



INTRODUCTION

For an enterprise that requires full PCI or FIPS compliance, the KCCVoIP Asterisk Cluster Manager has been developed {HTTPS access, account logging, OSSEC integration, encryption, fallback and high-availability control etc..} designed to run as an enterprise free-standing system running on a pair of high-availability servers {Linux CentOS 6.9} within an Asterisk cluster. Sites that do not have the FIPS requirement restrictions of single-function per server can implement the Asterisk Cluster Manager to run on a high-availability pair of Asterisk servers provided it is sized correctly to ensure it does not overload any Asterisk functionality.

IMPORTANT NOTE - THIS IS NOT AN OFF-THE-SHELF APPLICATION – IT DOES REQUIRE EXTENSIVE CUSTOMISATION TO MATCH THE REQUIREMENTS OF THE ENTERPRISE

Full enterprise features for FIPS compliance ;

- Single function per server if required for FIPS compliance
- Cluster high availability with VIP failover
- High availability failover for TSP connectivity
- Load balancing on multi-server clusters
- Single central management of Asterisk configuration
- Single central reporting for Asterisk enterprise
- Full integration with OSSEC/SIEM
- Fallback configuration for isolated site operation
- Full redundancy of configurations, mysql databases, CDR reporting and monitoring
- Single login for different levels of users/helpdesk/NOC

IMPORTANT NOTE - it is assumed there has been sufficient training and/or in-house expertise to work with the implementation design team and to provide first-level on-site support as the systems go into production.



LOGIN AND GET STARTED

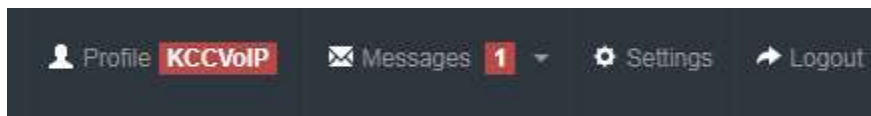


HTTPS SSL single login for all of the Asterisk Cluster Manager, reporting and CMS applications

When the password is entered correctly login begins - there is no feedback if the password is entered incorrectly or not recognised.

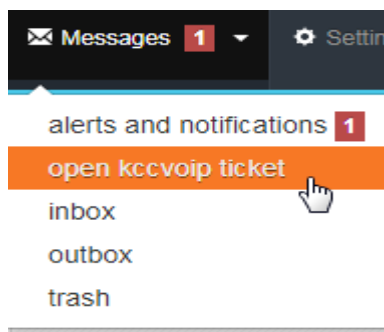
For example
<https://ast1.enterprise.net>

On login you will be directed to the menu page for your user group



The profile will show your user group name in this example KCCVoIP

The messages tab allows you to access your open tickets, customization requests and other alerts for your login

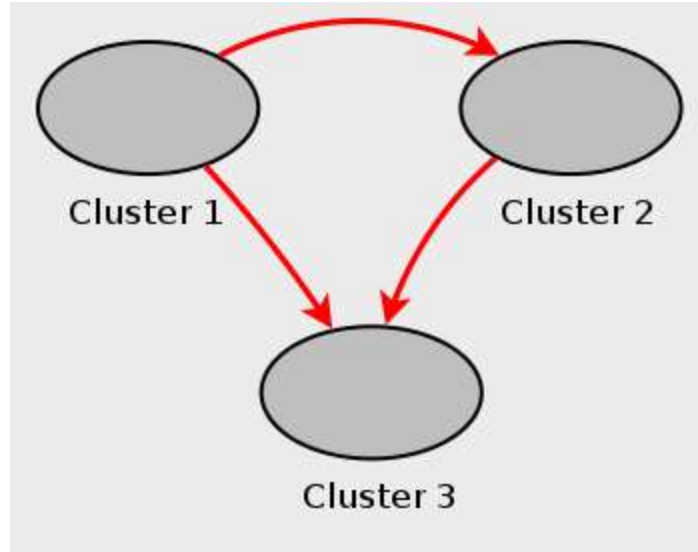


NOTE - Evaluation licenses have a 30 day lifetime. Full licenses can be 30 days or 12 months.

Software updates, customization, support and ticketing are available from the top line 'messages' tab on full licensed version of the software.

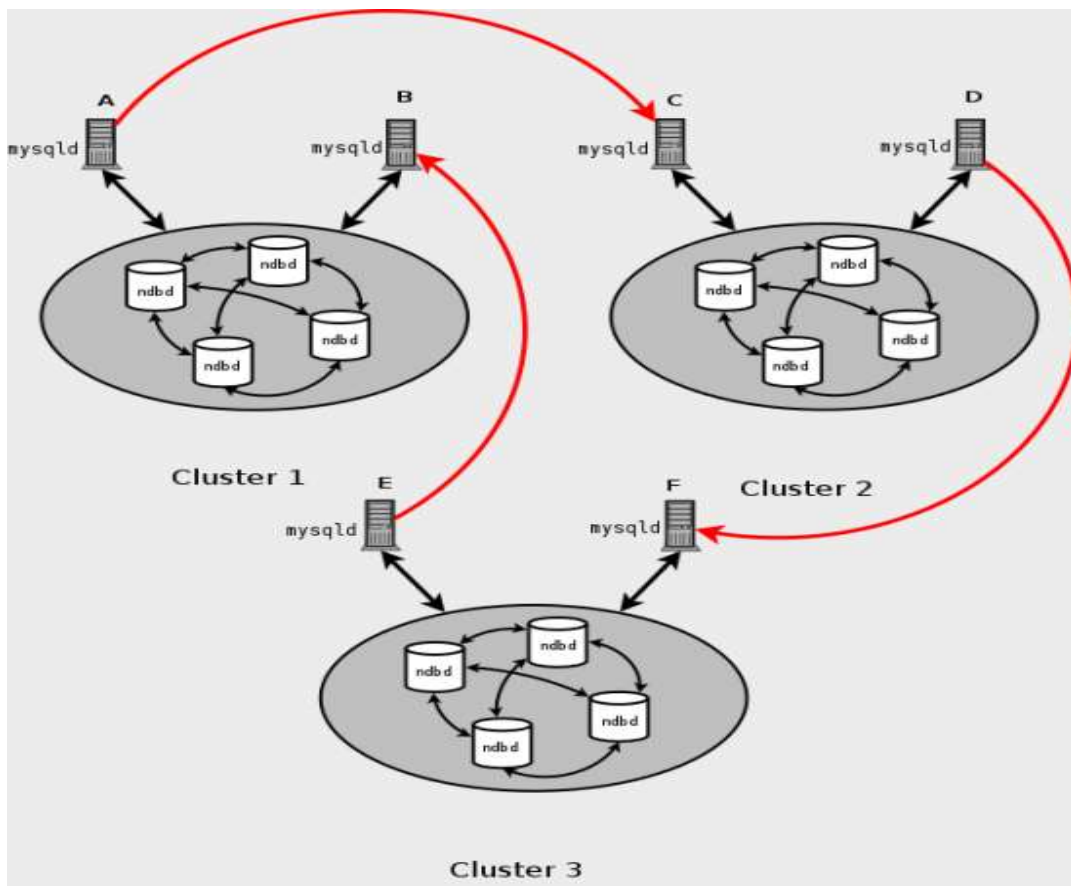
Depending upon your account profile, the settings tab allows change of the configuration for the cluster manager and database replication.

