

Step by Step Installation of CentOS Linux 7 and Active Circle

Active Circle Storage System

Abstract

This document describes the step-by-step procedures for installing and configuring the CentOS Linux 7 operating system and the Active Circle software on a server in an Active Circle environment.

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Installing the Operating System

The procedures in this document describe the different stages of installation and setup of the CentOS Linux 7 operation system required to prepare for an installation of the Active Circle software.



Important

During the installation, you need to perform all the steps described in the installation and configuration procedures of this document.



Tip

For the installation, the server must have internet access.



Note

The CentOS minimal ISO CentOS-7-x86_64-Minimal-1708.iso is available from the CentOS web site or directly with this [link](#).

Procedure for installing CentOS 7

Load the installation ISO or DVD. The welcome screen will be displayed.

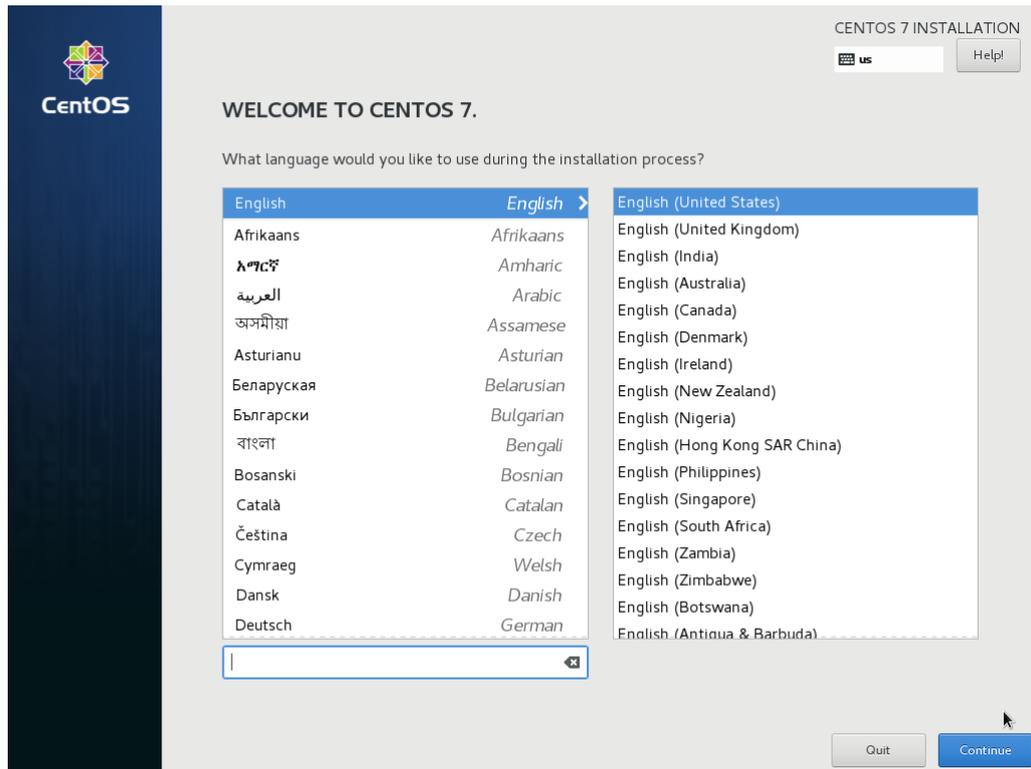
Figure 1. Installation – Welcome Menu



If this is the first time you use the installation ISO or DVD, you can test it before proceeding with the installation.

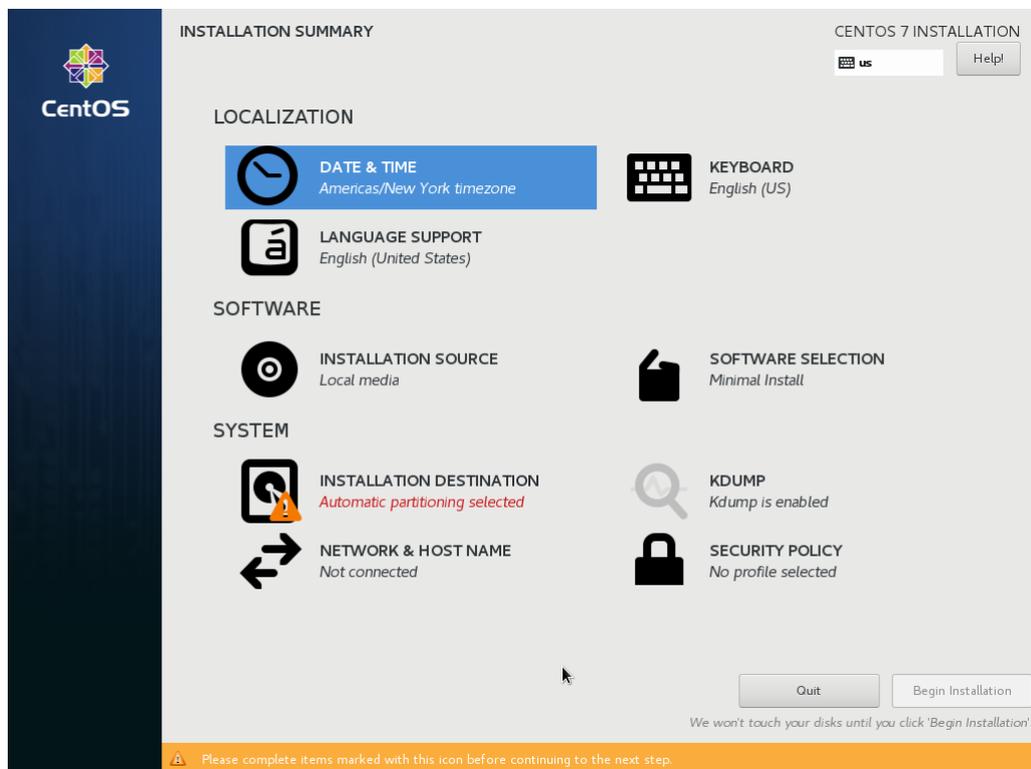
Otherwise, select **Install CentOS 7**.

