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Troubleshooting Guide

Advanced Malware Detection On-Premises Manager

v1.0

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1 Installation

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The Lastline Manager virtual machine (VM) is created the first time the Advanced Malware Detection On-Premises system reboots, right after the installation of the operating system (OS). The kickstart script responsible for driving the installation of the OS creates an additional installation script under /etc/init.d that is configured to run as a service on first boot via the **chkconfig** tool. The script creates the VM, installs the Lastline software and configures the Advanced Malware Detection On-Premises system to support the Lastline VM. The script removes itself from the services list after execution.

The installation script creates the VM using the **virt-install** command as follows:

```
virt-install --virt-type=kvm --name tmp_lastline --ram 49152
--vcpus=12 --os-variant=ubuntu14.04 --hvm --
network=bridge=virbr0,model=virtio --graphics vnc --disk
path=/data/
lastline.raw,size=4096,bus=ide,format=raw,cache=none,io=nati
ve --cdrom=/data/ISO/LL_ISO --wait=60 --noautoconsole
```

Installation overview

The installation process of the VM consist of 3 stages:

1. Creation of the VM using the **virt-install** tool.
2. Automated installation of the Lastline software using the same tool that created the VM (**virt-install**). This process requires no input from the user.
3. Upon reboot, the VM obtains an IP from the host system via DHCP.

Scripts

The installation of the VM involves 2 scripts:

- lastline-virt
- lastline-virt-install

The first script (**lastline-virt**) is configured to be executed as a service upon first boot. The main purpose of this script is to kick off the installation script and detach it from the execution shell. By detaching it from the shell, we make sure the OS does not kill the installation service since Linux enforces a time limit for starting services. Once the child script is detached, the parent removes itself from the list of services so it does not run again in the future. Then, it finished execution and exits with a success code to let the OS know everything went well, while the actual installation of the VM is still in progress running in the background.

The second script (**lastline-virt-install**) performs the actual creation/installation of the VM.

Installation steps

The lastline-virt-install script creates the VM, installs the Lastline Manager software, configures DHCP in the host system and updates the VM's configuration. It executes as follows:

1. The **lastline-virt-install** script runs the **virt-install** tool as a detached command (notice the parentheses and the '& disown' at the end) to create the VM and install the Lastline software in a single step as described below:

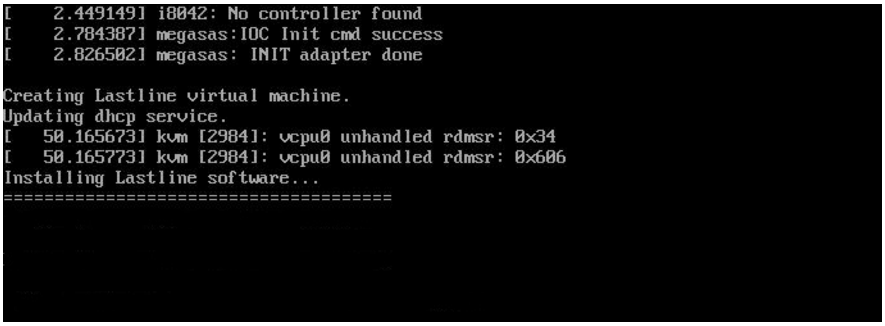
   ```
   (virt-install --virt-type=kvm --name tmp_lastline --ram
   49152 --vcpus=12 --os-variant=ubuntu14.04 --hvm --
   network=bridge=virbr0,model=virtio --graphics vnc --disk
   path=/data/
   lastline.raw,size=4096,bus=ide,format=raw,cache=none,io=nati
   ve --cdrom=/data/ISO/branded_lastline-manager-725~6-6547-
   39c4616.iso --wait=60 --noautoconsole >> ${LOGFILE} 2>&1 &
   disown)
   ```

   The installation process will take approximately 20 minutes to complete. No output is generated since all activity is happening inside the guest VM.