The central database is kept synchronised to all of the databases on the clusters throughout the enterprise and is configurable in master/master, master/slave and circular high resilience modes;



During any inter-site communications outages the clusters offer full application support within the isolated site. Each cluster can operate in isolation and still maintain the Asterisk services for the site.

In more detail – the MySQL database is maintained in a circular configuration ;





Each Asterisk server runs the AMI-Pollers to maintain a local database of the status and configuration of the local Asterisk servers within the local cluster. In turn the site cluster forwards the database changes to the next in line to maintain the enterprise database so all clusters are synchronized.

If communications should fail and a cluster becomes isolated, it uses the local configuration and database to maintain voice services for the local systems. When communications returns an update will be sent to synchronize the enterprise databases again.

Clusters in high availability topologies maintain local synchronized database and Asterisk configuration within the local cluster in addition to the enterprise connectivity.

Voice services VIPs provide Asterisk voice services for the local site and either load balance or failover based upon the polling within sip-ha for the cluster.

```

KCCVoIP High Availability Routines for Asterisk
-----
-v verify information:

This server is MASTER in active/standby HA pair
master server is : 192.168.0.216 service primary
slave server is  : 192.168.0.215 service secondary
local interface  : eth0 physical
timestamp       : 01/17/2018-10:09:32

VIP service address #1 : 192.168.0.218 controlled by kccvoip SIP-HA

Source IP 192.168.0.216 reachable
Replication IP 192.168.0.215 reachable
Active services 192.168.0.218 reachable
IPS/TALKTALK SIP Trunk interface 172.20.15.1 available
BT SIP Trunk NOT configured - NOT available

Privilege escalation protection disabled!
See https://wiki.asterisk.org/wiki/x/1gKfAQ for more details.
ACTIVE SERVICES ON THIS SERVER - This server is MASTER in active/standby HA pair
- NOW IN NORMAL STATE -

SIP-HA will replicate local files to 192.168.0.215

```

In the above example SIP-HA is maintaining the VIP for a pair of servers and controlling the voice service VIP on 192.168.0.218 for the local cluster. It is also maintaining the TSP SIP trunk using 172.20.15.1.

The configured files for replication will be sent from 192.168.0.216 to 192.168.0.215 to maintain synchronization.

During a failure on the primary server of this pair, 192.168.0.215 secondary server would become the primary for all services and the VIP 192.168.0.218 would be taken over.

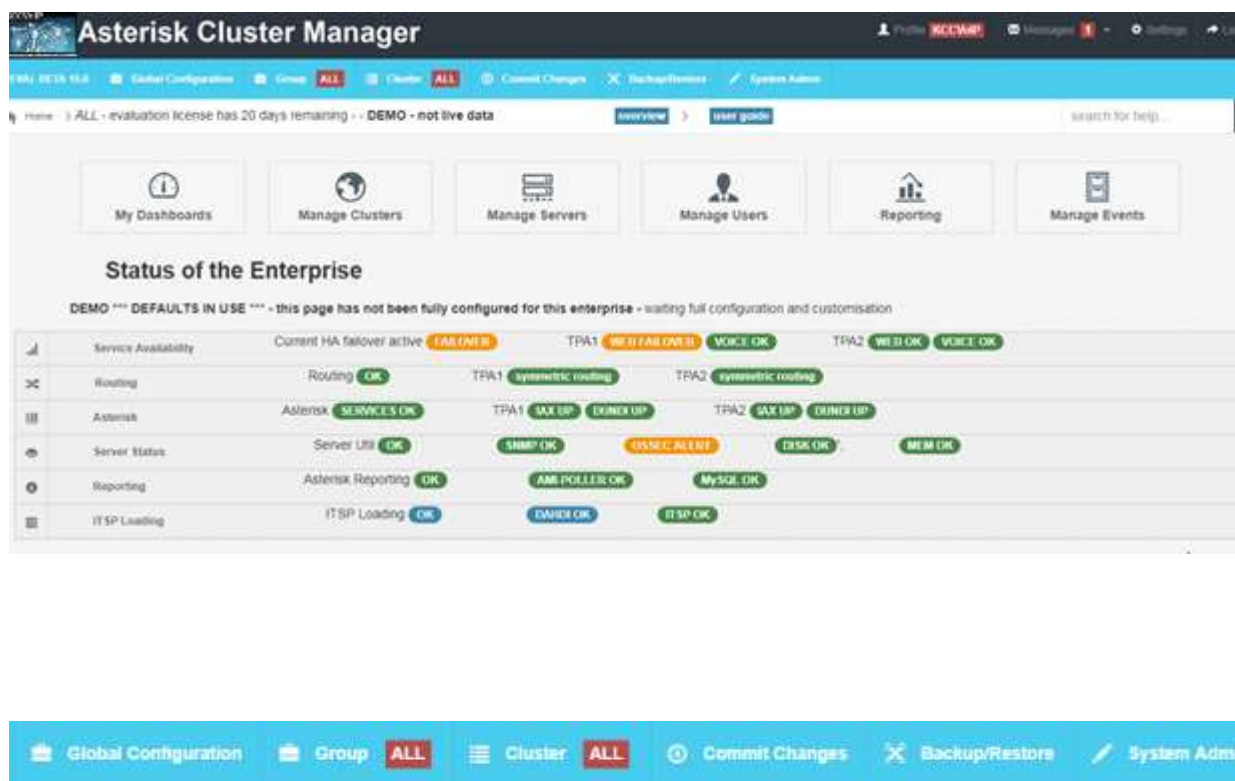


Local softphones, tablets, smart phones and telephones configured for DNS SRV would continue to use the primary service. If the primary and secondary become unavailable, they would then change their connectivity to the next server/cluster handed out in the DNS SRV list.

It is vital for the enterprise technical support and technical operations managers to understand the database synchronization, HA failover, SRV failover and traffic flow. The damage is obvious if the replication is incorrectly configured.