Figure 2. Installation – Start

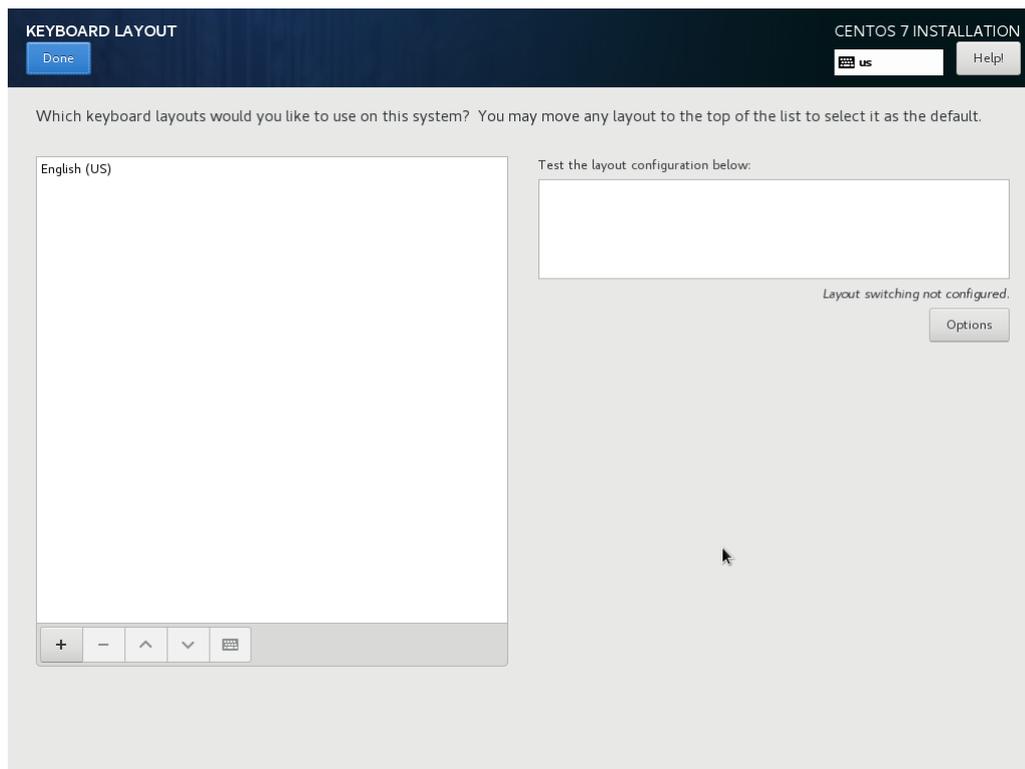


Keep default language: **English > English (United States)**. Click on Continue.

Figure 3. Installation – Installation Summary



Click on KEYBOARD to continue.

Figure 4. Installation – Keyboard

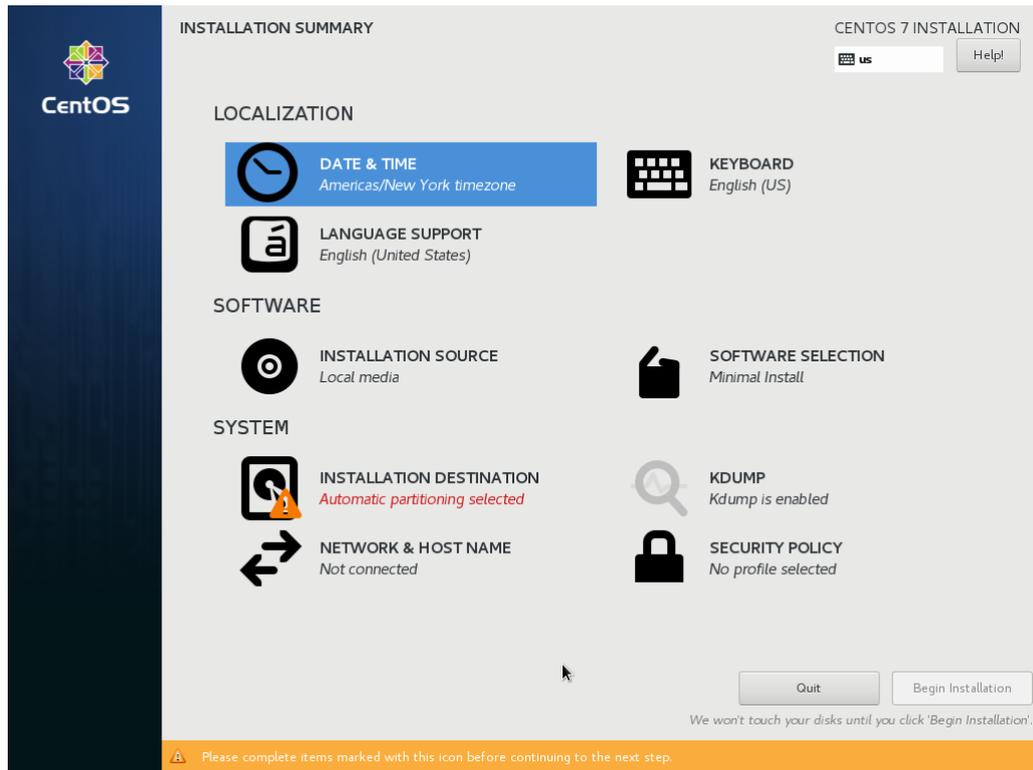
If needed, click on **+** to add a new keyboard.

