CIAB Remote Desktop System

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CIAB - *"Cloud in a Box"*

The file ***"install-ciab.zip***" includes all of the installation Bash Scripts and associated files required to create an *LXD container based CIAB Remote Desktop System*.

CIAB will create 2 LXD containers:

- **ciab-cn1** - which will have an installer's choice of *Desktop Envrionment* installed in it
- **ciab-guac** - will have Guacamole, Tomcat9, PostgreSQL, and NGINX installed via Docker in *ciab-guac*. We create the LXD "***ciab-guac***" container
  with an command option to ***"enable*** container ***"nesting"***. This is why we are able to install Docker *"inside"* the LXD "***ciab-guac***"
  container

Once installation is complete you can access both Guacamole & the ciab-cn1 based Desktop using any HTML5 Web Browser.

We configure *Guacamole/NGINX* etc with a ***"self-signed"*** certificate to allow support for using HTTPS. This means the connection **from** a User **to**
the Remote Desktop is ***encrypted***.

Steps to Install CIAB Remote Desktop

1) Copy the ***install-ciab.zip*** to the (local/remote) (Cloud, VM, server etc) you want to create the CIAB System
2) Unzip ***install-ciab.zip***
3) Execute ***ciab-pre-install.sh***
4) Execute ***install-ciab.sh***

NOTE: When ***Step 4*** completes...

a) ***both*** of the CIAB LXD containers (**ciab-guac** and **ciab-cn1**) will have been *created*
b) a ***"working"*** installation directory **/opt/ciab/** will have been created in *each* container
c) additional configuration scripts specific to setting up software ***specific*** to the function of each LXD container
-- scripts to install Docker, Guacamole, Tomcat9, PostgreSQL, NGINX in the **ciab-guac** LXD container
-- scripts to install a Desktop Environment and a User Acct for the person doing the CIAB installation into the ***ciab-cn1*** container.

Setup & Configure the *ciab-cn1* container

1) Access the ***ciab-cn1*** container:

> $ lxc exec ciab-cn1 bash

2) Create a User Account for yourself (***substitute your own UserID for "UserName" in the following steps***)

> root@ciab-cn1:**~# adduser UserName**

Answer all the questions re Password etc.

3) Make your UserName Account both "sudo" and "adm" privileged

> root@ciab-cn1:**~# adduser UserName sudo**
> root@ciab-cn1:**~# adduser UserName adm**