Main Menu Functions

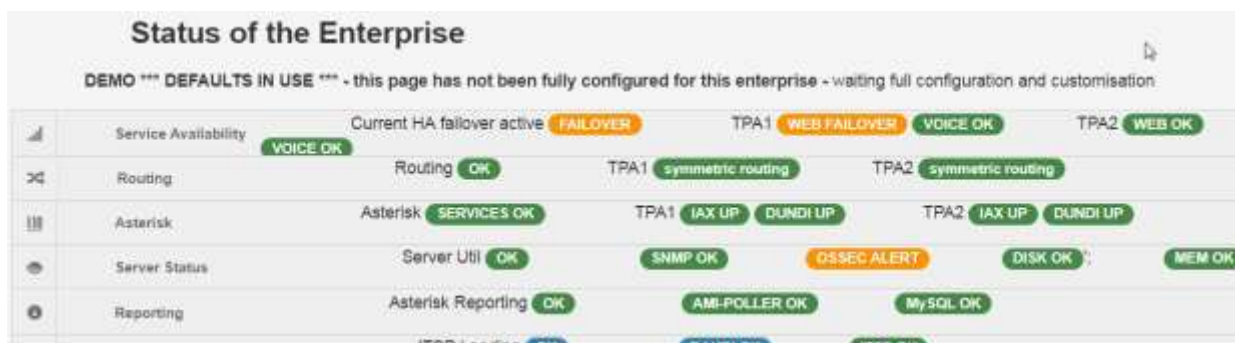
The main menu functions are found on the blue header tab selection bar. These menu selections will change depending upon your profile account.



The HOME menu will also have large icons customised to your requirements to allow direct link to reporting, dashboards/wallboards, user and agent manager screens, voice recording manager etc..



All icons are customised to the individual account profile and enterprise site requirements.



The main index page is customized to show the status from all of the vital components

Each summary display from the home/index can be expanded to show more detail





At default the reporting icon will link to the kccvoip CMS Reporting application menu if allowed by the account profile {and if installed} ;

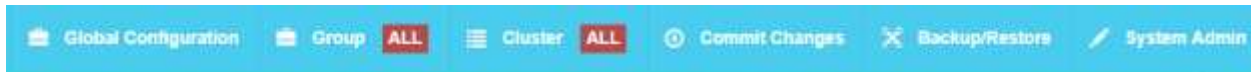


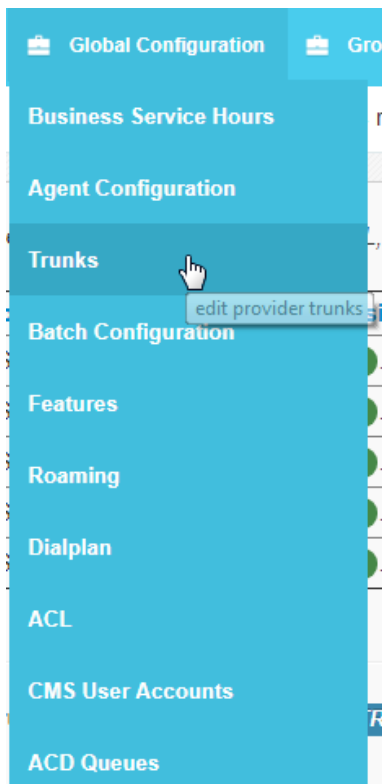
Depending upon the account profile, this allows the user to reach

- CDR and agent reporting
- custom report generator
- voice recording manager
- original wallboard software
- download area which contains the softphone client software and documentation etc.
- MySQL manager and KCCVoIP MySQL Reports

Each of the large icons can be customised by user group and enterprise to match the applications used by the enterprise NOC/HelpDesk and technical teams.

The blue menu line will either be at the top or left side of every page and allow the user to select the required action;





Global Configuration tab ;

Business Service Hours (times when calls flow through different IVRs or get routed to group voicemail and/or announcements etc.)

Agent Configuration (CSQ/ACD)

Trunks (Telco SIP/IAX trunks)

Batch (add large range of extensions and/or users etc)

Features (call parking, intercom, paging, music on hold, conferencing, video, spy and call control etc.)

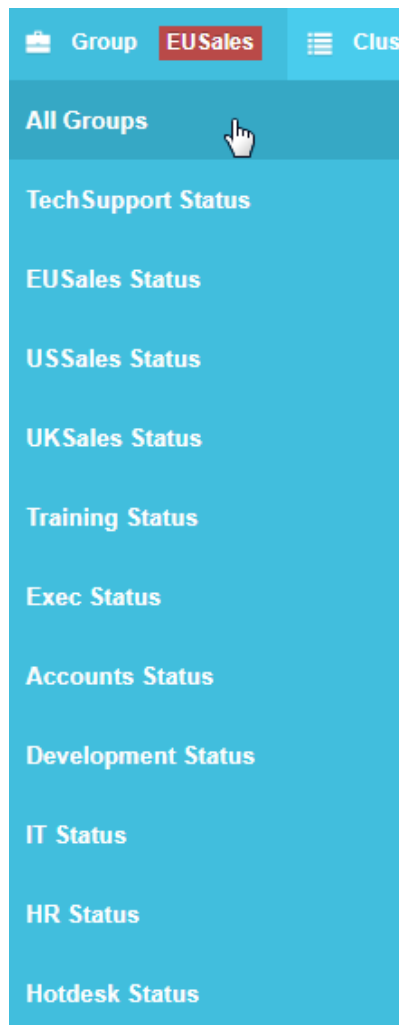
Roaming (check for DUNDI configuration and voicemail locations for users with roaming and single-number reach etc)

Dialplan – view and edit call flows,

ACL (access lists for internal phones, trunks, users etc)

Depending upon the group and server requirements, some of these functions may not be enabled for your profile account. All can be customised for each account profile to allow different levels of privilege for each user or user group.

The CMS User Accounts menu option allows privileged users to configure the system for user accounts and access rights to the system.



Group tab ;

Allows you to select the agent or user group and view the status of that group anywhere in the enterprise

The listed user groups may change depending upon your account profile

These groups are customized for each enterprise to allow quick selection of agent groups, corporate departments or functional groups such as hotdesk, roaming, conference rooms etc... to match the logical groups running on the Asterisk clusters.

Hotdesk Status shows the current state of the hotdesk users that are logged-in and shows the details for the hotdesk telephones etc

The group selected will show in red in the menu display - in the next example the group selected was 'UKSales'



notice the selection header also shows Cluster ALL which is telling you that you are looking at the status of any member of the UKSales group on ALL clusters within the enterprise – so you can monitor and maintain user groups that are spread across multiple clusters and multiple sites.