Select and **Add** the keyboard you will be using. For example, select **French** for France.

For use your new keyboard, put it on the top of the list.

Click on **Done** to come back to the installation summary.

Figure 5. Installation – Default Value



Keep default value for:

- | | |
|---------------------|-------------------------|
| Language Support | English (United States) |
| Installation Source | Local media |
| Software Selection | Minimal Install |
| Security Policy | No profile selected |

Click on INSTALLATION DESTINATION to continue.

Figure 6. Installation – Installation Destination

INSTALLATION DESTINATION CENTOS 7 INSTALLATION

[Done](#) [Help!](#)

Device Selection
Select the device(s) you'd like to install to. They will be left untouched until you click on the main menu's "Begin Installation" button.

Local Standard Disks

20 GIB

ATA VBOX HARDDISK
sda / 992.5 KiB free

Disks left unselected here will not be touched.

Specialized & Network Disks

[Add a disk...](#)

Disks left unselected here will not be touched.

Other Storage Options

Partitioning
 Automatically configure partitioning. I will configure partitioning.
 I would like to make additional space available.

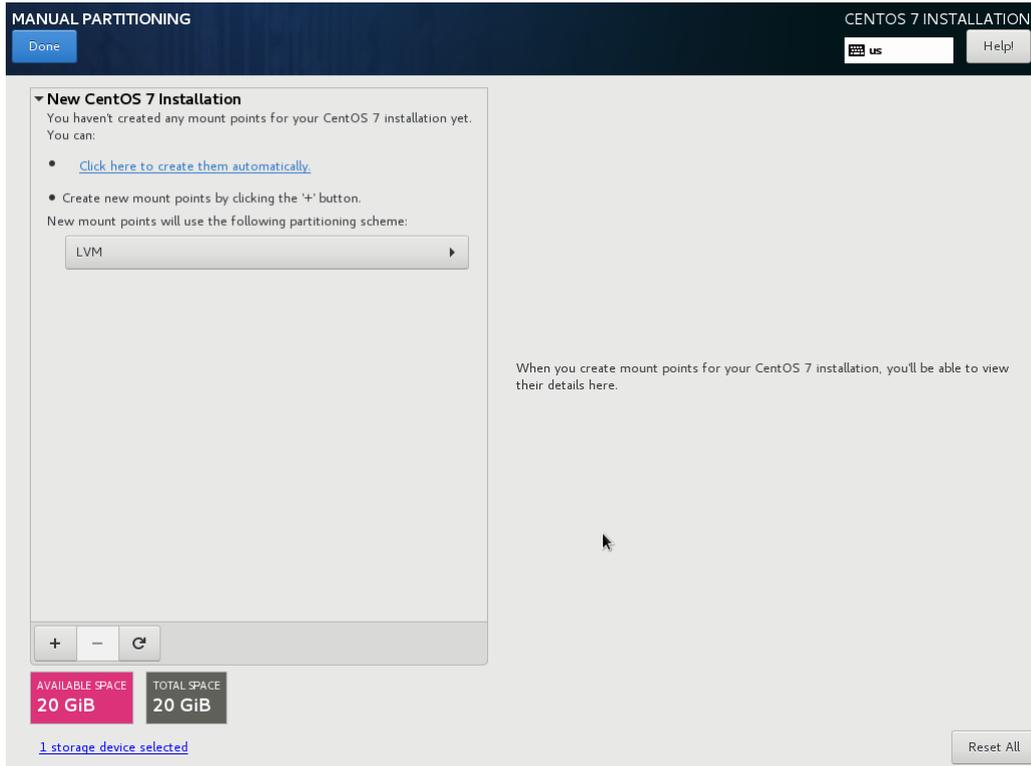
Encryption
 Encrypt my data. You'll set a passphrase next.

[Full disk summary and boot loader...](#) 1 disk selected; 20 GiB capacity; 992.5 KiB free [Refresh...](#)

The type and size of the partitions depend on your environment. Please consult with an Active Circle systems engineer to validate the configuration for the partitions. Only the system partitions will be configured at this stage of the installation (partitions specific to Active Circle will be created later).

Select your device, click on radio button I will configure partitioning. and then on Done.

