute:

```

service ntpd start
    
```

4 Ports & Firewalls

Before proceeding with the installation of the components, a few actions are required:

- Define the IP address of all servers;
- Make sure that you have opened a secure shell (ssh) root access to the servers;
- Open and redirect the following ports to the intended Aheeva CCS server:

Application	Port Number	Protocol	Priority
Secure Shell (ssh)	22	TCP	
Aheeva Record Server	4555	TCP	
AheevaCCS Manager	8467	TCP	
AheevaCTI server	8765	TCP	High
MySQL DBMS	3306	TCP	
Apache	8470	TCP	
AheevaPhone	8570	TCP	
Encryption Server	9443	TCP	
Live Screen Monitoring	5800	TCP	
VNC port Record Server	5900		
Webserver	8080/80	TCP	

If you plan to use the SIP protocol you should disable the turn off firewall on asterisk servers:

- Turn off Firewall:

```
#service iptables save
#service iptables stop
#chkconfig iptables off
```

If you plan to use the IAX2-based Aheeva softphone, or if you intend having a multi-site deployment with Asterisk servers in each site, then you must:

- Open and redirect the port UDP 4569 to the server that contains the Asterisk.

Application	Port Number	Protocol	Priority
Inter-Asterisk eXchange (IAX2)	4569	UDP	High

In order to open the above ports, you can either turn off firewall
Or allow all tcp packets on a specified port number.

```
#iptables -A INPUT -p tcp --dport port_number -j ACCEPT
```

5 Installation Procedure

5.1 AheevaSQL

5.1.1 Prerequisites

- If by mistake you installed MySQL, then you need to remove it manually before installing MySQL 5.0.x.

```
#yum remove mysql*  
#yum install mysql-server.x86_64
```

- Start the service with the following command:

```
#service mysqld start
```

5.1.2 FTP Files

- Download and save the following files into `/usr/src/aheeva` :
 - ftp://ftp.aheeva.com/AheevaCCS_V3.2.2/aheevaSQL/aheevacti_dbSchema.sql
 - ftp://ftp.aheeva.com/AheevaCCS_V3.2.2/aheevaSQL/cfg_language.sql
 - ftp://ftp.aheeva.com/AheevaCCS_V3.2.2/aheevaSQL/template_outbound_data.sql

Note: for ftp access, please send an email to support@heeva.com

Maintenance and Support MUST be up to date for access.

5.1.3 Installation

- Go to `/usr/src/aheeva` and run the following commands:

```
#mysql < aheevacti_dbschema.sql  
#mysql aheevaccs < cfg_language.sql  
#mysql aheevaccs < template_outbound_data.sql
```

5.2 AheevaManager

5.2.1 Prerequisites

```
#yum remove php  
#yum install php php-mysql  
#service httpd start
```

Now, you can copy your php file to `/var/www/html`

5.2.2 FTP Files

- Download and save the following file into `/usr/src/aheeva` :

- ftp://ftp.aheeva.com/AheevaCCS_V3.2.2/AheevaManager-3.2.2-1.noarch.rpm

Note: for ftp access, please send an email to support@heeva.com.
Maintenance and Support MUST be up to date for access.

5.2.3 RPM installation

- Go to directory `/usr/src/aheeva` and run the following command:

```
#rpm -ivh AheevaManager-3.2.2-1.noarch.rpm
```

- Go to the `/usr` directory, run the JAVA JDK installation program, and run the following command:

```
#cd /usr  
#./jdk-1_5_0_06-linux-i586.bin
```

This will create a directory `/usr/jdk1.5.0_06`

- Now Tomcat requires the JAVA_HOME environment variable to be set, to do that just reboot the server.

```
#Reboot
```

With these lines in your init script file, you can logout and log back in and the JAVA_HOME variable should be pointing to the JDK installation directory.

- To test this issue, use the following command:

```
#echo $JAVA_HOME
```

You should see:

```
#/usr/jdk1.5.0_06
```

5.3 AheevaCTI

5.3.1 Prerequisites

- Install the following package:

```
#yum install mysql.x86_64  
#yum update
```

5.3.2 FTP Files

- Download and save the following file into `/usr/src/aheeva` :
 - ftp://ftp.aheeva.com/AheevaCCS_V3.2.2/CentOS_5.x/x86_64/AheevaCTI-3.2.2-e15.x86_64.rpm

Note: For ftp access, please send an email to support@heeva.com
Maintenance and Support MUST be up to date for access.