Asterisk Cluster Manager Profile **KCCVoIP**

[EVAL BETA 15.6](#)
[Global Configuration](#)
[Group UKSales](#)
[Cluster ALL](#)
[Commit Changes](#)
[Backup/Restore](#)
[System Admin](#)

Home > ALL - evaluation license has 20 days remaining -- DEMO - not live data

[overview](#) > [user guide](#)

Current Extension Status *for site=ALL, cluster=ALL, group=UKSales, sort by regexten* -----> [EDIT USERS/EXTENSIONS](#)

group	cluster	extension	user name	agent status
UKSales	ams	6251	Mary Church	
UKSales	lon	6251	Mary Church	UKSales static
UKSales	ams	6252	Dennis Patterson	
UKSales	lon	6252	Dennis Patterson	UKSales logged in available + no calls from ACD yet
UKSales	lon	6253	Alice Small	UKSales logged out
UKSales	lon	6254	Sandra Foster	UKSales ringing
UKSales	ams	6255	Greg Davis	
UKSales	lon	6255	Greg Davis	UKSales logged in available + no calls from ACD yet
UKSales	lon	6256	Val Stone	UKSales logged in available + no calls from ACD yet
UKSales	lon	6256	Lee Mac	UKSales logged in + 7 ACD calls, last call over 3 hours ago
UKSales	lon	6260	Pip Frances	UKSales busy IN MEETING
UKSales	lon	6261	Martin Felps	UKSales logged in LUNCH
UKSales	ams	6272	Hanni Smith	UKSales logged out

NOTICE - in this example display shows the extension status for 'UKSales' group members on ALL sites, on ALL clusters with the display sorted by extension number;

Current Extension Status *for site=ALL, cluster=ALL, group=UKSales, sort by regexten*

The Agent status column will show the current agent status {on a call, available, lunch, break, meeting, logged-out, admin etc..} it can also show ACD call counters and voicemail if required ;

group	cluster	extension	user name	agent status	vm	calls
USSales	tpa1	6101	Leon Johnstone	USSales1 busy on a call	3	13 / 23 / 55
USSales	tpa1	6102	Mike Sydney	USSales1 logged out	5	0 / 0 / 0
USSales	tpa1	6103	Sally Phillips	USSales1 busy on a call	1	7 / 3 / 11
USSales	tpa1	6104	Janis Campbell	USSales1 busy IN MEETING	0	0 / 0 / 0



To change the sort order you can click on any of the blue headings - In this example we have re-sorted based upon user name ;

Current Extension Status for site=ALL, cluster=ALL, group=UKSales, sort by name ---> [EDIT USERS/EXTENSIONS](#)

group	cluster	extension	user name	agent status
UKSales	lon	6253	Alice Small	UKSales logged out
UKSales	ams	6252	Dennis Patterson	
UKSales	lon	6252	Dennis Patterson	UKSales logged in available + no calls from ACD yet
UKSales	ams	6255	Greg Davis	
UKSales	lon	6255	Greg Davis	UKSales logged in available + no calls from ACD yet
UKSales	ams	6273	Henry Smitt	UKSales logged out
UKSales	lon	6273	Henry Smitt	
UKSales	lon	6273	Lee Mac	UKSales logged in + 7 ACD calls, last call over 3 hours ago
UKSales	lon	6261	Martin Felos	UKSales logged in LUNCH

To edit, copy, delete, view in detail you can click the [EDIT USERS/EXTENSIONS](#) at the top of the displayed table.


Users and Extensions

[Add](#) [View](#) [Change](#) [Copy](#) [Delete](#) [Go to](#) 1 Page: 1 of 2 Records: 16

v	site	cluster	group	name	extension	vm box
+	ams	ams	UKSales	Mary Church	6251	
+	lon	lon	UKSales	Mary Church	6251	6251
+	ams	ams	UKSales	Dennis Patterson	6252	
+	lon	lon	UKSales	Dennis Patterson	6252	6252
+	lon	lon	UKSales	Alice Small	6253	6253
+	lon	lon	UKSales	Sandra Foster	6254	6254
+	ams	ams	UKSales	Greg Davis	6255	
+	lon	lon	UKSales	Greg Davis	6255	6255
+	lon	lon	UKSales	Vai Stone	6256	6256
+	lon	lon	UKSales	Lee Mac	6257	6257

Again you can re-sort by clicking on a blue header name or you can use the search button if you need to find a particular user or extension



The search button  allows you to search by any field {extension, user name, group....}

In this example we search for user name Keith Campbell ;

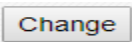
Users and Extensions

Navigation: << < Add View Change Copy Delete > >> Go to 1 Page: 1 of 1 Records: 1

site	cluster	group	name	extension
			Keith Campbell	
X Current Query: ('PMTable0', 'name' LIKE '*Keith Campbell*')				
kccvoip	bamey	tech1	Keith Campbell	101

Navigation: << < Add View Change Copy Delete > >> Go to 1 Page: 1 of 1 Records: 1

We can then choose to edit/change, copy or view this record in detail.

In this next example we choose to edit a London record by clicking on the  button ;

User and Extension - Edit Record

Save Apply Cancel

site	lon
cluster	lon
group	UKSales
name	Alice Small
callerid	Alice Small <6253>
extension	6253
authuser	6253
secret	jhsfd7
vm box	6253



accountcode	<input type="text" value="UKSales"/>
context group rights	<input type="radio"/> TechSupport <input type="radio"/> IT <input type="radio"/> HR <input type="radio"/> USSales1 <input type="radio"/> USSales2 <input type="radio"/> TampaADMIN <input type="radio"/> TampaReception <input type="radio"/> SFOReception <input type="radio"/> EUSales <input type="radio"/> EUAdmin <input checked="" type="radio"/> UKSales <input type="radio"/> UKAdmin <input type="radio"/> UKReception <input type="radio"/> EUReception <input type="radio"/> Training <input type="radio"/> Exec <input type="radio"/> Accounts <input type="radio"/> Development <input type="radio"/> Reception <input type="radio"/> conf_phones <input type="radio"/> hotdesk <input type="radio"/> kccvoip <input type="radio"/> fullrights <input type="radio"/> lab_phones
amaflags	<input type="text" value="None"/>
callgroup	<input type="text" value="44"/>
	<input type="text" value="44"/>

This allows you to edit the record for the user/extension. If you click Cancel then the change will not be saved - so you can play with these screens without making changes until you are familiar with the options and methods available for your account.

Depending upon your profile level, you will be able to change different elements of a user/extension. You should be able to set the extension number, username, secret/password for the phone, voicemail details, call and pickup groups, user groups, agent groups, enable encryption if required, auto provision, protocol etc....



To add a new user you can also use the COPY function which allows you to copy an existing user configuration so you can then modify the new copy with the new extension number, name, phone details etc. This is the quickest way to add a new user to an existing group. When finished editing you save the record by clicking Save or Apply.

BATCH CONFIGURATION

The screenshot shows the 'Batch Configuration' page in Asterisk Cluster Manager. At the top, there is a blue header with the KCCVoIP logo and the text 'Asterisk Cluster Manager'. Below the header, the page title is 'Batch Configuration' with a subtitle 'create users/extensions batch'. The 'Batch Group Template' section contains a dropdown menu with 'TechSupport' selected. The 'Cluster' section has four checkboxes: 'tpa1' (checked), 'tpa2', 'sfo', and 'lon'. The 'Extension range to create' section has two input fields: 'starting extension number' and 'ending extension number'. At the bottom, there is a large green button labeled 'VALIDATE'.