Figure 7. Installation – Manual Partitioning



Important

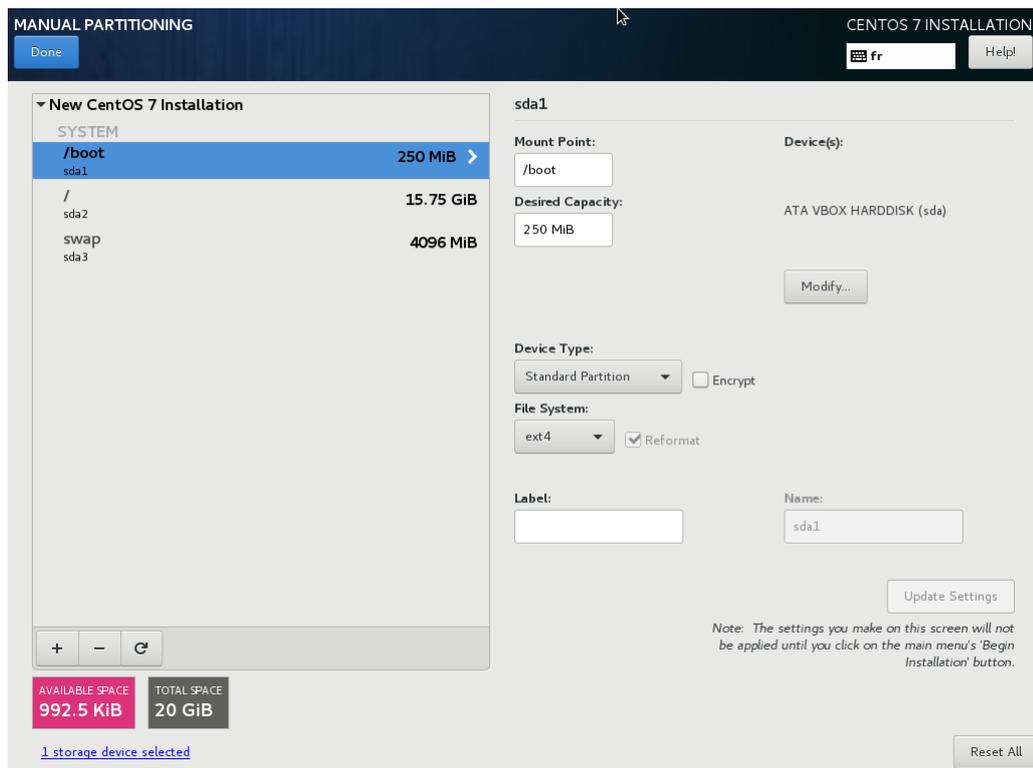
LVM volumes is not supported with Active Circle, choose "Standard Partition".

Table 1. Suggested system partitions

Mount Point	Size	Type
/boot	250 MB	ext2
/	Minimum 60 GB	ext4
(None)	SWAP 4GB	swap

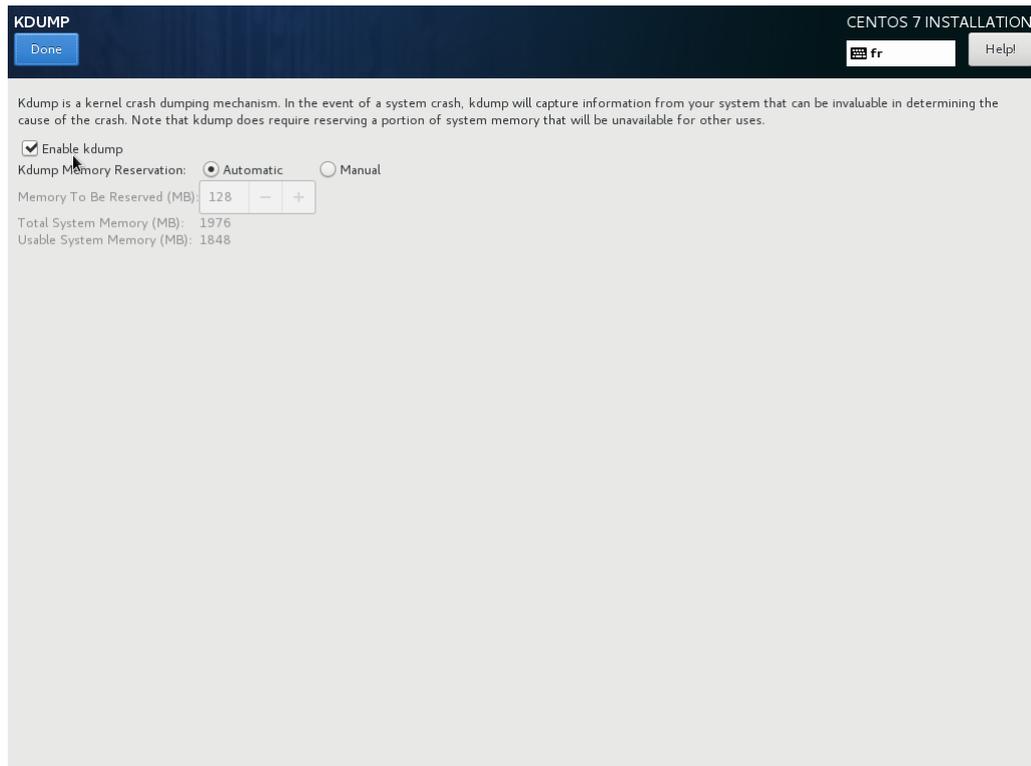
Create partitions by clicking on the **+** button.

