(Public) Server Installation Guide

Installation Guide

This guide will take you through installing the operating system as well as getting SWG NGE running on that system. This guide can be used for both the bare-metal installation as well as a VM installation. I do not recommend running your VM on Windows, but that is up to you to figure out how to get working.

> **WARNING:** DO NOT reboot your system until you reach the section for updating dnf and yum. Then the guide will tell you when to reboot.

Installing The Operating System

This section will take you through installing the AlmaLinux 8.6 operating system either on Bare-Metal (Physical Server) or on a VM. Follow the instructions carefully. This part can take about 10 minutes or so to complete. Ensure you allocate enough resources on your VM and/or have enough server resources on your physical machine for the installation. The minimum and recommended values are not set in stone, but they have been a guiding balance for me while testing on both VM and Bare-Metal setups.

Server Resources

- Ensure you have enough server resources when creating your VM or using a physical (bare-metal) server. The following is a recommendation for minimum system requirements.
  - **Storage**
    - 128 GB (Minimum)
    - 512 GB (Recommended)
    - The database will grow over time and thus you'll require more storage. The recommended storage is to future proof the machine.
  - **CPU**
    - 4+ Core CPU (Minimum)
    - 10+ Core CPU (Recommended)
  - **Memory**
    - 16 GB RAM (Minimum)
    - 32 GB (Recommended)

(Option 1) Bare-Metal Installation

Download the AlmaLinux 8.6 x86_64 dvd.iso

- https://repo.almalinux.org/vault/8.6/isos/x86_64/AlmaLinux-8.6-x86_64-dvd.iso
- Create a bootable flash drive with **AlmaLinux 8.6**.
- Create the bootable drive using Rufus - 4.
- Plug the drive into your server and load up the BIOS to set the USB drive as your boot media.
- Reboot until the AlmaLinux system boots up

(Option 2) VM Installation

Download the AlmaLinux 8.6 x86_64 dvd.iso

- https://repo.almalinux.org/vault/8.6/isos/x86_64/AlmaLinux-8.6-x86_64-dvd.iso
- Load the .iso into your VM. All VM's are different so I can't tell you how to do this.
- Wait until the OS is at it's loading screen.

Configuring AlmaLinux On Boot/Setup

Start the AlmaLinux Installation

- Set the **root** password
- Set the user account with the following details
  - **Username:** swg
  - **Full Name:** swg
  - **Password:** *what ever you want, write it down*
  - Set as **ADMIN** account
- Set the **network** to connect to your ethernet, *write down the IP assigned*
  - **NOTE**: this may change later via your router. You'll have to eventually set a static IP. That is out of the scope of this guide.
  - **Hostname:** swg
- Select the disk drive that you'll install AlmaLinux on.
  - This will delete existing partitions (Select this option if you haven't already).

- Continue the installation process. This will take several minutes. The server will ask to reboot after.
  - Before you reboot, *pull the flash drive out of the USB port**.*** Now reboot.
  - After reboot, *accept the terms of service* then log into your **swg** account with the password you used.

Installing SWG NGE

Here we'll install the SWG NGE server by starting out with the *swg-prepare* repository. This will run through a guided install script to install all the basic dependencies. It occasionally fails for one reason or another. We'll try to prepare for those failures by making some initial changes before the

script is run. You should be able to get to the very end of the script which will install the entirety of the SWG Source code on your machine.

First Time Setup (Terminal)

Let's first configure the machine with the necessary stuff to allow the SWG server to run.

Update Hostname

Update the **hostname** on your system. This step has two commands. We'll use **nano** which is a text editor that you can use from the terminal of the machine. For future steps, you'll use **nano** to edit all files as it is the easiest for beginners to work with.

Open up the **terminal** and type the following commands.

```
sudo hostnamectl set-hostname swg
```

That will update the hostname to **swg**.