Use the batch configuration to add multiple users, extensions or hotdeskphones to Asterisk.

Select from the pull down list of templates - enables easy addition of users to an existing agent group, extensions as hotdesk phones or use an existing extension as a template to create a batch of similar extensions.

Select the cluster(s) where the new users/extensions are to be created.

Remember if you create the same extension number on different clusters you must consider the dialplan and how call roaming will be affected and can use the roaming tab to verify the configuration.

When you have input the range of extensions to be created and clicked the VALIDATE button, the system will check if the new numbers are compatible with the existing dialplan



Batch Configuration

TEMPLATE IS VALID
batch configuration will use **IT**
as the group template to add the batch of new
extensions - starting **5166** and ending
with extension number **5176**
on clusters **tpa1 tpa2**

In this example we have validated a new range of extensions to be added into the IT group.

The system will use the IT group profile to create the new extensions

The validation was successful as the screen shows **TEMPLATE IS VALID**.

If the extension numbers were not valid for the chosen template, dialplan and cluster, the message **INVALID** would be seen and the initial form shown for re-entry.

Click **SUBMIT** to create the new extensions

Batch Configuration

batch configuration complete using the **IT** group template to add extensions - starting **5166** and ending with extension number **5176** on clusters **tpa1 tpa2**
NEXT - edit the new extensions for the required user details and commit config

records added OK

The confirmation screen will then show that the new extensions have been created.



Most of the configuration menus make use of the same layout, so it is very easy to manage all configuration as soon as you are familiar with one ;

Business Hours of Service

<< < Add View Change Copy Delete > >> Go to 1 Page: 1 of 1 Records: 8

v	Site	Cluster	Group	Function	Description	Active	start time	end time	start day	end day	start date	end date	announcement
●	lon	lon	UKSALES	OPEN	UK hours	yes	08:00:00	18:30:00	mon	fri	*	*	
●	tpa	tpa1	USSales	OPEN	EST hours	yes	13:00:00	22:00:00	mon	fri	*	*	
●	ams	ams	EUSales	CLOSED	force closed	no	00:00:00	00:00:00	mon	sun	*	*	closed
●	tpa	tpa1	USSales	CLOSED	force closed	no	00:00:00	23:59:59	mon	sun	07/04	07/07	closed
●	tpa	tpa1	USSales	HOLIDAY3	Memorial Day	yes	00:00:00	23:59:59	mon		05/25	05/31	closed
●	tpa	tpa1	USSales	CHRISTMAS	2018 Christmas	yes	00:00:00	23:59:59	*		12/25	12/26	merry-christmas
●	tpa	tpa1	USSales	HOLIDAY4	Independance Day	yes	00:00:00	23:59:59	*		07/04		closed
●	tpa	tpa1	USSales	HOLIDAY5	Labour Day	yes	00:00:00	23:59:59	mon		09/04	09/07	closed

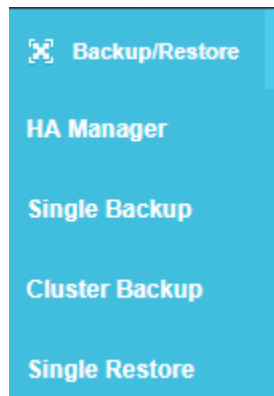
Example of a global configuration screen to modify the business hours of operation.

Trunks

<< < Add View Change Copy Delete > >> Go to 1 Page: 1 of 2 Records: 17

v	site	cluster	group	trunk name
●	lon	lon	UKSales	SIP-32
●	lon	lon	inter-site	SFO
●	lon	lon	TechSupport	PRI-E1
●	lon	lon	inter-site	AMS
●	lon	lon	inter-site	TPA
●	sfo	sfo	inter-site	LON
●	sfo	sfo	inter-site	AMS
●	sfo	sfo	inter-site	TPA
●	tpa	tpa2	Telnyx	TELNYX-1
●	tpa	tpa2	CallCentric	CALLC
●	tpa	tpa2	SIPGate	SIPGate

Example of a global configuration screen to edit, view or delete telco trunks.



Backup/Restore menu tab

Allows control of High Availability VIPs and cluster priority

Backups and restore options for individual servers or clusters



System Admin menu tab

Allows control of OSSEC and NMS configuration

iptables firewalls and fail2ban

customized options can be added for storage management, voice recording manager, dashboards, wallboards, CDR reporting, custom reporting, MySQL tuning and configuration etc...

Encryption Key Manager and storage management etc..

The FAX gateway and voice conference managers can be launched from this menu

Links are also found here to reach all of the reporting systems and voice recording manager if installed



Key update for kccvoip voice recording encryption

Cluster = MGA - - Group = ALL

key files available

- key-2017-Dec-11-22-12
- key-2018-Feb-22-11-11
- key-2018-Jan-19-13-01
- key-2018-May-07-14-06

current-kccvoip-key-RSA
using **key-2018-May-07-14-06** now

[FORCE generate new key](#)

[download current key](#)

Example screen for encryption key management

Customized dashboards allow wallboard display and/or supervisor dashboards be configured to match the business requirements ;



Current Extension Status for site=ALL, cluster=tpa1, group=USSales, sort by regexpen - - - - - EDIT USERS/EXTENSIONS

group	cluster	extension	user name	agent status	avail	lunch	break	meet	train	admin
USSales	tpa1	6101	Leon Johnstone	USSales1 busy on a call	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00
USSales	tpa1	6102	Mike Sydney	USSales1 logged out	logged off	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00
USSales	tpa1	6103	Sally Philips	USSales1 busy on a call	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00
USSales	tpa1	6104	Jessie Gonzalez	USSales1 busy TAKING	23:57:57	00:02:00	00:00:00	00:00:00	00:00:00	00:00:00
USSales	tpa1	6105	Ken Thomas	USSales1 logged in available 3 ACD calls, last call 8783305	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00
USSales	tpa1	6106	Jim Smith	USSales1 logged out	logged off	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00
USSales	tpa1	6107	Jo Clayden	USSales1 logged out	logged off	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00
USSales	tpa1	6108	Gerrit Rosbeek	USSales1 logged out	logged off	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00
USSales	tpa1	6109	Carina Linnert	USSales1 logged in AVAILABLE	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00

examples of supervisor dashboards that are customized to show the required information

Current Trunk Status - - - - - EDIT TRUNKS

group	trunk status	trunk ID	provider	response	protocol	acl
UKSales	UP	SIP-32	BT	<150ms	SIP	providers
inter-site	UP	SFO		<150ms	IAX	sto_link
TechSupport	UP	PRI-E1	BT	<150ms	DAHDI	providers
inter-site	UP	AMS		<150ms	IAX	ams_link
inter-site	UP	TPA		<150ms	IAX	tpa_link
UKSales	UP	TELNYX-7	sip.telnyx.com	<150ms	SIP	providers
UKSales	UP	TELNYX-6	sip.telnyx.com	<150ms	SIP	providers



Wallboard examples

More details can be found in the user guide documentation and the training presentations which are customised to the enterprise prior to implementation.