5.3.3 Installation

- Go to directory `/usr/src/aheeva` and run the following command:

```
#rpm -ivh AheevaCTI-3.2.2-el5.x86_64.rpm
```

5.4 AheevaRecordServer

5.4.1 Prerequisites

- Go to `/usr/src` and install the following package:

```
#yum install wget
#wget http://packages.sw.be/rpmforge-release/rpmforge-release-0.3.6-
1.el5.rf.x86_64.rpm
#rpm -ivh rpmforge-release-0.3.6-1.el5.rf.x86_64.rpm
#yum install mpg123 libsndfile libpng gd
#yum update
```

5.4.2 FTP Files

- Download and save the following file into `/usr/src/aheeva`:
- ftp://ftp.aheeva.com/AheevaCCS_V3.2.2/CentOS_5.x/x86_64/AheevaRS-3.2.2-el5.x86_64.rpm

Note: for ftp access, please send an email to support@heeva.com
Maintenance and Support MUST be up to date for access.

5.4.3 Installation

- Go to directory `/usr/src/aheeva` and run the following command:

```
#rpm -ivh AheevaRS-3.2.2-el5.x86_64.rpm
```

5.5 AheevaAsterisk

5.5.1 Prerequisites

- Install the following packages:

```
#yum install make kernel kernel-devel kernel-smp-devel kernel-smp bison
bison-devel ncurses ncurses-devel zlib zlib-devel openssl openssl-devel
gnutls-devel gcc gcc-c++ newt newt-devel gdb
#yum update
```

5.5.2 FTP Files

- Download and save the following file into `/usr/src/aheeva`:

- ftp://ftp.aheeva.com/AheevaCCS_V3.2.2/asterisk-1.4.tar.gz.

Note: for ftp access, please send an email to support@heeva.com
Maintenance and Support MUST be up to date for access.

5.5.3 Installation

- Go to `/usr/src/aheeva` and run the following commands:

```
#cd /usr/src/aheeva
#tar -zxvf zaptel-<version>.tar.gz
#tar -zxvf libpri-<version>.tar.gz
#tar -zxvf asterisk-1.4.tar.gz
#cd zaptel-<version>
#./configure && make && make install && make config
#cd ..
#cd libpri-<version>
#make clean && make && make install
#cd ..
#cd asterisk-version
#./configure && make menuselect [check *don't optimize* option]
#make && make install && make samples && make config
```

You can install additional sounds with the menuselect and selecting the sounds; and /or by installing **asterisk-sounds-1.4**

```
#yum install asterisk-sounds-1.4
#make clean
#make install
```

5.6 AheevaEncryptionServer

5.6.1 Prerequisites

- The only package required by aheevaEncryptionServer is that JAVA JDK needs to be installed and JAVA_HOME environment variable to be set. This is done in section **5.1.3**.

5.6.2 FTP Files

- Download and save the following file into `/usr/src/aheeva`:
 - <ftp://ftp.aheeva.com/EncryptionServer/Crypt-OpenSSL-AES-0.01.tar.gz>
 - <ftp://ftp.aheeva.com/EncryptionServer/perl-Crypt-CBC-2.24-1.el5.rf.noarch.rpm>
 - <ftp://ftp.aheeva.com/EncryptionServer/encryptionInstall.sh>

Note: for ftp access, please send an email to support@heeva.com
Maintenance and Support MUST be up to date for access.

5.6.3 Installation

- Go to **/usr/src/aheeva** and run the following commands:

```
#rpm -ivh perl-Crypt-CBC-2.24-1.e15.rf.noarch.rpm
#tar -zxf Crypt-OpenSSL-AES-0.01.tar.gz
#cd Crypt-OpenSSL-AES-0.01
#perl Makefile.PL
#make
#make install
#cd ..
#yum install mod_ssl
```

- To generate the ENCRYPTION SERVER certificates, run the following script:

```
#chmod 755 encryptionInstall.sh
#./encryptionInstall.sh
#Do you still want to add it: yes
```