Figure 8. Installation – Partitioning after manual configuration



When you have finished creating partitions, click on **Done** to continue. You may receive warnings that the disks or partitions will be reformatted and be prompted before writing changes to disk. Accept changes to continue.

Click on **KDUMP** to continue.

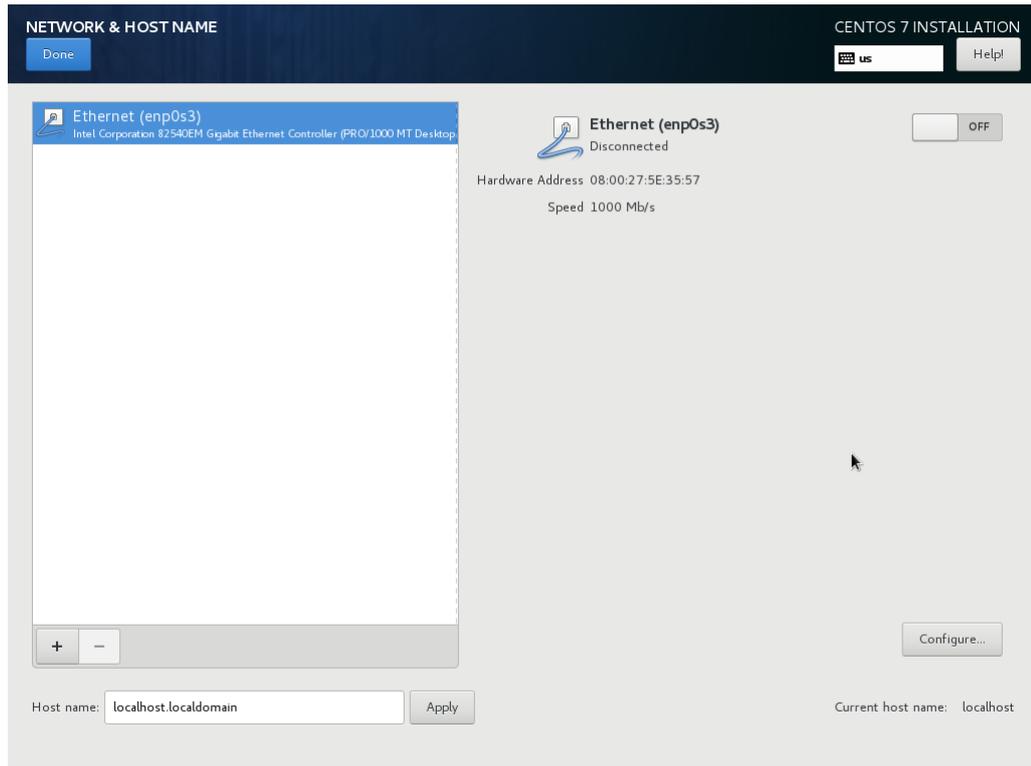
Figure 9. Installation – kdump

Click on **Enable kdump** checkbox to disabled it.

Then click on **Done** to come back to the installation summary.

Click on **NETWORK & HOSTNAME** to continue.

Figure 10. Installation – Network & Hostname



Click on **OFF** switch button to activate network.

Click on **Configure...** to configure network:

- IPv4 Setting Configure static address
- IPv6 Settings Configure method to "Ignore"

Change the host name and click on **Apply**.

 **Note**

If Active Circle is installed on a single server, please set the hostname to "AML" for Active Media Library.

When you have finish click on **Done** to come back to the installation summary.

Click on **DATE & TIME** to continue.

Figure 11. Installation – Date & Time



Select the time zone of the installation location, using the map or the list **Region & City**.