Now we'll edit your **hosts** file with the same information, you'll need the **IP Address** from earlier. I hope you wrote it down. For my example I'll use **192.168.1.1**, but you'll have to replace this value with your own IP Address.

```
sudo nano /etc/hosts
```

The **sudo** command will run this as root, allowing you the permissions to edit the file. You may need to enter in your password. I hope you wrote that down too. Now, within this file, go to the end of the line and add the following information.

```
192.168.1.1    swg
```

Replace the IP address with your own. Then use **tab** to separate the IP Address from the hostname. After that, save the file and you're done with the Host changes.

Update Sudoers

In this part, you'll need to add your swg account as a sudo user, i.e., so swg can run as admin. This is a very simple change. Remember the **sudo** command will/may require you to enter your password, depending on how long it's been since you entered it previously.

```
sudo visudo
```

When you are in this file, you'll need to look for the following line which will look like this.

```
## Allow root to run any commands anywhere
root    ALL=(ALL)       ALL
```

After this line, make a new line, and enter in the following. You can copy and paste this.

```
swg     ALL=(ALL)       NOPASSWD:ALL
```

That's it. Save the file and you're done. FYI, you may have to edit this file in **vim**, which is a more advanced text editor. If you're unsure how to make edits and/or save the file using vim, then you will need to look that up. It should default to **nano**, but if it doesn't then just look up how to use vim.

Update AlmaLinux 8.6 GPG Keys

As of late 2024 AlmaLinux 8.6 has outdated GPG Keys. This means that when you try to pull dependencies via the install script and through updating, you will run into issues. You need to first get the updated GPG keys and let AlmaLinux know where to find them. Run the following commands to update your GPG Keys:

```
sudo mv /etc/pki/rpm-gpg/RPM-GPG-KEY-AlmaLinux /etc/pki/rpm-gpg/RPM-GPG-KEY-AlmaLinux.bak


sudo wget -O /etc/pki/rpm-gpg/RPM-GPG-KEY-AlmaLinux https://repo.almalinux.org/almalinux/RPM-GPG-KEY-AlmaLinux
```

Installing SWG (Prepare Script)

Now that we have completed the first time setup, we can actually begin installing Star Wars Galaxies. Let's install one more application: **git** which is needed to run the prepare script.

Installing GIT

Git is the version control application. Anytime you clone a repository, pull code from GitHub or anywhere else, you'll be using git and the git commands. This should install with no issues. Just run the following command.

```
sudo dnf install -y git
```

Installing SWG Prepare Script

Here we will clone the SWG Prepare Script from the public repository. Once it's cloned we will navigate inside of the project and run the script. First, clone the repository.

```
git clone https://github.com/SniperFox22/swg-prepare.git
```

This may take a few seconds. Once it finishes, we can navigate into the newly created directory and start running the script.

```
cd swg-prepare


./main.sh
```

Select **Single Server Install**.

Now that the install script is running, it'll prompt you to press any key to continue a thousand times as it runs through the process. This is normal. Just keep pressing ENTER when it asks you. It will also ask you to enter in your password. This is fine too. Enter in your password as some commands will need root permissions to run.

You'll likely get to a point where things start to fail. It may look like everything is successful, but I doubt it finished with no issues. So, once the script ends after failing, let's do a few things.

Fix 32-bit Libraries

Run this command to get the proper 32-bit libraries installed. Copy the entire snippet and paste it in your terminal.

```
sudo dnf install -y glibc.i686 libstdc++.i686 zlib.i686 gtk2.i686 libXtst.i686 libXrender.i686 libcanberra-gtk2.i686 libcanberra-gtk3.i686
```

Fix BOOST Installation

The BOOST version that comes with the prepare script is old and outdated. You'll want to install the very specific version of 1.81.