   NOTE: We use the IDE driver for the virtual disk because the guest system cannot detect disks running with the high performance virtual driver (virtio). Apparently, Ubuntu's 14.04 installation scripts cannot see drives that are named **vda** as required by the virtio driver. Only **sda** and **hda** are supported by the scripts. We will update the VM's configuration to use the right driver (virtio) once the installation is complete.
2. Once the VM has been created, the script will update the DHCP configuration in the host system and assign the new VM the default IP of 10.0.0.10.
3. The script will wait for the VM to become online. It will ping the default IP (10.0.0.10) until the Lastline Manager responds. If the manager does not respond in 30 minutes, the installation will fail and exit.
4. Once the installation is complete, the VM is powered off to update the configuration of the disk driver from IDE to virtio.
5. The VM is configured to start on boot.
6. The Advanced Malware Detection On-Premises system is rebooted to complete installation.

Troubleshooting a stalled installation

The Advanced Malware Detection On-Premises Manager installation should take approximately 30 minutes. If the installation is taking much longer than 30 minutes and the = ticks have passed the “unhandled” point (as shown below) it is likely the installation has stalled.



```
[    2.449149] i8042: No controller found
[    2.784387] megasas:IOC Init cmd success
[    2.826502] megasas: INIT adapter done

Creating Lastline virtual machine.
Updating dhcp service.
[   50.165673] kvm [2984]: vcpu0 unhandled rdmsr: 0x34
[   50.165773] kvm [2984]: vcpu0 unhandled rdmsr: 0x606
Installing Lastline software...
======================================
```

This is known to be caused by not having the Advanced Malware Detection On-Premises Manager ports wired up and active. Specifically, the E port (2nd interface/ bottom port) is not wired to an active switch or Advanced Malware Detection On-Premises Engine port that is ON. Please wire the E port as described in the *Quick Start Guide* that was included with your Advanced Malware Detection On-Premises server. Turn on the Advanced Malware Detection On-Premises Engine or switch so that the ports are ON and active and re-initiate the Advanced Malware Detection On-Premises Manager installation.

2 Registration and Configuration

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The **amd_register** script launches the Installation Wizard GUI. Errors by the wizard will be logged to: /root/amd-wiz.log.

Networking, proxy support, and token registrations are configured by the **amd_setup** script. Actions and errors are logged to: /root/amd-configuration.log

Engine image update: The last step of registration and configuration is launching the **llama-update-images.py** script on the Lastline VM. Output from this script is logged to a nohup.out file in home directory of the Lastline VM. This output is also captured in: /root/amd-update-images.log

3 Packages

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As of Advanced Malware Detection On-Premises v1.0, the following packages are installed for shim operation:

```
[root@amd-manager:/usr/local/amd/shim/bin]# rpm -qa | grep AMD
AMD-rsyslog-client-1.0.0-287.7fe7f18.noarch
AMD-dhcp-server-config-1.0.0-287.7fe7f18.noarch
AMD-config-1.0.0-287.7fe7f18.noarch
AMD-harden-1.0.0-287.7fe7f18.noarch
AMD-monitor-1.0.0-287.7fe7f18.noarch
AMD-network-config-1.0.0-287.7fe7f18.noarch
AMD-shim-1.0.0-290.91db56e.noarch
AMD-yum-client-1.0.0-287.7fe7f18.noarch
```

Note

The above packages display a version number of 1.0.0. Your displayed version number may differ from the version number shown above.

4 Processes

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Critical processes include **nginx**, **uwsgi**, **mem-cached**.