4) Change the ownership of everything in /opt/ciab to UserName:UserName

> root@ciab-cn1:~# **chown - R UserName:UserName /opt/ciab**

5) Make sure file permissions make sense for the installation

> root@ciab-cn1:~# **chmod -R 766 /opt/ciab/**

6) change to the Install Directory

> cd /opt/ciab

6.1) Become your UserName user

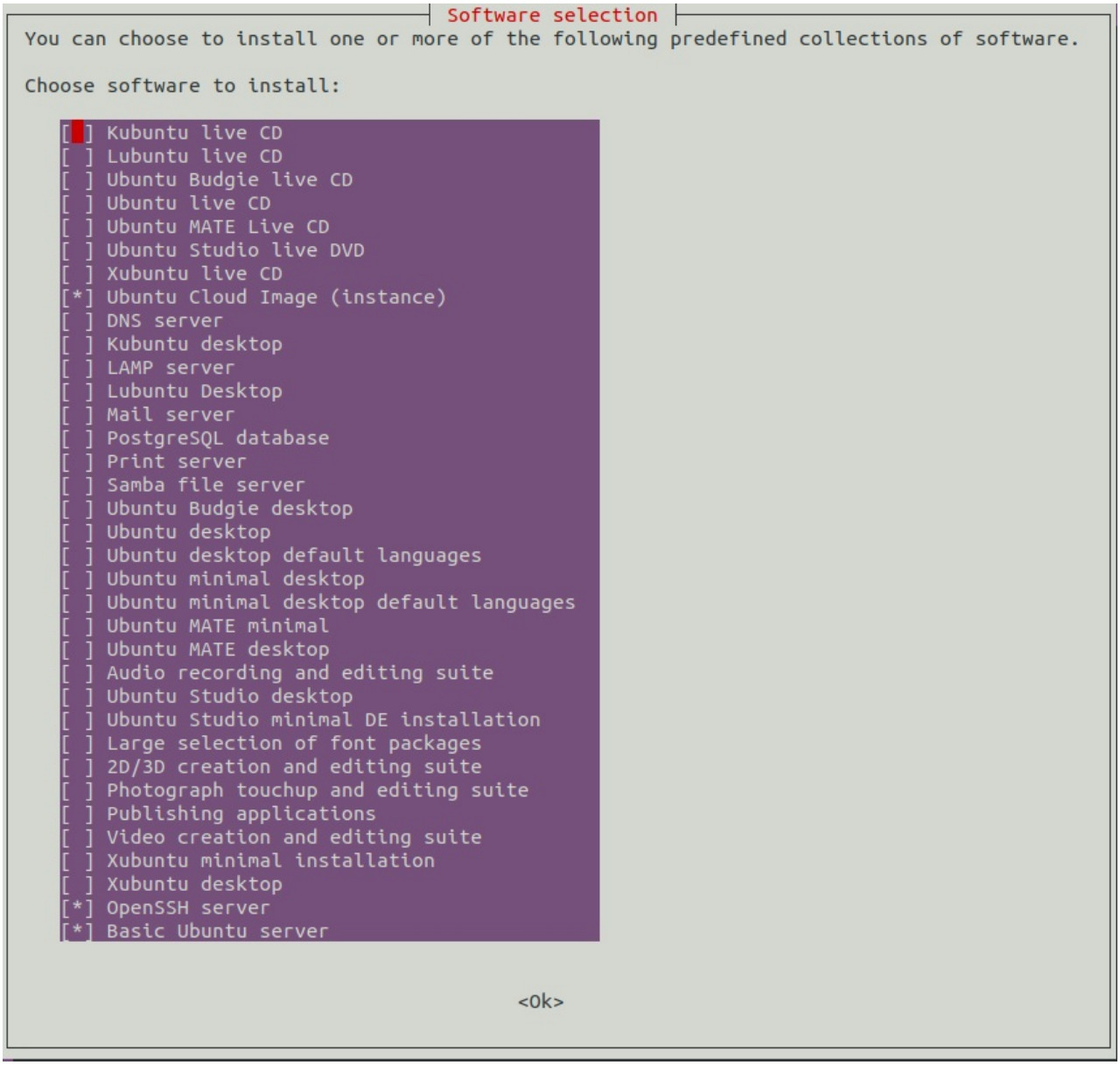
> root@ciab-cn1:~# **su UserName**
> *UserName@ciab-cn1: ~$*

NOTE:
CIAB installation scripts should be executed as a *"normal"* User ... ***do not*** use ***sudo***.
The Scripts will prompt for you to enter your password when Sudo privileges are required!

6.2) ***Begin the ciab-cn1 installation/setup*** by executing:

> UserName@ciab-cn1:/opt/ciab$ **./setup-ciab-cn1.sh**

During the installation into the **ciab-cn1** container you will be presented with the following menu where you can choose which ***Desktop Environment*** you want to install:



You *should* ***pick just one*** of the variety of ***Desktop Environments*** available

> - Kubuntu (re KDE)
> - Lubuntu (re LXDE)
> - Ubuntu Budgie
> - Ubuntu Gnome
> - Ubuntu MATE
> - Xubuntu (re XFCE)

NOTE: *You can also select to install some of the other services listed as well... if you choose !*

Setup & Configure the *ciab-guac* container

1) Access the ***ciab-guac*** container:

> $ lxc exec ciab-guac bash

2) Create a User Account for yourself (substitute your own UserID for "UserName" in the following steps

> root@ciab-guac:**~# adduser UserName**

Answer all the questions re Password etc.