- Download and install the **Boost 1.81** from the link provided. You'll load up **Firefox** browser on your AlmaLinux machine, navigate to the URL and download the files directly to the machine.
- https://www.boost.org/releases/1.81.0/
- Run the following commands, one by one, to install BOOST 1.81 properly. You'll run these commands after you've downloaded the **tar.gz** file into the **/Downloads** directory.

```
sudo dnf groupinstall "Development Tools"


sudo mkdir -p /opt/boost


sudo mv ~/Downloads/boost_1_81_0.tar.gz /opt/boost/


cd /opt/boost/


sudo tar -xvf boost_1_81_0.tar.gz
```

```
cd boost_1_81_0

sudo ./bootstrap.sh --prefix=/usr/local

sudo ./b2 install --with-program_options
```

Update & Reboot

You are now in a safe position to update your system fully and reboot. This will take you to AlmaLinux 8.10, which is 100% more stable and won't result in your system into an unrecoverable crash loop.

```
sudo dnf update -y && sudo dnf upgrade -y

sudo yum update -y && sudo yum upgrade -y

sudo reboot now
```

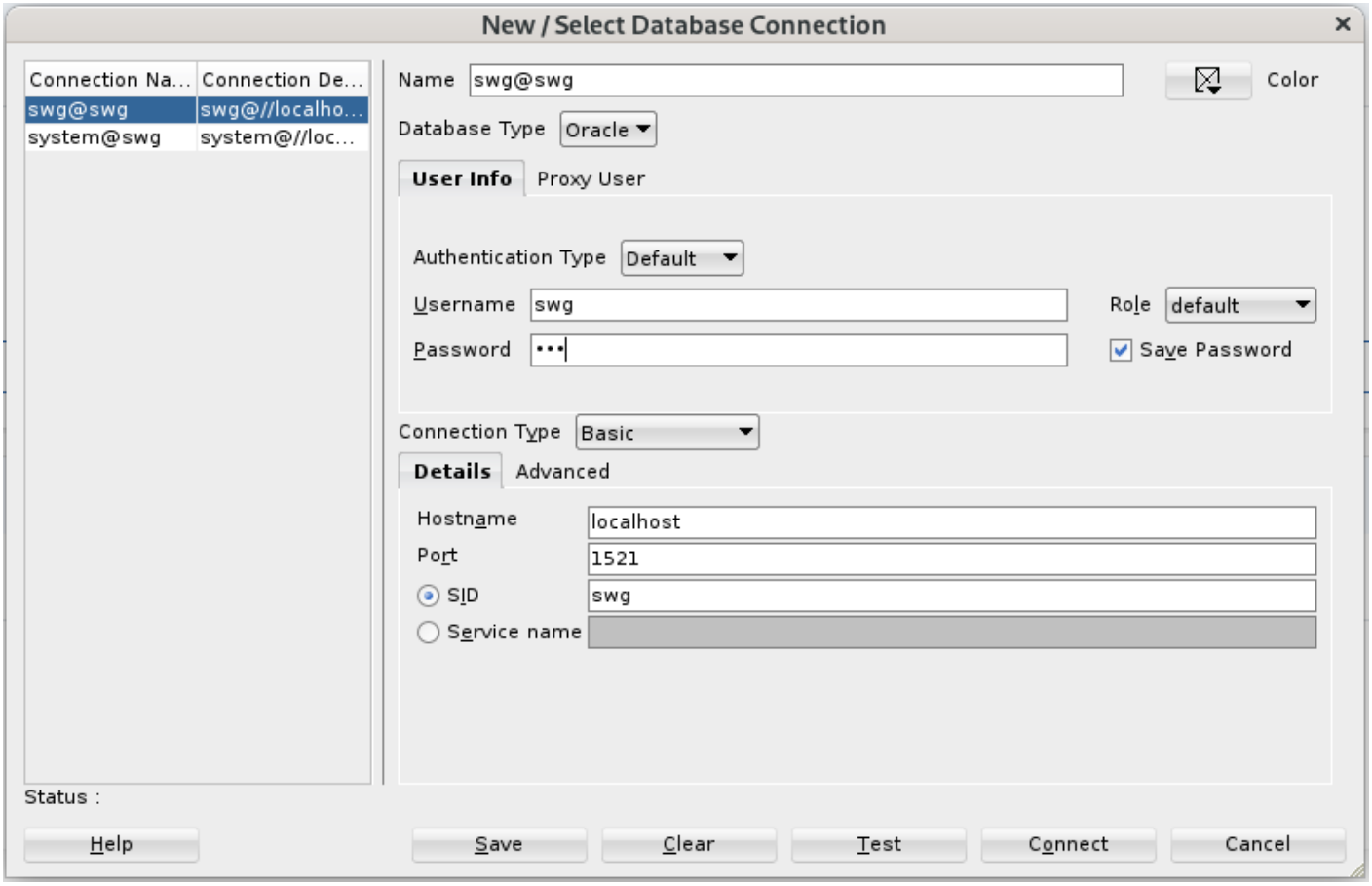
Your system will reboot and this may take a few minutes as it runs through an update process going from AlmaLinux 8.6 to AlmaLinux 8.10. Once it's done. Log back into your machine and open up the terminal.