The shim control scripts are located in /usr/local/amd/shim/bin/

Process Logs: /var/log/amd/

- shim.log
- uwsgi-daemon.log
- nginx/access.log
- nginx/error.log

5 Workflows

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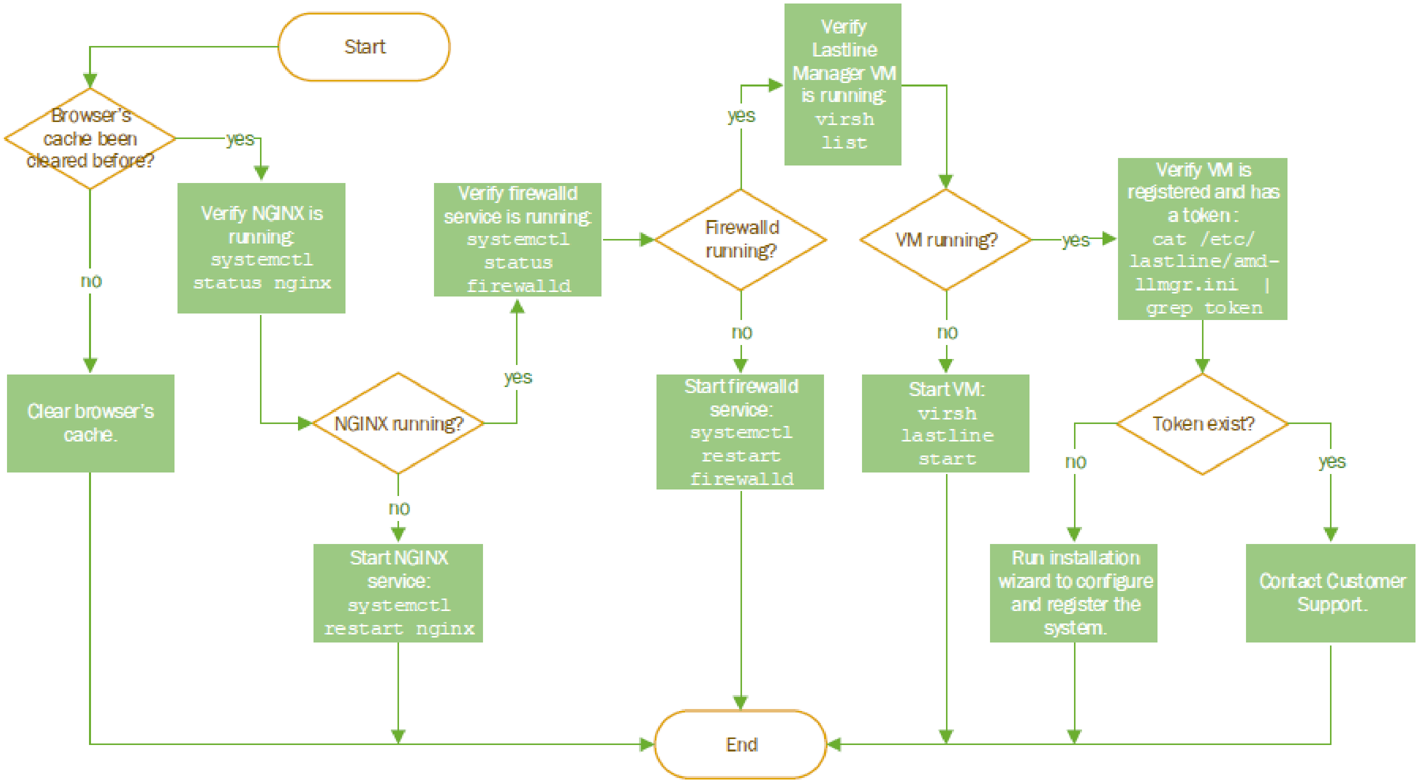
Review the workflow diagrams on the following pages to troubleshoot two common issues found in Advanced Malware Detection On-Premises.

- *Unable to reach the login page*, page 12
- *Unable to send files*, page 13

Unable to reach the login page

If you cannot reach the Advanced Malware Detection On-Premises login page, review the following workflow.