3) Make your UserName Account both "sudo" and "adm" privileged

> root@ciab-guac:**~# adduser UserName sudo**
> root@ciab-guac:**~# adduser UserName adm**

4) Change the ownership of everything in /opt/ciab to UserName:UserName

> root@ciab-guac:~# **chown - R UserName:UserName /opt/ciab**

5) Make sure file permissions make sense for the installation

> root@ciab-guac:~# **chmod -R 766 /opt/ciab/**

6) change to the Install Directory

> cd /opt/ciab

6.1) Become your UserName user

> root@ciab-guac:~# **su UserName**
> *UserName@ciab-guac: ~$*

NOTE:
CIAB installation scripts should be executed as *"normal"* User ... ***do not*** use ***sudo***. The Scripts will prompt for you to enter your password when required to use Sudo to do something!

6.2) ***Begin the ciab-guac installation/setup*** by executing:

> UserName@ciab-guac:/opt/ciab$ **./setup-ciab-guac.sh**

This will install Docker and Docker-compose into the ***ciab-guac*** LXD container,
Then Docker-Compose is used to to install/setup **the Dockerized Guacamole**, Tomcat9, PostgreSQL, NGINX for CIAB.

Post Installation

At this point you should exit back to the LXD ***"Host"*** and ***restart*** both ***ciab-cn1*** and ***ciab-guac*** so just type ***"exit"*** until you are back at your Server/VM's terminal Prompt.

Then execute:

> **$ lxc restart ciab-cn1**
> **$ lxc restart ciab-guac**

You can now use an HTML5 Web Browser to access Guacamole and configure a new *"Connection"* configuration for accessing ***ciab-cn1***

You (the Admin) must first access Guacamole first to setup a Guacamole "connection" to ciab-cn1's using its IP address (10.x.x.x):

Point your web browser to:

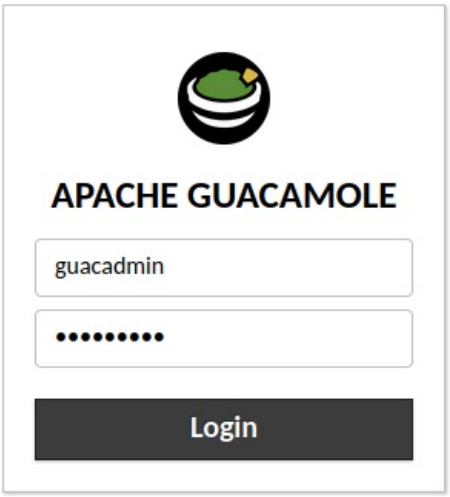
> **HTTPS://ip_addr_of_Server-VM-Cloud-Instance**

This HTTPS traffic will be sent to Port 443 (re HTTPS) on the *Server/VM/Cloud-Instance*.

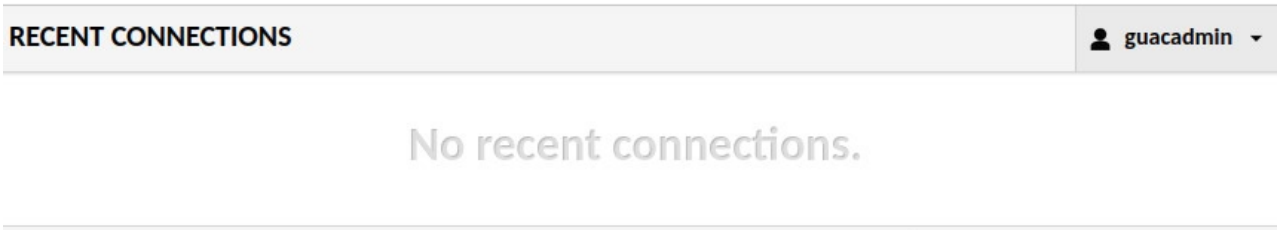
CIAB forwards anything on the incoming to the Server/VM/Cloud-Instance on Port 443 to Port 443 on the ***ciab-guac*** Container. In ***ciab-guac*** NGINX is listening on Port 443 and will forward again that Traffic to Port 8443 for the Guacamole Daemon (***guacd***) to process.