Statistics
from FAX gateway



Configuration
FAX Gateway

Current Status *KCCVoIP FAX Gateway - outbound*

date	account	site	sender from	FAX to	FAX file details	FAX status	extension
02-15-2018 19:44	kccvoip	US	keith@mail2.kccvoip.net	+441207688118	RG-ALARM-TABLE.pdf	PDF queue	16465701658
02-27-2018 16:27	kccvoip	US	keith@mail2.kccvoip.net	8001	2018-02-27-16-27-55-FAX-keith@mail2.kccvoip.net.tif	sent OK ●	16465701658
02-28-2018 14:54	kccvoip	US	keith@mail2.kccvoip.net	300	2018-02-28-14-54-46-FAX-keith@mail2.kccvoip.net.tif	sent OK ●	16465701658

Current Status *KCCVoIP FAX Gateway - inbound*

date	account	site	sender - from	FAX - for	file
02-16-2018 13:20	kccvoip	UK	cisco-TAC-EU +43528274717	8001	fax-20180211-104349.tif
02-16-2018 14:17	lab3	TeamValley	DunnyCO	+442031375007	fax-20180219-135548-kccvoip-16465701658.tif
02-28-2018 14:55	CATCH-ALL		16465701658	300	fax-20180228-145418-300-16465701658.tif
02-28-2018 15:25	kccvoip	US	16465701658	8001	fax-20180228-152416-8001-16465701658.tif

example from the FAX Manager

Current Status *Conference Manager*

Current Conferencing Status [LINK OR CREATE CONFERENCE](#)

start	end	reoccur	conf num	external num	owner	account	description	max users	status	record	video
2018-05-30 00:00:00	0000-00-00 00:00:00	weekly	8602	16465701658 8602	keith	UKSales	weekly chat on UKSales	10	OK ●	no	no
2018-05-30 00:00:00	0000-00-00 00:00:00	weekly	8608	16465701658 8608		USSales	weekly chat on USSales	16		no	no
2018-06-22 14:00:00	2018-06-23 00:00:00	no	8603			USSales	TPA site move	10		yes	follow_talker

Conference Manager - booking

1

Page: 1 of 1 Records: 3

v	conf number	start	end	reoccur	account	cluster	external number	description	maxusers	user pin	record conf	video mode
+	8602	2018-05-30 00:00:00	0000-00-00 00:00:00	weekly	UKSales	lon	16465701658 8602	weekly chat on UKSales	10	1234	no	no
+	8608	2018-05-30 00:00:00	0000-00-00 00:00:00	weekly	USSales	tpa2	16465701658 8608	weekly chat on USSales	16	1234	no	no
+	8603	2018-06-22 14:00:00	2018-06-23 00:00:00	no	USSales	tpa1		TPA site move	10	1234	yes	follow_talker

example from the Conference Manager



Example screens from the outbound dialer

The screenshot shows the 'Create New Campaign' form. At the top, there are four buttons: 'Create New Campaign' (blue), 'View or Edit Campaign' (blue), 'Start Campaign' (green), and 'Stop Campaign' (orange). The main heading is 'Create New Campaign'. Below it is a 'Campaign Name' text input field. There are three file upload sections: 'Import CSV File' with a 'Choose file' button and 'No file chosen' text; 'Greeting Audio' with a 'Choose file' button and 'No file chosen' text; and 'Message Audio - advert or announcement' with a 'Choose file' button and 'No file chosen' text. At the bottom is a green 'Create Campaign' button.

Allows import from CRM and/or CSV files to create the outbound dialer lists for each campaign

The screenshot shows the 'Select A Campaign' form. At the top, there are four buttons: 'Create New Campaign' (blue), 'View or Edit Campaign' (blue), 'Start Campaign' (green), and 'Stop Campaign' (orange). The main heading is 'Select A Campaign'. Below it is a 'Campaign Name' dropdown menu with 'test9' selected. There are three radio button options: 'Deliver Message - Announcement Only', 'Dial Only - Direct to Queue' (which is selected), and 'Dial Only - Direct to Agent'. Below these is a 'Maximum Concurrent Calls' text input field with the value '12'. At the bottom, there are two text input fields: 'Maximum Retries' with the value '1' and 'Retry Time' with the value '300'. A green 'Start Dialing' button is at the bottom.

Customised to the agent group requirements



Essentials for Implementation

CentOS 6.9 32 or 64 bit minimum of 2 servers in HA cluster

MySQL version required = > 5.5

PHP version required = > 5.6

Asterisk version > 13.18 cert 1

OSSEC > 2.9

iptables/fail2ban modified for MySQL, SSH, HTTPS, SIP, SCCP, DUNDI, IAX etc..

SNMP NMS require Asterisk MIBs installed on any NMS/SIEM systems used by the enterprise

Local site DNS requires configuration for DNS SRV and local server identification

OSSEC INTEGRATION NOTES

All Asterisk servers within a cluster send encrypted UDP notifications to the master OSSEC servers in the UK {a free on-demand service or a subscription service for 24/7 PCI compliance}. These servers analyse and filter the streams to prioritize and forward the required notification to the enterprise NMS/SIEM systems, notification to department managers via email and urgent emails and SMS to engineers/helpdesks as required for the enterprise.

OSSEC continuously monitors the servers within all clusters for FIM/HIDS etc. in compliance with FIPS/PCI recommendations.

OSSEC analyser login is available for technical and security engineers via the VPN AnyConnect gateway ;

Example of a web SSL login form:

GROUP: LAB-1

USERNAME: [input field]

PASSWORD: [input field]

DUO code: [input field]

Login

Example of a web SSL login to the client portal

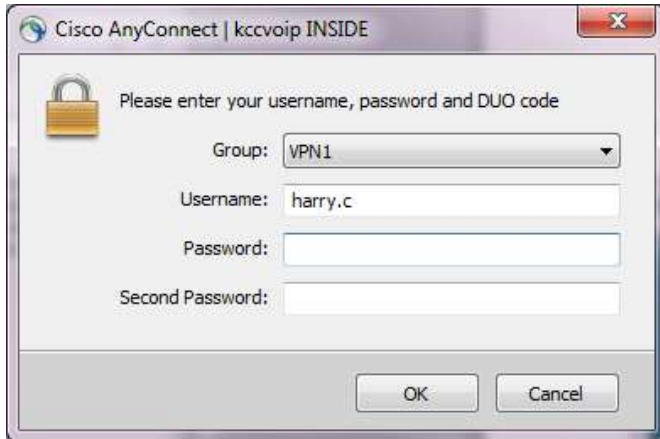
{ <https://kcc1.webhop.net:8088> }

Cisco ASA AnyConnect gateway uses DUO multi-factor authentication for full FIPS compliance