Then answer of the questions that comes up exactly as in bold letters (see below)

```
#Country Name (2 letter code) [GB]:CA
#State or Province Name (full name) [Berkshire]:QC
#Locality Name (eg, city) [Newbury]:Montreal
#Organization Name (eg, company) [My Company Ltd]:Aheeva
#Organizational Unit Name (eg, section) []: Integration
#Common Name (eg, your name or your server's hostname) []:Var name or Var
#Client name.
#Email Address []:support@aheeva.com
#Please enter the following 'extra' attributes to be sent with your
certificate request.
#A challenge password []:aheevaccs “
#It's important that you put aheevaccs as the password.
#An optional company name []:aheevaccs
#Trust this certificate? Yes
#Reboot
```

5.7 AheevaScreenCapture

5.7.1 Prerequisites

This section does not require any additional packages to be installed as it deals directly with the agent's machine.

- For more information about agent's machine, please refer to section **1.2.1**.

5.7.2 FTP Files

- Download and save the following file on the agent's machine:

- ftp://ftp.aheeva.com/AheevaCCS_V3.2.2/AheevaScreenRecorder/Drivers
- ftp://ftp.aheeva.com/AheevaCCS_V3.2.2/AheevaScreenRecorder/msu-sc-codec.exe
- ftp://ftp.aheeva.com/AheevaCCS_V3.2.2/AheevaScreenRecorder/aheevasc.exe

Note: for ftp access, please send an email to support@ahееva.com
Maintenance and Support MUST be up to date for access.

5.7.3 Installation

- Run the following commands on the agent's desktop:
- Install setupdrv.exe (from Drivers and regarding the agent's OS).
- Install msu-sc-codec.exe
- Run aheevasc.exe

Note: setupdrv.exe and msu-sc-codec.exe should be installed once and for all.

The following part describes how to install those three softwares on agent's machine and how to make aheevasc.exe run on startup:

- Click on START→PROGRAMS→STARTUP and open folder
- Drag the aheevaASC.exe file into the startup folder
- Right click and choose run as administrator
- Restart the server and login as the user

Because of the firewall, etc it will ask once again for the admin password

- Enter the password then the program restarts.
- Exit the program and restart

Now the program should start without asking for the admin password.

6 AheevaCCS Configuration Files

6.1 AheevaManager

6.1.1 Specify the location of the Aheeva CCS Server

Edit the file `/usr/apache-tomcat-`

`5.5.17/webapps/aheevaccs/aheevaManager/CommPage.jsp`

You should specify the internal and external IP address (LAN and WAN) of the host running the Aheeva CCS server.

Look for the parameter **host** and specify the correct IP addresses. Make sure that the first two parts of the internal IP address (192.168) match the ones specified in the file. If not, change them to the correct ones.

As an example, if you intend on running the CCS server on a host having the internal IP address 192.168.10.195 and external IP address 207.107.208.150, then the parameter must be set as:

```
<jsp:param      name="host"      value="<%=      (remoteIp.substring(0,
7).compareTo("192.168") == 0 ? "192.168.10.195": "207.107.208.150") %>"/>
```

6.1.2 Specify the non-SSL Connector port number

- Edit the file `/usr/apache-tomcat-5.5.17/conf/server.xml`. You should locate the non-SSL Connector and set the port to **8467**. The section of the file should look like:

```
<!-- Define a non-SSL HTTP/1.1 Connector on port 8080 -->
<Connector      port="8467"      maxHttpHeaderSize="8192"      maxThreads="150"
minSpareThreads="25"      maxSpareThreads="75"      enableLookups="false"
redirectPort="8443"      acceptCount="100"      connectionTimeout="20000"
disableUploadTimeout="true" />
```

6.1.3 Specify the MySQL database information

- Edit the file `/usr/apache-tomcat-5.5.17/conf/context.xml`
- Specify the IP address of the host on which the MySQL server is running, the name of the AheevaCCS master database, and the user and password to connect to that database.

Make sure that the name of the master database, the user and the password should already be set, by default, to `aheevaccs`.