Setting Up the Oracle Database

For this step, we'll set up the Oracle Database. I'll attach screenshots so you can see what's going on. The SWG Prepare Script should have created the Oracle user for you but now we'll need to actually set it up so you can view the database. Enter in the following command to start the SQL Developer application, which will open up a GUI for you to easily modify the database.

```
/opt/sqldeveloper/sqldeveloper.sh
```

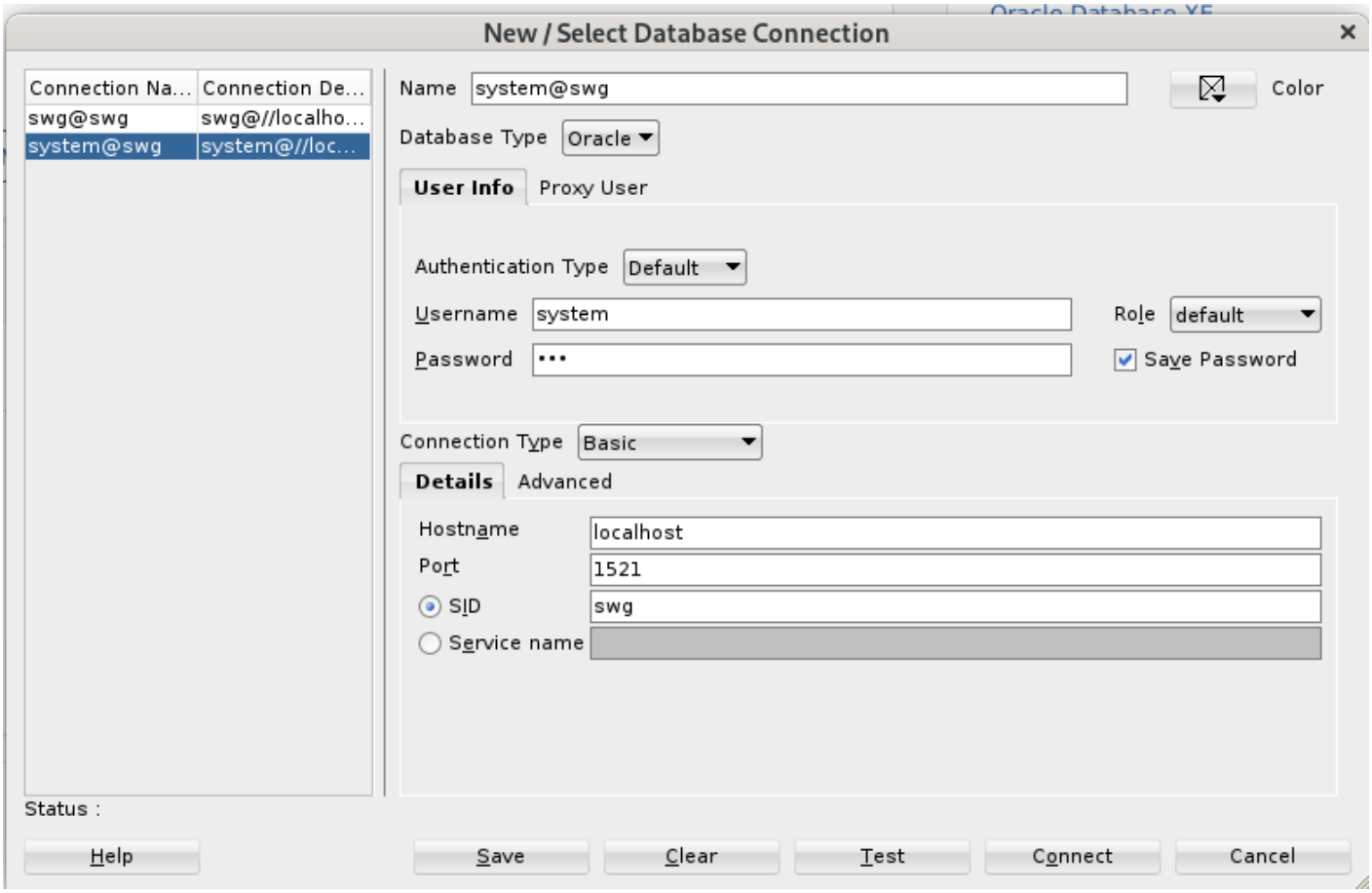
When the GUI loads, you'll not have any active databases showing up. Click the GREEN **+** icon at the top left corner and select **New Database Connection.**