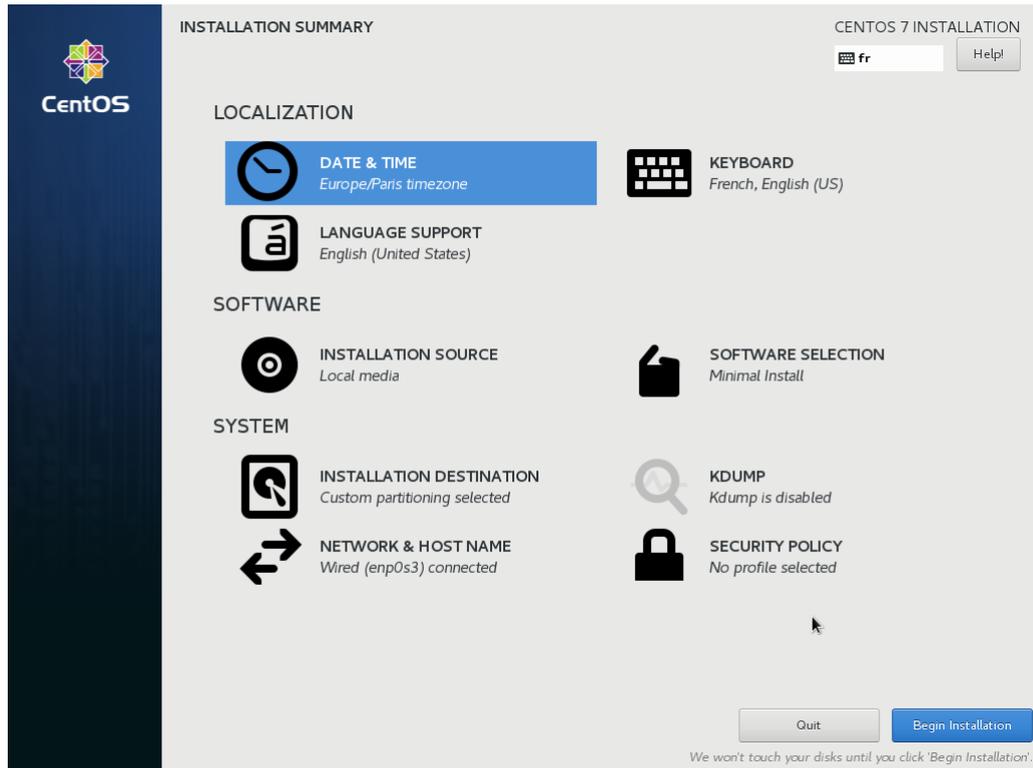


Important

The NTP is required for Active Circle. Please check that **Network Time** is enabled.

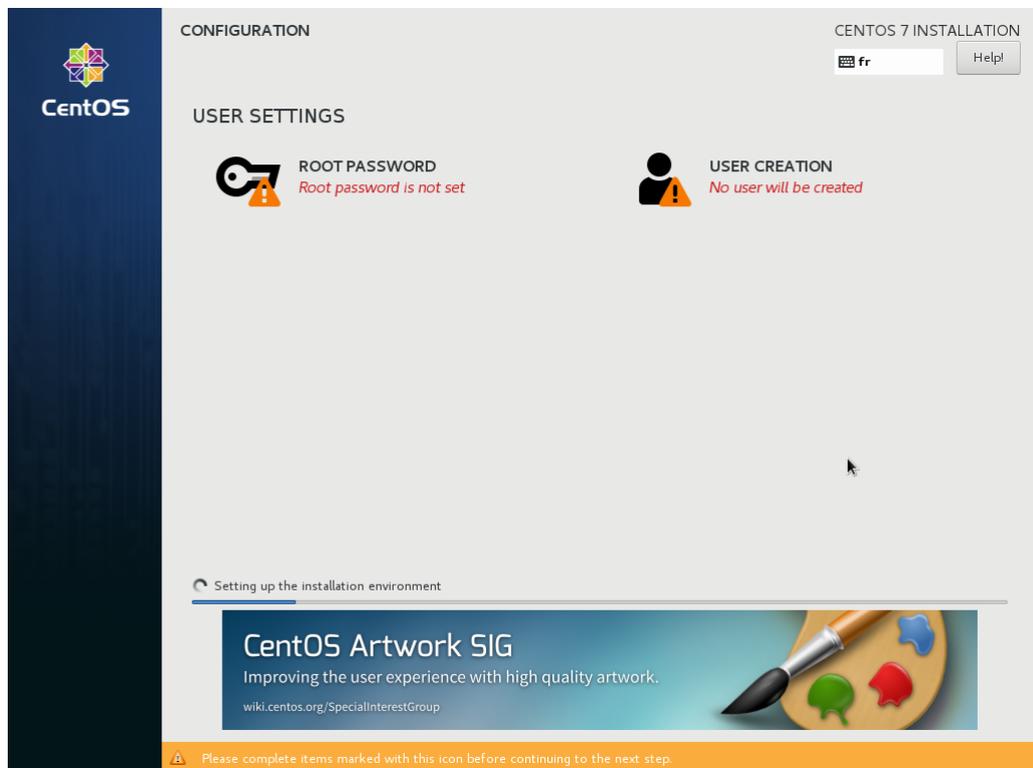
When you have finish click on **Done** to come back to the installation summary.

Figure 12. Installation – Installation Summary



Your server is now ready to install. Click on **Begin Installation** to continue.