As an example, if the server running the MySQL master `aheevaccs` database has the IP address **192.168.10.195**, then the Resource section should look like:

```
<Resource      name="jdbc/aheevaccs_report"      auth="Container"
type="javax.sql.DataSource"      maxActive="10"      maxIdle="5"      maxWait="10000"
username="aheevaccs"      password="aheevaccs"
driverClassName="com.mysql.jdbc.Driver"
url="jdbc:mysql://192.168.10.195:3306/aheevaccs?autoReconnect=true"
removeAbandoned="true"      removeAbandonedTimeout="60"      logAbandoned="true"/>
removeAbandonedTimeout="60"      logAbandoned="true"/>
```

The same information must be specified for the slave database. A second Resource section should look like:

```
<Resource          name="jdbc/aheevaccs_report"          auth="Container"
type="javax.sql.DataSource"  maxActive="10"    maxIdle="5"    maxWait="10000"
username="aheevaccs"
driverClassName="com.mysql.jdbc.Driver"
url="jdbc:mysql://192.168.10.195:3306/aheevaccs?autoReconnect=true"
removeAbandoned="true" removeAbandonedTimeout="60" logAbandoned="true"/>
```

6.2 AheevaCTI

- Specify the location of the AheevaSQL that aheevaCTI will use.
- Edit the file `/etc/aheevaccs/cti/serverCfg.xml`

You should specify:

- The IP address of the server running the main database, the name of the main database, as well as the user and password to connect to it.
- The IP address of the server running the slave database, the name of the slave database, as well as the user and password to connect to it.
- The necessary information to correctly send an email to the administrator in case the connection between aheevaCTI server and the database drops.

An example of the content of the file is as follows:

```
<? xml version="1.0"?>
<AsteriskCTI>
<log level="trace"/> <aheevalog enable="1" path="/var/log/aheevaccs/cti/"
max_file_size="20" />
<db username="aheevaccs"/>
<db password="aheevaccs"/>
</databaseInfo>
<slaveDBInfo><host name ="192.168.XXX.XXX"/>
<db name="aheevaccs"/>
<db username="aheevaccs"/>
<db password= "aheevaccs"/>
</slaveDBInfo>
<emailSender><daemon value="/usr/sbin/sendmail -t -i" />
<adminEmail value="example@example.com"/>
<sendFrom value="example@example.com"/>
</emailSender>
</AsteriskCTI>
```

Replace “**192.168.XXX.XXX**” with the IP address of the host that runs the MySQL database.

The database name, username and password should already be set, by default, to **aheevaccs**.

Users can be automatically notified when the connection to the database cannot be reestablished after a failure has occurred.

There are four connections to the database. When either one of them is lost, the CCS module tries to re-establish the connection every five seconds. All the SQL errors, including failed **INSERT** and **UPDATE** statements, are logged by the CCS server in the file: `/etc/aheevaccs/cti/databaseErr.sql`

The aheevaCTI server will attempt to reload and execute the failed requests when it succeeds in reconnecting to the database.

If it succeeds in reconnecting, it will send an email to the system administrator with a status update.

If it fails to reestablish the connection, the CCS server will notify users at the email addresses that you specify in the `serverCfg.xml` file.

6.3 AheevaRecordServer

6.3.1 Specify the location of aheevaCTI

- Edit the file `/etc/aheevaccs/recordserver/recordServerCfg.xml`
You should specify:

- The name and password that this Recording Storage Server must use to authenticate itself with the aheevaManager. These username and password must match the ones specified in the Network Configuration in the aheevaManager when configuring aheevaRecordServer.
- The IP address of the server where the aheevaCTI is running.

An example of content of the file is:

```
<?xml version="1.0"?>
<RecordServer>
<log level = "trace"/>
<username name="recordserver_name"/>
<password value=" recordserver_password"/>
<updateport value="8000"/>
<AsteriskCTI>
<hostcti name="192.168.XXX.XXX"/>
<ctiport value="8765"/></AsteriskCTI>
<ssl><certf fname="aheeva.pem"/>
<keyf fname="aheeva.pem"/>
</ssl>
</RecordServer>
```

6.4 AheevaAsterisk

6.4.1 Specify the location of aheevaCTI

Edit the file `/etc/asterisk/aheeva.conf` to set the IP address of the Aheeva CCS server and assign a unique name to this asterisk machine. Example:

```
[CtiServer]
name = aheeva1
password = password
host = 192.168.XXX.XXX
port = 8765
nb_threads_in_pool = 100
```

The parameter `nb_threads_in_pool` specifies the number of threads that will be created upon startup and used solely for outbound campaigns. This number should depend on the capacity of your Asterisk server and the volume of outbound campaigns you may run. Every dial generated by an outbound campaign will use one of those threads. When the call ends, the thread becomes available to handle another dial. If all threads are in use and the system requires an additional thread, then a new one will be created and it will automatically be added to the pool of threads.

