

Updating Scientific Linux 7 to Alma Linux

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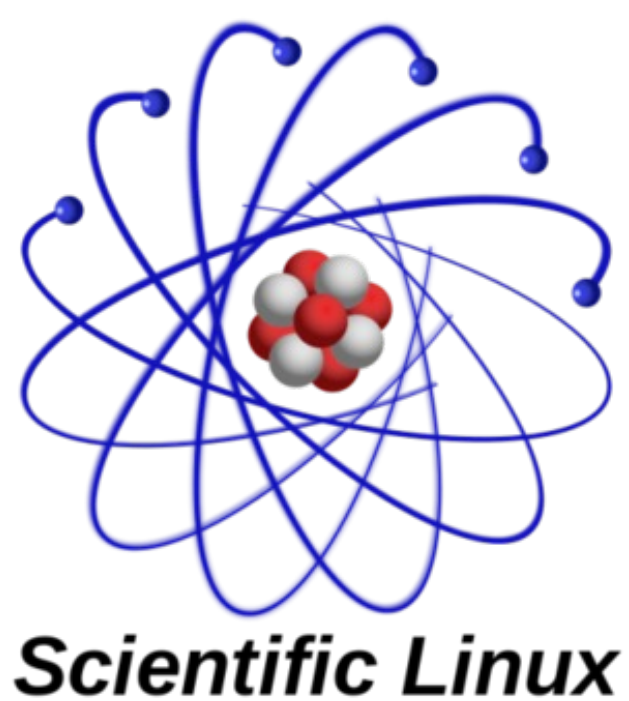
Bonnie King – Supervisor – FNAL

Introduction

This summer I worked with the Real-Time Processing Systems Department, in the SLAM group. They work on maintaining computing systems used for data acquisition in physics experiments. They also write the data acquisition software and take care of the server clusters. This summer I was tasked to help audit and upgrade the lab's systems from Scientific Linux 7 to Alma Linux, this included writing a script to find how many machines needs to be upgraded, keeping track of which systems get updated and helping with upgrades.

Scientific Linux 7 & Alma Linux

Scientific Linux was introduced in 2003 by Connie Sieh, it was created to get a standard x86 configuration that could allow for easier collaboration in the science community. After providing support to scientific research and exchange of ideas it came to an end on June 30,2024 after 20 years of service. With the end of life there was a need to replace this operating system with a supported Linux distribution. The distribution chosen to replace Scientific Linux is Alma Linux.



Scientific Linux



SQL Script for auditing the Scientific Linux 7 Machines.

SLAM maintains many of the machines here at lab. To keep track of them all there is a tool called OCSinventory. This runs nightly and can check to see what machine is on what version of Linux. To help with keeping track of updates, the team needs a couple of things:

- A script to list all the machines still on Scientific Linux 7
- Create a spread sheet that can help track all the machines upgrades.
- And get a list of machines that needs to be put into Tissue to be blocked.

The script for finding this information is a little over 20 lines of code. It will ask for an input to a machine you are looking for, if you are looking for a cluster of machines you can put the first two or three letters and the group will be printed. See figure 2.

```
#MySQL select statement that will find machines that user gave that still have scientific linux 7 as of 7-8-2024
sql = "SELECT name, oscomments FROM hardware WHERE name LIKE %s AND lastdate > '2024-7-08' ORDER BY oscomments;"
mycursor.execute(sql,('%' + user_input + '%',))
```

Fig.1 above: This is the SQL query used to obtain the machines still on Scientific Linux 7

Not only is this list helpful for the SLAM group but also the Computer Security group. Every week we generate a new list of all machines still using Scientific Linux. This will be sent to the Computer Security group to add to the Issue Tracking Database (Tissue). This database allows tracking machines and their compliance with the Computer Security polices as well as FBI(Fermi Blocking Implementation) and NCIS (Network Common Infrastructure). This can allow protection to any machines still using Scientific Linux in case of a vulnerability.

Upgrade Process

Updating machines itself is not too difficult, but to do the upgrade there are many steps that take place before hand. These steps are:

- Obtain MAC and IP address
- Create a configuration in puppet
- Create host in SLAM-dish
- Build iso
- Download iso and convert to an image

Once all these steps are done you can download the image you created onto a flash-drive which will now allow you to upgrade the machine. At boot, a process called kickstart will run. This allows for different options to be selected at install. The configuration is then completed by Puppet.

```
enter a machine name or the starting letters (or 0 to quit): fa
name          oscomments
-----
Scientific Linux release 7.9 (Nitrogen)
Scientific Linux release 7.9 (Nitrogen)
Scientific Linux release 7.9 (Nitrogen)
Scientific Linux release 7.9 (Nitrogen)
Scientific Linux release 7.9 (Nitrogen)
Scientific Linux release 7.9 (Nitrogen)
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Scientific Linux release 7.9 (Nitrogen)
Scientific Linux release 7.9 (Nitrogen)
Scientific Linux release 7.9 (Nitrogen)
Scientific Linux release 7.9 (Nitrogen)
```

Fig.2 above: this is what an output can look like when running the OCSinventory script with machines still running Linux 7

Acknowledgments

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