First you will see the Guacamole Login Screen!

> Enter ***guacadmin*** and ***guacadmin***



You should see...



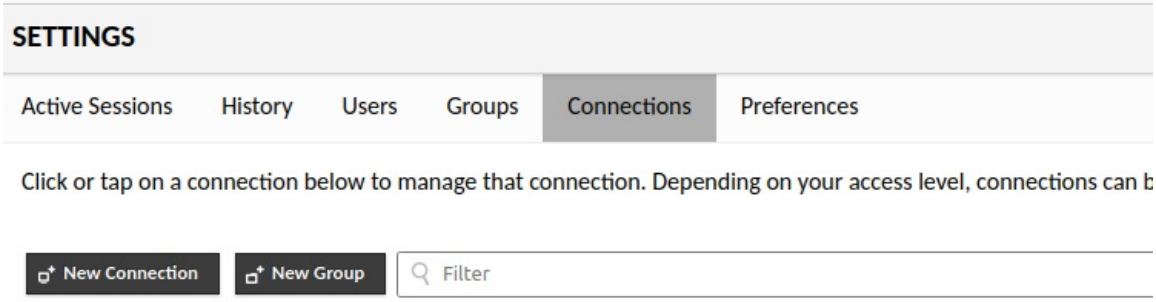
> Click on "**Guacadmin**" in the ***upper right*** of the screen and *a Drop Down Menu will appear*.

On that menu...

> Click on ***Settings***

You will see the Guacamole Configuration editor's Main Menu:

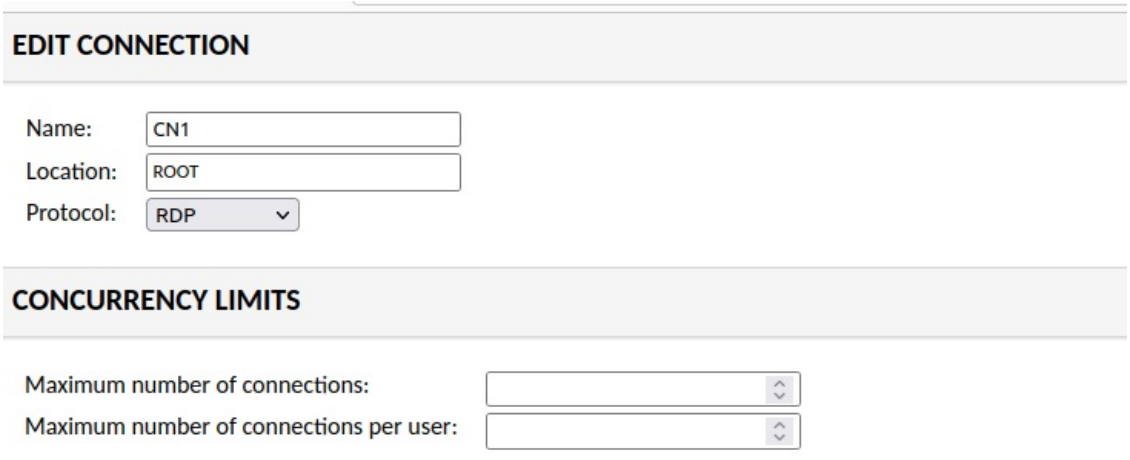
> Click on ***Connections***



Configure a "new" Guacamole "Connection" for the ciab-cn1 Desktop Container.

Configure a "connection" for the ***ciab-cn1*** container running our CIAB Remote Desktop *using the following example*.

Make sure to substitute the IP of your **ciab-cn1** *container (_re 10.x.x.x something*) for the *Hostname* instead of the *"IP of ciab-cn1"* in the example.