7 Starting the servers

7.1 AheevaSQL

- On the root shell, run the following command

```
#service mysqld start
```

- To test if mysql is running

```
#service mysqld status
```

7.2 AheevaCTI

- On the root shell, run the following command

Note: Make sure you have a valid 3.X license file in the right directory
`/etc/aheevaccs/cti/license.dat`

```
#service ahevacti start
```

- To test if aheevaCTI is running

```
#service ahevacti status  
Or enter its command line interface  
#ahcli
```

7.3 AheevaRecordSever

- On the root shell, run the following command

```
aheevars start
```

- To test if aheevaCTI is running

```
#service aheevars status  
Or enter its command line interface  
#rscli -r
```

7.4 AheevaAsterisk

Before starting Asterisk you must make sure that the Zaptel drivers are loaded. To load Zaptel, start the zaptel service with the commands.

```
#irqbalance  
#service zaptel start  
#ztcfg -vv
```

Once you have Zaptel is loaded, you can start Asterisk by starting the service with the commands:

```
#ulimit -c unlimited
#service asterisk start
```

Once Asterisk is started, you can access the Asterisk Command Line Interface (CLI) with the command:

```
#asterisk -vvvncr
```

7.5 Apache-Tomcat

- Go to `/usr/apache-tomcat-5.5.17/bin/` and run the following commands

```
#!/shutdown.sh
#!/startup.sh
```

- To test if apache-tomcat is running

```
#ps -ef | grep -i tomcat
```

7.6 PHP

- On the root shell, run the following command

```
#service httpd restart
```

- To test if php is running

```
#service httpd status
```

7.7 AheevaManager

The Aheeva CCS Manager is now configured and can be accessed from an Internet Explorer browser.

Open a browser page (Internet Explorer) and enter the following URL in the address field

<http://192.168.xxx.xxx:8467/aheevaccs> where 192.168.xxx.xxx:8467 is Apache-Tomcat's IP address and port.

The browser should display the Aheeva CCS Manager Login page.

8 Advanced logging configuration

This section is optional.

This section shows how to change the log level of the Aheeva CCS server, as well as some advance logging options to use the Linux ‘syslog’ mechanism.

8.1 AheevaCTI

8.1.1 Configure the log level

In the aheevaCTI configuration file, you can specify four different levels of logging: normal, debug, trace and trace_ext.

The log level **normal** has the fewer logs and the **trace_ext** level logs each single event in the system. It is not recommended using the **trace_ext** for a production server.

Note: It must be used only for advance and extensive debugging.

- Edit the file `/etc/aheevaccs/cti/serverCfg.xml` :

```
<?xml version="1.0"?>
<AsteriskCTI>
<log level="trace"/>
<aheevalog enable="1"
path="/var/log/aheevaccs/cti/" max_file_size="20" />
```

8.1.2 Enable or disable the Aheeva logging

You have the possibility to enable or completely disable the Aheeva CCS logging. For doing so, you can set the value of the parameter **enable** to 1 or 0.

- Edit the file `/etc/aheevaccs/cti/serverCfg.xml` :

```
<?xml version="1.0"?>
<AsteriskCTI>
<log level="trace"/> <aheevalog enable="1"
path="/var/log/aheevaccs/cti/" max_file_size="20" />
...

```

8.1.3 Configure the location and size of the Aheeva logs

The aheevCTI will rotate the log files when they reach the size specified with the **max_file_size** parameter, in megabytes (MB). You can also modify the location of the log files by specifying the full path with the **path** parameter.

- Edit the file `/etc/aheevaccs/cti/serverCfg.xml` :

```
version="1.0"?>
<AsteriskCTI>
<log level="trace"/> <aheevalog enable="1"
path="/var/log/aheevaccs/cti/" max_file_size="20" />
```


...

8.1.4 Configure the Syslog

Syslog is a Linux service in charge of writing log files for many processes like the kernel and sendmail. By default, syslog is disabled, but you can enable it on your system.