You'll enter in the following information as shown in the screen shot

- **Name:** swg@swg
- **Username:** swg
- **Password:** swg (and save the password)
- **Hostname:** localhost
- **Port:** 1521
- **SID:** swg

Select **Save**. Then create another new database connection the same way.



You'll enter in the following information as shown in the screen shot

- **Name:** system@swg
- **Username:** system
- **Password:** swg (and save the password)
- **Hostname:** localhost
- **Port:** 1521
- **SID:** swg

That's it. **Save** the database connection. It won't connect at this point because you haven't started up the Database. Don't worry about that for now.

> Database Lock

Sometimes the database will become locked. If you see an error like this, then it's a very simple fix which you can resolve with a few commands. Here is the process if that does occur. Otherwise, just ignore this section.

```
sudo -i -u oracle

sqlplus sys as sysdba
```

This will log you in as the oracle user to the database. You may need to enter in your root password as it uses **sudo**. Then when you're logged in, you may need to also enter in the database password, which is **swgevolve**.

Now, you'll be in the SQL prompt. Enter in the following commands, one by one.

```
ALTER USER swg ACCOUNT UNLOCK;

ALTER USER swg IDENTIFIED BY swg;

EXIT;
```

Final Steps

Now that we have the database portion sorted out. The system is up to date. We've run the SWG Prepare Script as far as it can go... We're ready to finish the installation.

Let's run the final commands to get everything running. You should be in the proper directory which will be the **swg-main** directory. Here is where all your **ant** commands will be run.

We need to quickly stash some changes that were made so we can reinstall via the **ant swg** command below.

```
cd /home/swg/swg-main/exe

git stash
```

Now we can continue. Let's first start up the database listener.

```
sudo -i -u oracle

sqlplus / as sysdba

startup

exit

lsnrctl start

exit
```

Once we restart the database connection and listeners we'll have to wait about 30 seconds. After that time we can start our **ant swg** process again (the first time was from the SWG Prepare Script), now we'll finish it.

```
cd /home/swg/swg-main


ant swg
```

We need to make a quick adjustment to how the server searches for the Java application. Here is how we can fix that (which should be done AFTER the **ant swg** command finishes.

```
cd /home/swg/swg-main/exe/linux/


nano servercommon.cfg
```

This will open an editor to the **servercommon.cfg** file. We'll want to add two lines under the **[TaskManager]** group.

```
environmentVariable=PATH+=/usr/lib/jvm/zulu-11-x86/bin:./
environmentVariable=LD_LIBRARY_PATH+=/usr/lib/jvm/zulu-11-x86/lib:/usr/lib/jvm/zulu-11-x86/lib/server:./
```

Save your file and that's it, you're now ready to start your server! Skip to "Starting Your SWG Server" section below to start.

(Optional Steps)

This will run through the entire install process for the game server, including the database. If this has any issues with the database, you can easily fix them by running the following command, although, **don't run it if you don't have any issues as it'll clear your database**.

```
ant create_database
```

If there are no other issues, then you're likely all setup and ready to go. **If for any reason you need to clean up the code and/or recompile everything, then here are the commands to do that.**

```
ant clean


ant compile
```

These two commands are already part of the **ant swg** command above, so you only need to run those if you are intentionally cleaning and recompiling everything or clearing the database. Compilation takes about 15 minutes to run...