LOAD BALANCING

Connection weight:

Use for failover only: ☐

GUACAMOLE PROXY PARAMETERS (GUACD)

Hostname:

Port:

Encryption:

PARAMETERS

Network

Hostname: ip-of-ciab-cn1

Port: 3389

Authentication

Username: ${GUAC_USERNAME}

Password: ${GUAC_PASSWORD}

Domain:

Security mode: RDP encryption

Disable authentication: ☐

Ignore server certificate: ☐

Remote Desktop Gateway

Hostname:

Port:

Username:

Password:

Domain:

Basic Settings

Initial program:
Client name:
Keyboard layout: US English (Qwerty)
Time zone: America New York
Administrator console: ☐

Display

Width:
Height:
Resolution (DPI):
Color depth: True color (32-bit)
Resize method:
Read-only: ☐

Clipboard

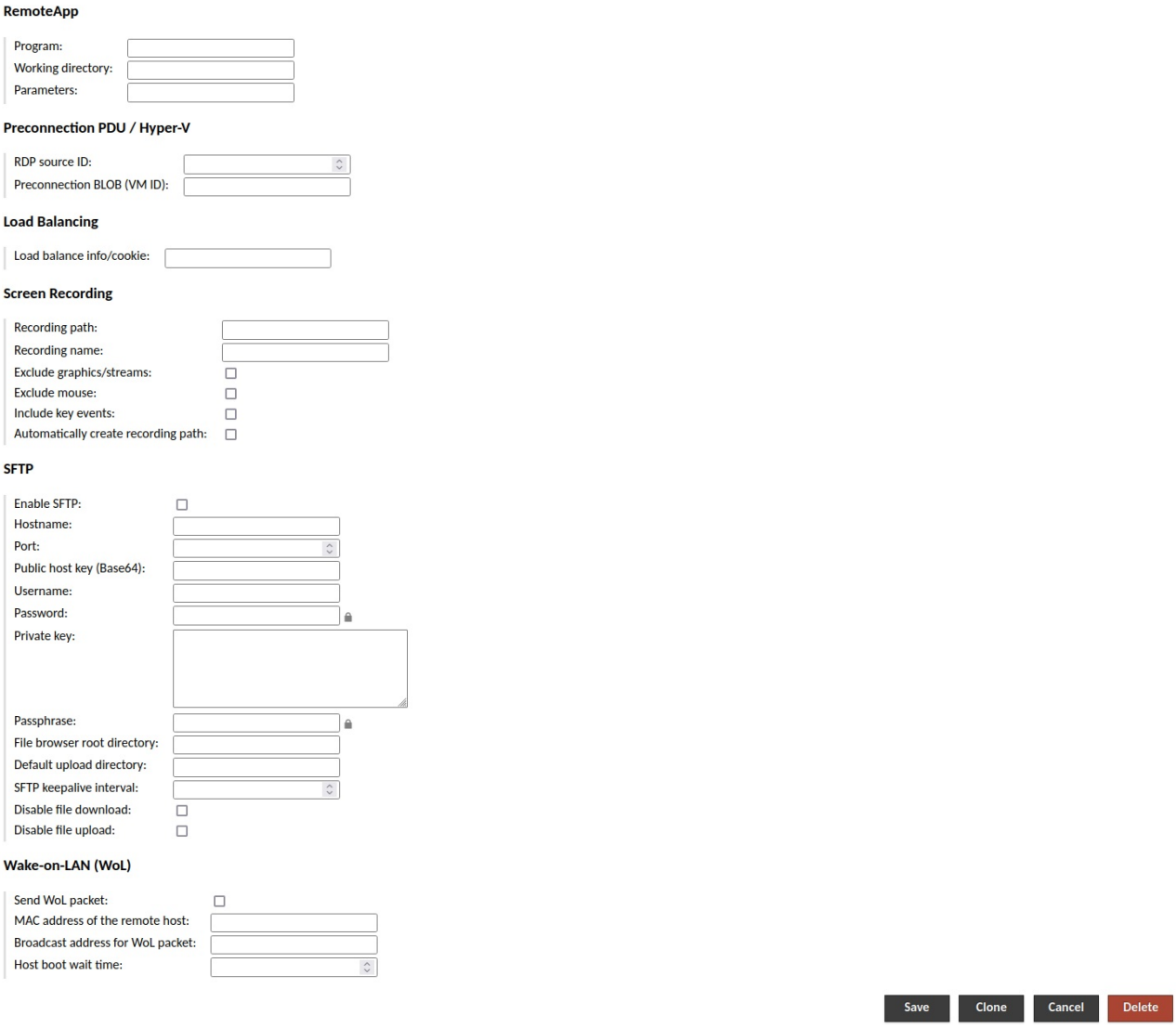
Disable copying from remote desktop: ☐
Disable pasting from client: ☐