You can enable at the same time the aheevaCTI log and the syslog, it is recommended to use only one of the two mechanisms at a time. You can configure your aheevaCTI server to send your log to a specific syslog facility. A facility can be chosen between the LOG_LOCAL1 and the LOG_LOCAL7.

- Edit the file to change the syslog parameters `/etc/aheevaccs/cti/serverCfg.xml`

```
<?xml version="1.0"?>
<AsteriskCTI>
<log level="trace"/> <aheevalog enable="1"
path="/var/log/aheevaccs/cti/" max_file_size="20" />
<syslog enable="0" syslog_facility="LOG_LOCAL1"/>
...
```

If you enable syslog, then you have to make sure that the service is running (should be installed and running with a minimal installation).

- Edit the file `/etc/syslog.conf` and add the following line:

```
local1.* /var/log/aheevaccs/cti/aheevaccs.log
```

With this configuration all files coming from the facility LOG_LOCAL1 will be written in the file `aheevaccs.log`. Because this file will grow indefinitely we suggest configuring the log rotation process.

- Create the file `/etc/logrotate.d/aheevaccs`:

```
/var/log/aheevaccs/cti/aheevacti.log {
Daily
rotate 30
prerotate /etc/rc.d/init.d/syslog stop
endscript
postrotate /etc/rc.d/init.d/syslog start
Endscript
}
```

With this configuration the log will rotate every day and you will keep a maximum of 30 days of data.

9 Running the software

- **ntpd**

```
#chkconfig ntpd on
```

- **AheevaMysql**

```
#chkconfig mysqld on
```

- **AheevaCTI**

```
#chkconfig ahevacti on
```

- **Apache-Tomcat**

```
#vi /etc/rc.local  
#JAVA_HOME=/usr/jdk1.6.0_06  
#export JAVA_HOME  
#/usr/apache-tomcat-5.5.17/bin/startup.sh 2>&1 >  
#/root/boot.txt &  
#exit 0
```

- **AheevaRecordserver**

```
#chkconfig aheevars on
```

- **Zaptel**

```
#chkconfig zaptel on
```

- **AheevaAsterisk**

```
#chkconfig asterisk on
```

- **NFS**

```
#chkconfig nfs on
```

10 Mounting the audio records directory to the /mnt Directory

The following procedure is useful only if Asterisk CTI and the Web server are on two different servers. In most cases, the Web server and the CTI server are located on the same application server and a simple soft link with the recording function is sufficient.

Note: For a 2-server installation, see also, in this document, section **10.3**.

10.1 Setting up the audio directory on Tomcat Server

In order to be able to play audio record files in the CCS Manager, a directory must be mounted under TOMCAT that will point to the directory that contains the physical audio files (each record server).

- Create if necessary the directory `/mnt_record1` in `/usr/apache-tomcat-5.5.17/webapps/aheevaccs/`
- Make sure the audio directory used by the record server is in the CCS Manager under Configuration is `/etc/recordserver/recordings`

10.2 Mounting the recordings directory in the Record Server

To set up an NFS server, you need to edit the following three main configuration files. This editing will determine the computers that will have access to the server, and those that will not:
`/etc/exports`, `/etc/hosts.allow` and `/etc/hosts.deny`

10.2.1 Edit `/etc/exports`

A typical setup for `/etc/exports` might look like this:

```
directory machine1(option11,option12)
machine2(option21,option22)
e.g.: /usr/local 192.168.0.1(ro) 192.168.0.2(ro)
```

- Add the following entry to the file `/etc/exports`:

```
/etc/recordserver/recordings 192.168.XXX.XXX(rw, sync)
```

Where “192.168.XXX.XXX” is the host name of the machine on which TOMCAT is installed.

10.2.2 Edit- `/etc/hosts.deny`

- Deny all services, add the following entries to `/etc/hosts.deny` file:

```
portmap:ALL
lockd:ALL
mountd:ALL
rquotad:ALL
statd:ALL
```

Next, you need to add an entry to the `/hosts.allow` to give access to all the hosts to which you want to grant access. (If the only file you edit is `/hosts.deny`, nobody will have access to the NFS server).