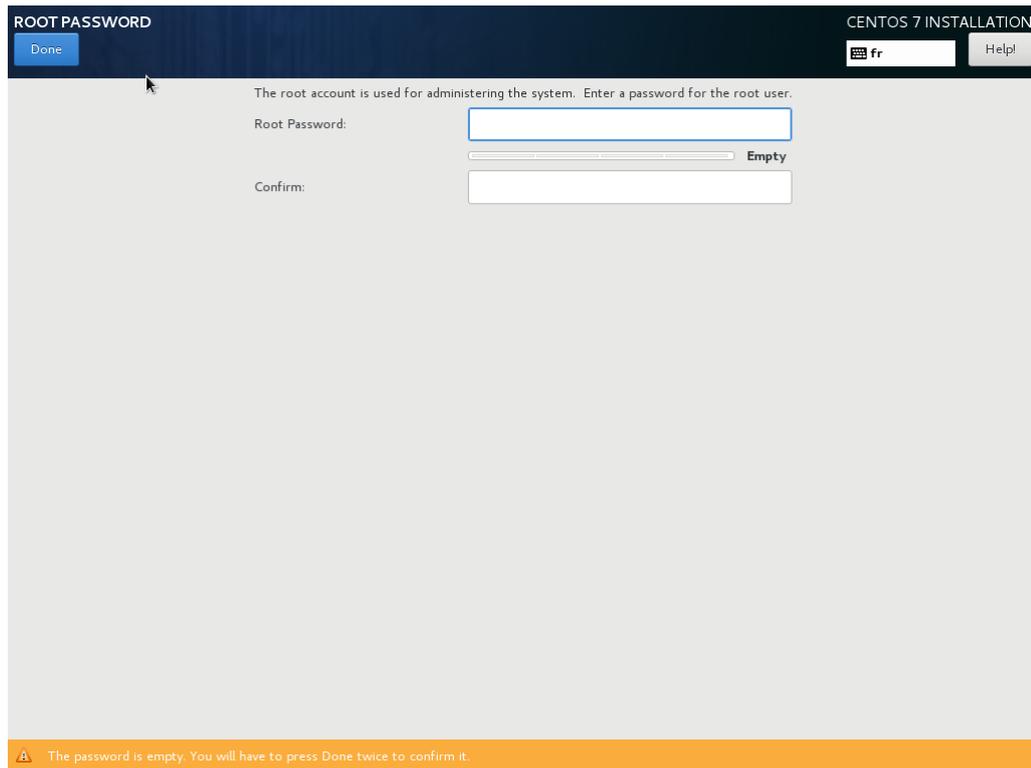
Figure 13. Installation Progress



The copying of files and installation will begin, and the progress is shown on the screen

Click on **ROOT PASSWORD**

Figure 14. Installation – Root Password



ROOT PASSWORD

CENTOS 7 INSTALLATION

Done

fr Help!

The root account is used for administering the system. Enter a password for the root user.

Root Password:

Empty

Confirm:

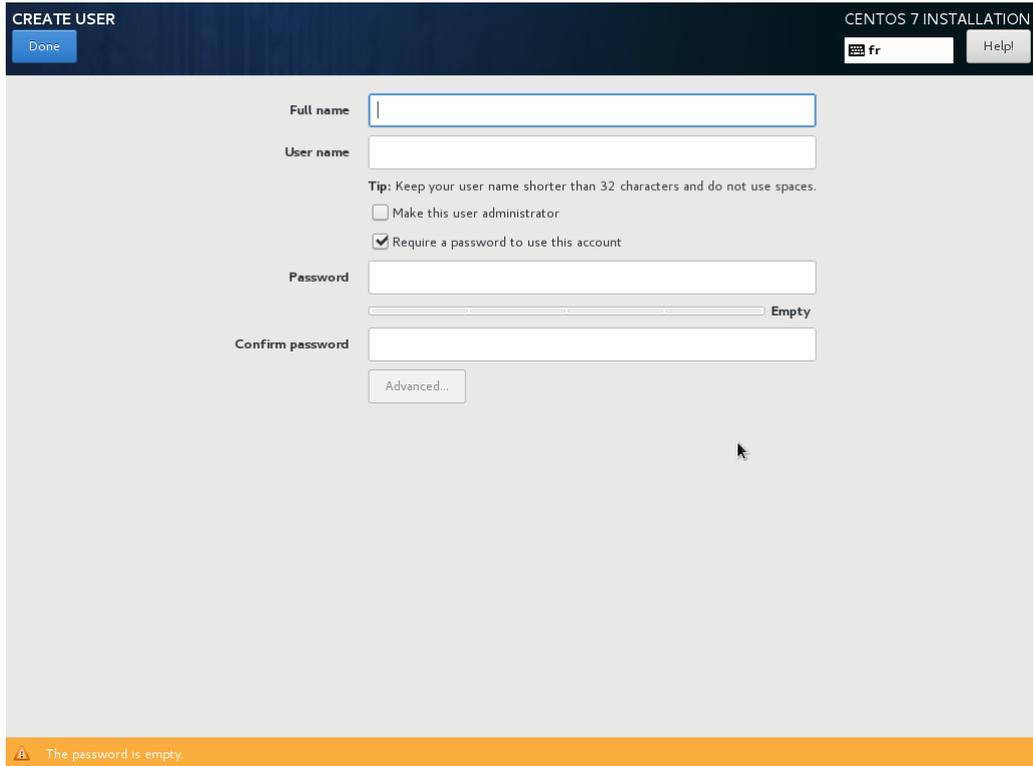
The password is empty. You will have to press Done twice to confirm it.

Specify the password for the root account by typing a password in the **Root Password** and **Confirm** fields. Use "activec" as default unless you want to use a specific password.

Click twice on **Done** to come back to the installation progress.

Click on **USER CREATION** to continue.

Figure 15. Installation – User Creation



CREATE USER

CENTOS 7 INSTALLATION

fr Help!

Full name

User name

Tip: Keep your user name shorter than 32 characters and do not use spaces.

Make this user administrator

Require a password to use this account

Password

Empty

Confirm password

Advanced...

 The password is empty.