Device Redirection

Support audio in console: ☐
Disable audio: ☐
Enable audio input (microphone): ☐
Enable printing: ☐
Redirected printer name:
Enable drive: ☑
Drive name: ciab_drive
Disable file download: ☐
Disable file upload: ☐
Drive path: /home/${GUAC_USERNAME}
Automatically create drive: ☑
Static channel names: rdpdr

Performance

Enable wallpaper: ☐
Enable theming: ☐
Enable font smoothing (ClearType): ☐
Enable full-window drag: ☐
Enable desktop composition (Aero): ☐
Enable menu animations: ☐
Disable bitmap caching: ☐
Disable off-screen caching: ☐
Disable glyph caching: ☐



Remember to *Click Save* !

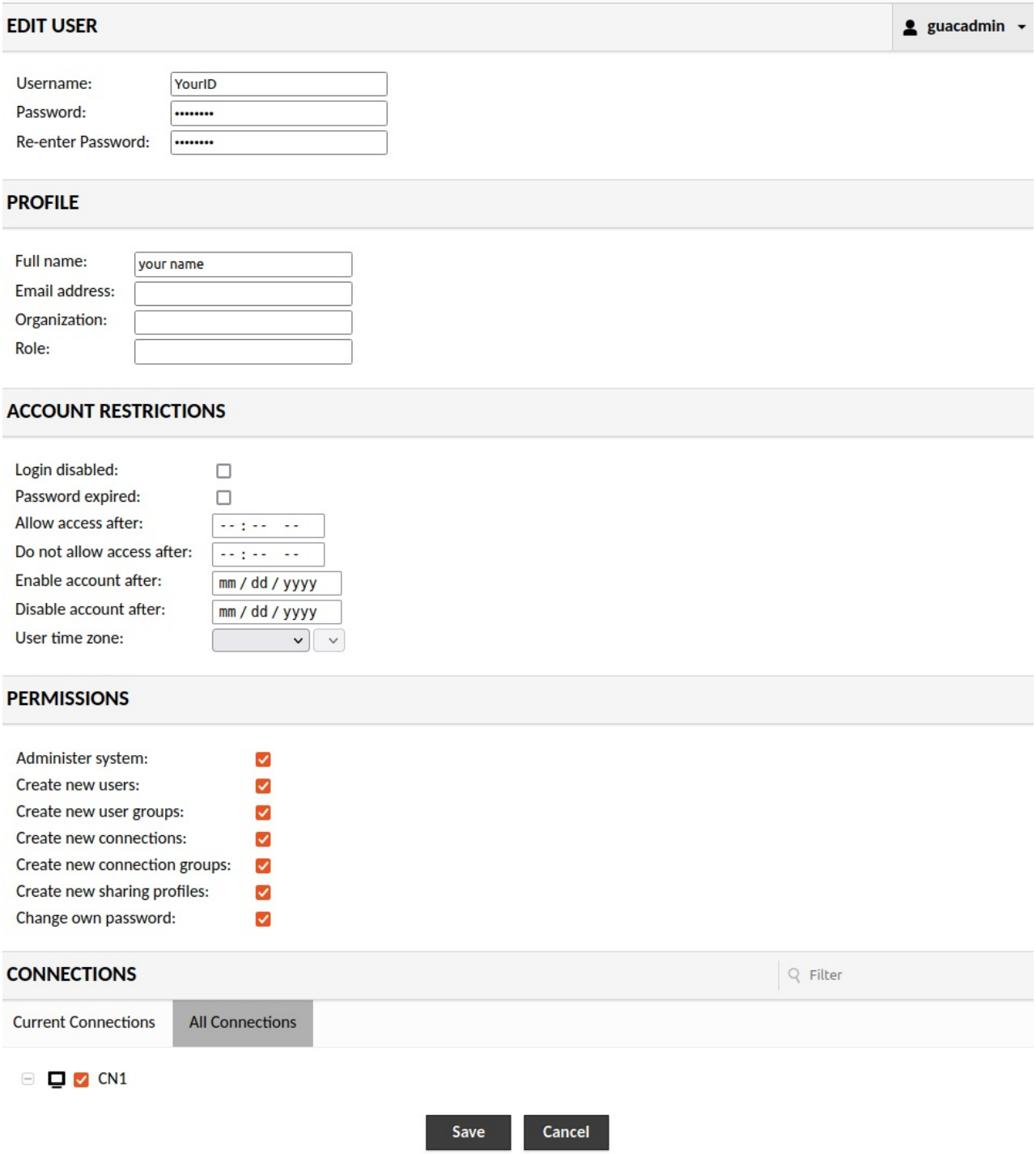
> **NOTE:** the Use of *"squirrely* braces* in several of the above "fields".
>
> the **${GUAC_USERNAME}** *will allow Guacamole to pass the current User's Guacamole ID as the XRDP Login User ID.*
> *the **${GUAC_USERNAME}*** will allow Guacamole to pass the current User's Guacamole Password as the XRDP Login User's Password