Use the DUO push or code gen app on a smart phone for the DUO code



Login is also possible using Cisco AnyConnect client and DUO ;

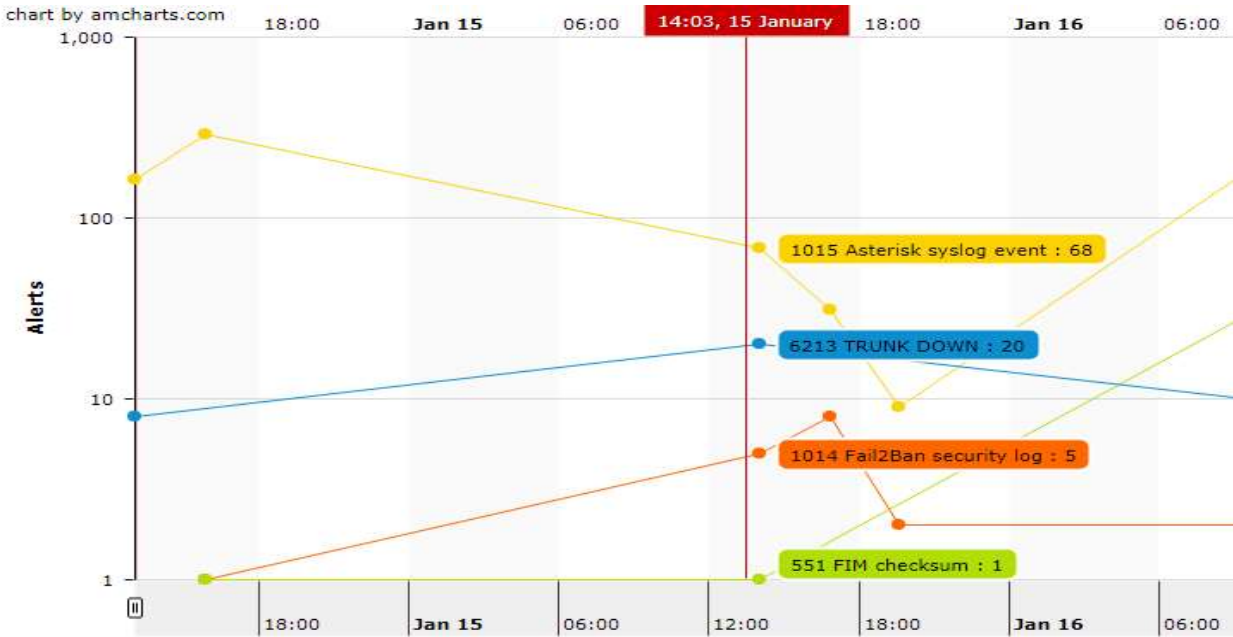


Example of a AnyConnect login to the client portal

{ kcc1.webhop.net }

Cisco ASA AnyConnect gateway uses DUO multi-factor authentication for

The account will then connect you to the software ticketing, account consoles and OSSEC gateways depending upon your account ;