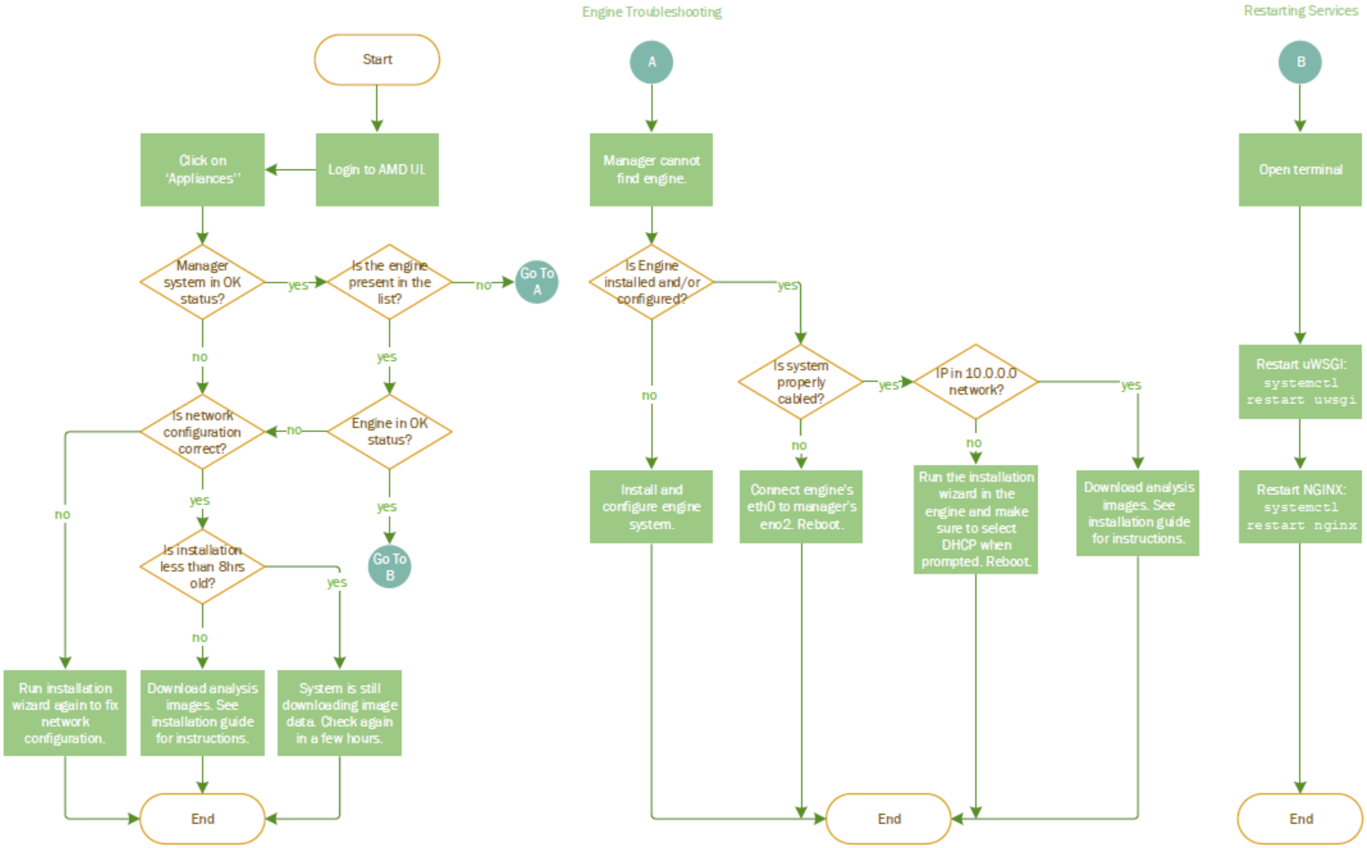
Cannot Reach AMD's login page


Start
Browser's cache been cleared before?
yes
no
Clear browser's cache.
Verify NGINX is running: systemctl status nginx
NGINX running?
yes
no
Start NGINX service: systemctl restart nginx
Verify firewalld service is running: systemctl status firewalld
Firewalld running?
yes
no
Start firewalld service: systemctl restart firewalld
Verify Lastline Manager VM is running: virsh list
VM running?
yes
no
Start VM: virsh lastline start
Verify VM is registered and has a token: cat /etc/lastline/amd-llmgr.ini | grep token
Token exist?
no
yes
Run installation wizard to configure and register the system.
Contact Customer Support.
End

Unable to send files

If Advanced Malware Detection On-Premises is not accepting files, or the API is unreachable, review the following workflow.

AMD Not Accepting files / API Unreachable


Engine Troubleshooting
Restarting Services
Start
Login to AMD UI.
Click on 'Appliances'
Manager system in OK status?
yes
Is the engine present in the list?
no
Go To A
no
yes
Is network configuration correct?
no
Engine in OK status?
no
yes
yes
Is installation less than 8hrs old?
yes
Go To B
no
Run installation wizard again to fix network configuration.
Download analysis images. See installation guide for instructions.
System is still downloading image data. Check again in a few hours.
End
A
Manager cannot find engine.
Is Engine installed and/or configured?
yes
no
Is system properly cabled?
yes
IP in 10.0.0.0 network?
yes
no
no
Install and configure engine system.
Connect engine's eth0 to manager's eno2. Reboot.
Run the installation wizard in the engine and make sure to select DHCP when prompted. Reboot.
Download analysis images. See installation guide for instructions.
End
B
Open terminal
Restart uWSGI:
Restart NGINX:
End

```
systemctl restart uwsgi
```

```
systemctl restart nginx
```