This helps automate login so the CIAB User only has to enter their Login UserID and Login Password once.

NOTE: *In Guacamole-speak* the above are called ***Parameter Tokens***

Configure a "new" Guacamole "User" for CIAB.

From the Guacamole main menu Click on ***Users*** and create a NEW User *wth the following example* **substituting** *your UserID on the* ***ciab-cn1*** *container as the* **UserName;_** in place of the examples "YourID".



Remember to *Click Save* !

IMPORTANT NOTE

When creating ***YOUR*** Guacamole User ID...
Remember to check **ALL** of the ***Permissions*** so that you will have Guacamole Admin capabilities in the future.

Other future Users you create usually only have 1 or 2 of these checked !

Time to Rock & Roll

Logout of Guacamole by again ***Clicking on Guacadmin*** in the *upper right* and selecting ***Logoff***

Then log back in using your new CIAB ***User ID*** and **_Password_**

Troubleshooting Tips

1) RDP uses Port 3389 so make sure that Port is open on the LXD ***ciab-cn1*** container.

Make sure that Ports 443 are Open on the LXD Host and in the LXD ***ciab-guac*** container to permit HTTPS access.

2) When you access your ciab-cn1 Desktop, if you have no audio then open a Terminal on that Desktop and do the following:

> **$ pulseaudio -k**

This will kill & immediately restart the Pulseaudio Daemon for that UserID only. Audio should then work.

> *NOTE: the CIAB installation should have alread added the above command to the system /etc/skel/.profile "skeleton"*
> *template file so all future users created in the ciab-cn1 Desktop system will automatically have this configured for*
> *them* so audio will work on first login*.

References

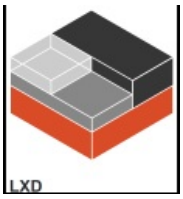
Note: Each project has their own specific open source license

1) **Apache Guacamole** Apache Guacamole is a *clientless remote desktop gateway*.

It's called it *clientless because no plugins or client software are required*!
Thanks to HTML5, once Guacamole is installed, all you need to access your ***CIAB Remote Desktop*** is a web browser.

> 
> 2) **boschkundendienst - Github Guacamole with Docker-Compose** Create a fully working Apache Guacamole
> (*including Tomcat9, NGINX, PostgreSQL*) instance using Docker (Docker-Compose).


3) **Pieces/Excerpts from *"Easy install xRDP w Pulseaudio support on Ubuntu"***

> 
>
> 4) **LXD - linux containers** LXD is a next generation System Container & Virtual Machine (VM) manager

5) **LXD Sub-Reddit - moderated by Brian Mullan**