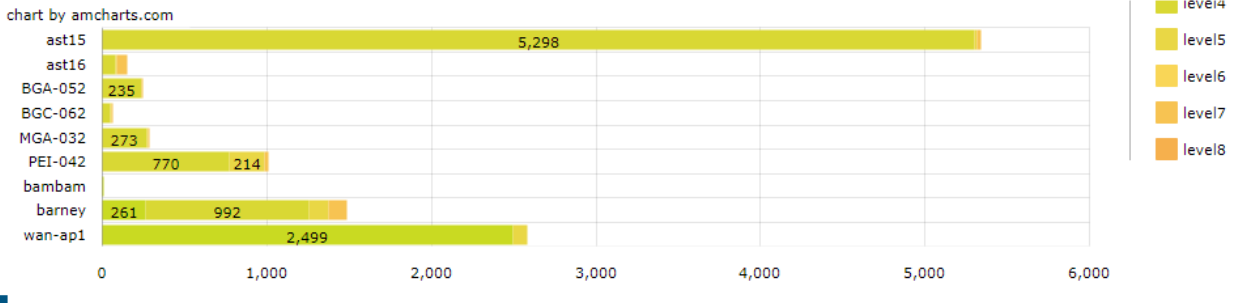


ID	Rule	Lvl	Timestamp	Location	IP	Data
13000	6213	7	2018-01-17 09:15:07	(ast16) var log asterisk/messages	[17:09:15.00] NOTICE[1016] chan_sip.c: Peer 'PEI' is now UNREACHABLE! Time 0	
13002	6213	7	2018-01-17 09:15:07	(ast16) var log asterisk/messages	[17:09:15.00] NOTICE[1016] chan_sip.c: Peer 'NOVA-OLD' is now UNREACHABLE! Time 0	
13009	6213	7	2018-01-17 09:14:42	(ast15) var log asterisk/messages	[17:09:14.98] NOTICE[1090] chan_sip.c: Peer 'tgo' is now UNREACHABLE! Last quality: 0	
12988	1015	4	2018-01-17 09:05:41	(PEI-042) var log/messages	Jan 16 14:25:23 [998]ASCR01 Fail2Ban.actions[14342] NOTICE [asterisk] Unban 10.42.18.88	
12989	1015	4	2018-01-17 09:05:41	(PEI-042) var log asterisk/messages	[18:18:09.37] WARNING[2179][C-0000320] app_voicemail.c: Playback of message 'var/spool/asterisk/voicemail/default/741/000000000000 failed	
12990	1015	4	2018-01-17 09:05:41	(PEI-042) var log asterisk/messages	[18:18:11.00] WARNING[2179][C-0000320] app_voicemail.c: Playback of message 'var/spool/asterisk/voicemail/default/752/000000000000 failed	
12991	1015	4	2018-01-17 09:05:41	(PEI-042) var log asterisk/messages	[18:18:11.00] WARNING[2179][C-0000320] app_voicemail.c: Playback of message 'var/spool/asterisk/voicemail/default/753/000000000000 failed	
12992	1015	4	2018-01-17 09:05:41	(PEI-042) var log asterisk/messages	[18:18:11.00] WARNING[2179][C-0000320] app_voicemail.c: Playback of message 'var/spool/asterisk/voicemail/default/754/000000000000 failed	
12993	1015	4	2018-01-17 09:05:41	(PEI-042) var log asterisk/messages	[18:18:11.00] WARNING[2179][C-0000320] app_voicemail.c: Playback of message 'var/spool/asterisk/voicemail/default/755/000000000000 failed	
12994	1015	4	2018-01-17 09:05:41	(PEI-042) var log asterisk/messages	[18:18:11.00] WARNING[2179][C-0000320] app_voicemail.c: Playback of message 'var/spool/asterisk/voicemail/default/756/000000000000 failed	
12995	1015	4	2018-01-17 09:05:41	(PEI-042) var log asterisk/messages	[18:18:11.00] WARNING[2179][C-0000320] app_voicemail.c: Playback of message 'var/spool/asterisk/voicemail/default/757/000000000000 failed	
12996	1015	4	2018-01-17 09:05:41	(PEI-042) var log asterisk/messages	[18:18:11.00] WARNING[2179][C-0000320] app_voicemail.c: Playback of message 'var/spool/asterisk/voicemail/default/758/000000000000 failed	
12997	1015	4	2018-01-17 09:05:41	(PEI-042) var log asterisk/messages	[18:18:11.00] WARNING[2179][C-0000320] app_voicemail.c: Playback of message 'var/spool/asterisk/voicemail/default/759/000000000000 failed	
12998	1015	4	2018-01-17 09:05:41	(PEI-042) var log asterisk/messages	[18:18:11.00] WARNING[2179][C-0000320] app_voicemail.c: Playback of message 'var/spool/asterisk/voicemail/default/760/000000000000 failed	
12999	1015	4	2018-01-17 09:05:41	(PEI-042) var log asterisk/messages	[18:18:11.00] WARNING[2179][C-0000320] app_voicemail.c: Playback of message 'var/spool/asterisk/voicemail/default/761/000000000000 failed	
13004	1015	4	2018-01-17 09:05:41	(PEI-042) var log asterisk/messages	[18:18:11.00] WARNING[2179][C-0000320] app_voicemail.c: Playback of message 'var/spool/asterisk/voicemail/default/762/000000000000 failed	
13005	1015	4	2018-01-17 09:05:41	(PEI-042) var log asterisk/messages	[18:18:11.00] WARNING[2179][C-0000320] app_voicemail.c: Playback of message 'var/spool/asterisk/voicemail/default/763/000000000000 failed	
13006	1015	4	2018-01-17 09:05:41	(PEI-042) var log asterisk/messages	[18:18:11.00] WARNING[2179][C-0000320] app_voicemail.c: Playback of message 'var/spool/asterisk/voicemail/default/764/000000000000 failed	
13007	1015	4	2018-01-17 09:05:41	(PEI-042) var log asterisk/messages	[18:18:11.00] WARNING[2179][C-0000320] app_voicemail.c: Playback of message 'var/spool/asterisk/voicemail/default/765/000000000000 failed	
13008	1015	4	2018-01-17 09:05:41	(PEI-042) var log asterisk/messages	[18:18:11.00] WARNING[2179][C-0000320] app_voicemail.c: Playback of message 'var/spool/asterisk/voicemail/default/766/000000000000 failed	
13009	1015	4	2018-01-17 09:05:41	(PEI-042) var log asterisk/messages	[18:18:11.00] WARNING[2179][C-0000320] app_voicemail.c: Playback of message 'var/spool/asterisk/voicemail/default/767/000000000000 failed	
13010	1015	4	2018-01-17 09:05:41	(PEI-042) var log asterisk/messages	[18:18:11.00] WARNING[2179][C-0000320] app_voicemail.c: Playback of message 'var/spool/asterisk/voicemail/default/768/000000000000 failed	
13011	1015	4	2018-01-17 09:05:41	(PEI-042) var log asterisk/messages	[18:18:11.00] WARNING[2179][C-0000320] app_voicemail.c: Playback of message 'var/spool/asterisk/voicemail/default/769/000000000000 failed	
13012	6213	7	2018-01-17 09:17:30	base--var log asterisk/messages	[17:08:17.27] NOTICE[3338] chan_sip.c: Peer '100' is now UNREACHABLE! Last quality: 0	

Example screens from the analogi from OSSEC

Database Usage - Client Vs Level

In the case where there are too many hosts in the database that this graph becomes a hindrance disable `$glb_management_clientvslevel` in config.php



Log extract examples

- Jan 17 09:14:36 ast16 kernel: wct4xpp 0000:03:02:0: RCLK source set to span 1
- Jan 17 09:14:36 ast16 kernel: wct4xpp 0000:03:02:0: Recovered timing mode, RCLK set to span 1



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- Jan 17 09:14:41 ast16 ntpd[2735]: Listen normally on 6 eth0:2 172.20.15.1 UDP 123
- Jan 17 09:14:41 ast16 ntpd[2735]: Listen normally on 7 eth0:1 192.168.0.218 UDP 123
- Jan 17 09:22:39 ast16 kernel: wct4xxp 0000:03:02.0: Need to increase latency. Estimated latency should be 3
- Jan 17 09:22:39 ast16 kernel: wct4xxp 0000:03:02.0: Increased latency to 3
- "USSales","6252","8500","USSales_agents1","""Harry Styles"" <6252>","SIP/6252-00000000","","VoiceMailMain","6252@default","2018-01-08 09:55:44","2018-01-08 09:55:45","2018-01-08 09:55:50","5","4","ANSWERED","DOCUMENTATION",,""

Latest events	
Level: 4 - First time user logged in.	2018 Jan 17 10:07:10
Rule Id: 10100	
Location: (ast15) 192.168.0.215->/var/log/secure	
Src IP: 192.168.0.216	
User: asterisk	
[Jan 17 10:07:08 ast15 sshd[5051]: Accepted publickey for asterisk from 192.168.0.216 port 45050 ssh2	
Level: 7 - Asterisk TRUNK DOWN	2018 Jan 17 09:15:05
Rule Id: 6213	
Location: (ast16) 192.168.0.216->/var/log/asterisk/messages	
[Jan 17 09:15:03] NOTICE[3819] chan_sax2.c: Peer 'WGA-OLD' is now UNREACHABLE! Time: 0	
Level: 7 - Asterisk TRUNK DOWN	2018 Jan 17 09:15:05
Rule Id: 6213	
Location: (ast16) 192.168.0.216->/var/log/asterisk/messages	
[Jan 17 09:15:03] NOTICE[3820] chan_sax2.c: Peer 'PEI' is now UNREACHABLE! Time: 0	

Level 5 and above are usually forwarded to the enterprise HelpDesk/NOC

Level 7 and above usually trigger email and SMS notification for department heads and support engineers

Rules can be customised to send alerts for defined sites to the appropriate email, NMS and/or syslog within the enterprise. At default there are >500 rules and alerts configured into the various alert levels. The configuration and tuning of OSSEC is a complex and lengthy process and is usually done in stages to match the enterprise requirements.

Try the software on your local Asterisk server demonstration installation or online demo.kccvoip.net
{request a demo username and password from support@kccvoip.com or from your account on the [kccvoip secure portal](#)