10.2.3 Edit- /etc/hosts.allow

Entries in *hosts.allow* follow the format:

service: host [or network/netmask], host [or network/netmask]

- Add the following entries to the */etc/hosts.allow* file:

```
portmap: 192.168.x.0/255.255.255.0
lockd: 192.168.x.0/255.255.255.0
mountd: 192.168.x.0/255.255.255.0
rquotad: 192.168.x.0/255.255.255.0
statd: 192.168.x.0/255.255.255.0
```

- Execute the following command:

```
#exportfs -ra
```

10.3 Starting the Portmapper on the recordserver

Verifying that NFS is running:

```
#service nfs start
#chkconfig nfs on
```

To verify that the NFS is running, query the portmapper with the command:

```
#rpcinfo -p
```

This will list the services being provided. The result of the command should look something like this:

Program	vers	proto	port
100000	2	tcp	111 portmapper
100000	2	udp	111 portmapper
100011	1	udp	749 rquotad
100011	2	udp	749 rquotad
100005	1	udp	759 mountd
100005	1	tcp	761 mountd
100005	2	udp	764 mountd
100005	2	tcp	766 mountd
100005	3	udp	769 mountd
100005	3	tcp	771 mountd
100003	2	udp	2049 nfs
100003	3	udp	2049 nfs
300019	1	tcp	830 amd
300019	1	udp	831 amd
100024	1	udp	944 status
100024	1	tcp	946 status
100021	1	udp	1042 nlockmgr
100021	3	udp	1042 nlockmgr
100021	4	udp	1042 nlockmgr
100021	1	tcp	1629 nlockmgr
100021	3	tcp	1629 nlockmgr
100021	4	tcp	1629 nlockmgr

10.4 Mounting remote directories on Tomcat server

From the root prompt on the TOMCAT machine, type:

```
#mount 192.168.yyy.yyy:/etc/recordserver/recordings /usr/apache-tomcat-5.5.16/webapps/aheevaccs/mnt
```

and the directory `/mnt` under TOMCAT will look like the directory `/usr/localbin/aheevaccs/recordings` on 192.168.yyy.yyy where “192.168.yyy.yyy” is the host name of the machine on which Record server is installed.

Note that the above procedure takes for granted that you have previously created the `/mnt` directory as an empty mount point.

Unmounting the NFS file system

You can get rid of the file system by typing the following:

```
#umount /usr/apache-tomcat-5.5.16/webapps/aheevaccs/mnt
```

10.5 Getting NFS file systems to be mounted at boot time on Tomcat Server

10.5.1 Edit- /etc/fstab

Add the following entry to `/etc/fstab`:

```
192.168.yyy.yyy:/etc/recordserver/recordings /usr/apache-tomcat-5.5.16/webapps/aheevaccs/mnt nfs defaults 0 0
```

Where “192.168.yyy.yyy” is the host name of the machine on which Record Server is installed.

10.5.2 Edit- /etc/rc.local

- Add the following entry to `/etc/rc.local`:

```
/usr/bin/mount -a
```

- Verify that everything is OK

Use the `ls -la` command to list the content of the `/mnt` directory under `/webapps`. The contents should reflect those found in `/etc/recordserver/recordings`.

11 Resources

For your convenience, we include a list of references. Aheeva does not, however, endorse the contents of the sites or any views that they may express.

Java Development Kit

<http://java.sun.com/j2se/>

MySQL open source database

<http://www.mysql.com/>

Tomcat open source server

<http://jakarta.apache.org/>

Decompression software

To extract .tar and .tar.gz files on Windows XP you can use PowerArchiver 6.1 (freeware) or 7-zip (freeware) or Winzip (commercial).

12 How to Verify All Required Services are Running

PROCESS	PATH	STARTUP	VERIFICATION
Zaptel Drivers	/lib/modules/kernelversion/ extra/*.ko	# service zaptel start	# service zaptel status #lsmod grep zaptel
AheevaMySQL	/usr/sbin/mysqld	# service mysqld start	# service mysqld status
AheevaCTI	/usr/sbin/aheevaCTI	# service ahevacti start	# service ahevacti status
AheevaRecordServer	/usr/sbin/recordserver	# service aheevars start	# service aheevars status
TOMCAT	/usr/apache-tomcatversion/ bin/	#cd usr/apache- tomcat-version/ bin/* # ./startup.sh	ps -ef grep tomcat
Apache	/usr/sbin/httpd	# service httpd start	# service httpd status
AheevaAsterisk	/usr/sbin/asterisk	# service asterisk start	# service asterisk status

13 Installation Checklist

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