Open Up Firewall Ports

If you have a firewall running, then you'll need to open up the ports. Here are the commands to do that below:

```
# Open each port 44451-44453, 44462-44464 for TCP and UDP
sudo firewall-cmd --add-port=44451/tcp --permanent
sudo firewall-cmd --add-port=44451/udp --permanent
sudo firewall-cmd --add-port=44452/tcp --permanent
sudo firewall-cmd --add-port=44452/udp --permanent
sudo firewall-cmd --add-port=44453/tcp --permanent
sudo firewall-cmd --add-port=44453/udp --permanent
sudo firewall-cmd --add-port=44462/tcp --permanent
sudo firewall-cmd --add-port=44462/udp --permanent
sudo firewall-cmd --add-port=44463/tcp --permanent
sudo firewall-cmd --add-port=44463/udp --permanent
sudo firewall-cmd --add-port=44464/tcp --permanent
sudo firewall-cmd --add-port=44464/udp --permanent

# Reload the firewall
sudo firewall-cmd --reload
```

Port Forwarding

You'll likely want to connect to your server remotely, or rather, have others connect to it, so you'll need to set up your port forwarding rules. Here are the ports that will need to be forwarded for both TCP and UDP.

```
44451-44453, 44462-44464
```

Public IP

You'll also need to determine your public IP address. Once you've got that you'll forward your Public IP address to your Server's IP address through the port forwarding rules. Then you'll tell your players to update their client's configuration file, the **login.cfg** and put your public IP address as the login server address.

Finally, you'll need to tell your server what the public IP address is so that your **cluster** will know about it. You'll use the same SQL Developer application you used a few steps previously.

```
/opt/sqldeveloper/sqldeveloper.sh
```

Once the application opens. Open up the **swg** connection on the left panel. Then open up the **tables.** Search for **CLUSTER_LIST**. Open that and select **DATA** from the tabs in the center part of

the screen. Find the **ADDRESS** column. Double click it and enter in the public IP address here. Once you're done, press ENTER, then find the button called **COMMIT CHANGES**. Press that. Now the table will have the updated public IP address.

Starting Your SWG Server

The first thing you'll need to do to start the server is to start the database listener. **Only do this part if you had to restart the machine, if you are following this guide then we already ran this part, so you won't have to do it again.** This may not be done yet and will almost certainly need to be done when you restart the server as you'll need to do occasionally. This part is super easy. Enter in the following commands into the terminal. Once you're done. Wait about a minute for the database process to finish. You may need to enter in your root password when you do this.

```
sudo -i -u oracle

sqlplus / as sysdba

startup

exit

lsnrctl start

exit
```

After the database is ready, you can actually **start the server.** Navigate to the **swg-main** directory. Then run the **ant** command to start the server. Keep in mind the **&** symbol at the end will allow you to run terminal commands, like stopping the server, etc.

```
cd /home/swg/swg-main

ant start &
```

Starting the server will take about a minute as it loads up all the planets. If you see any errors during the startup process then you'll have to resolve them. The server will say **Cluster swg is ready for players** when everything works correctly and the server is ready for player connections.

If you need to stop the server, you can do that with the stop command.

```
ant stop
```

Starting System Chat (Game Mail, etc)

Finally, you'll want to enable the game's chat and email systems. You can open up a new tab in the terminal to run this command. Just leave it running.

```
cd /home/swg/swg-main/chat


./stationchat &
```

As a final note to running the server. You'll want to keep both terminal tabs open, the first that has **ant start &** running, and the second that has ./**stationchat &** running. If you close them then you will close the application. This is the most basic way to get your server running. Anything after this part is up to you to figure out, i.e., system services and other production/live ready server infrastructure.

Remember, any of the **ant** commands must be run from the **swg-main** directory which you can always get there by this command.

```
cd /home/swg/swg-main/
```

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