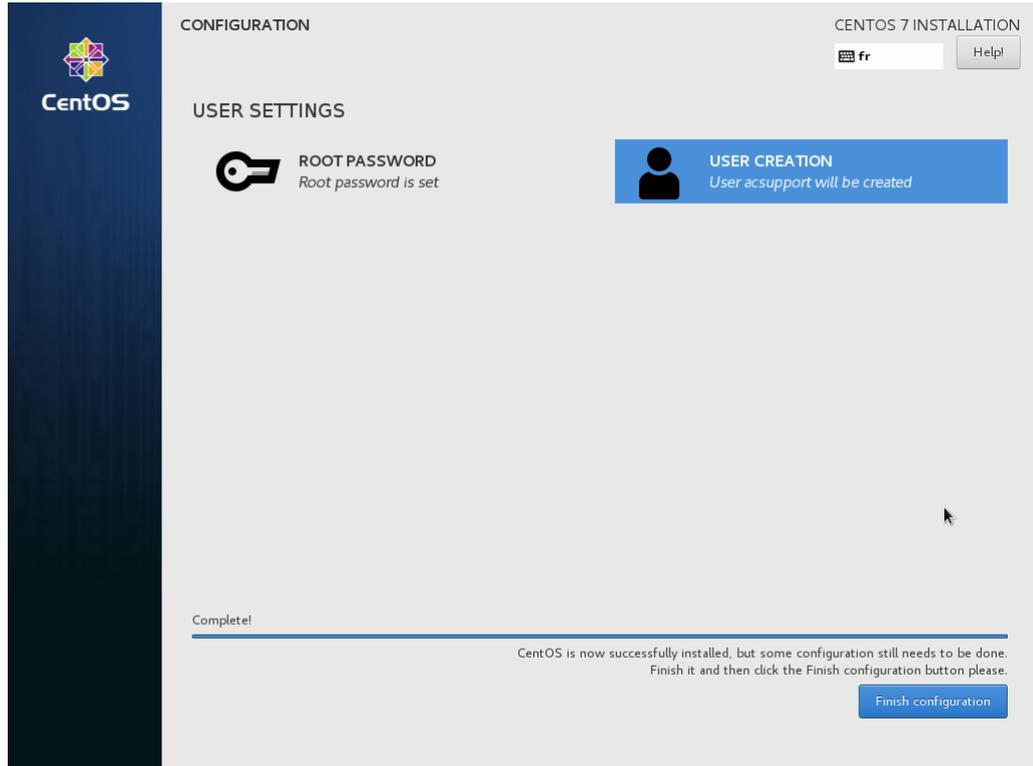
Create a user called "acsupport", which will be used for remote maintenance:

- **Full name** acsupport
- **User name** acsupport
- **Password** acsupport

Keep default value for the different options.

Click twice on **Done** to come back to the installation progress.

Figure 16. Installation – End



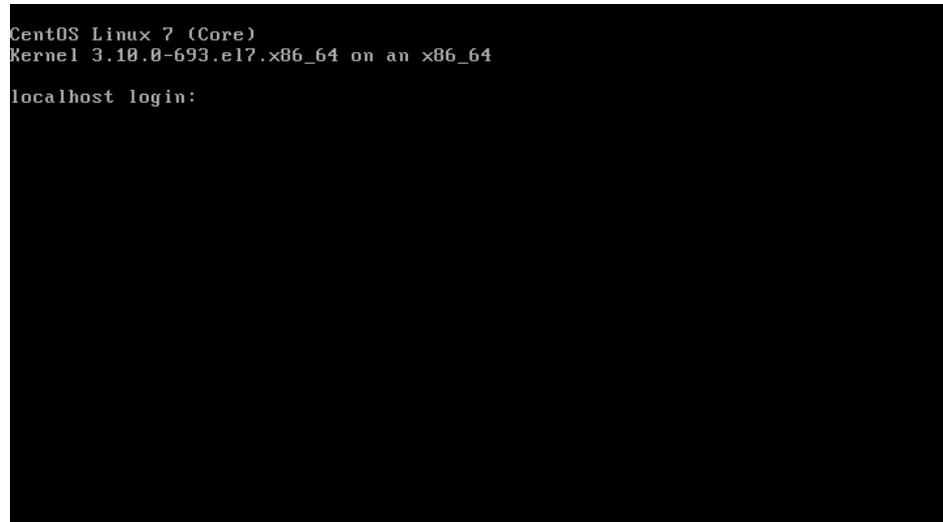
The server need to make some configuration before restart for finish installation process.

Click on **Finish configuration** to continue and then **Reboot**.

Procedure for configuring the base

After reboot, the welcome screen will be displayed.

Figure 17. Bash Login



Log in with the root default credentials (root/activec) or with your own credentials.

Install the "FTP" command with the following:

```
yum install ftp -y
```

Download the postinstallation script from the Active Circle FTP server. It is located in the following directory:

```
/downloads/Tools/CentOS-7/postinstall_CentOS-7.sh
```

```
ftp ftp.active-circle.com
```

```
cd /downloads/Tools/CentOS-7
```

```
get postinstall_CentOS-7.sh
```

Make executable the postinstallation script:

```
chmod +x postinstall_CentOS-7.sh
```

Launch the script with the following:

```
./postinstall_CentOS-7.sh
```

The script will install automatically the prerequisites for Active Circle and reboot at the end.



Note

For advanced administrator only: you can choose to not install graphical interface by launching script with "--nogui" option:

```
./postinstall_CentOS-7.sh --nogui
```

Next, skip to the ["Configuring File System"](#) section.



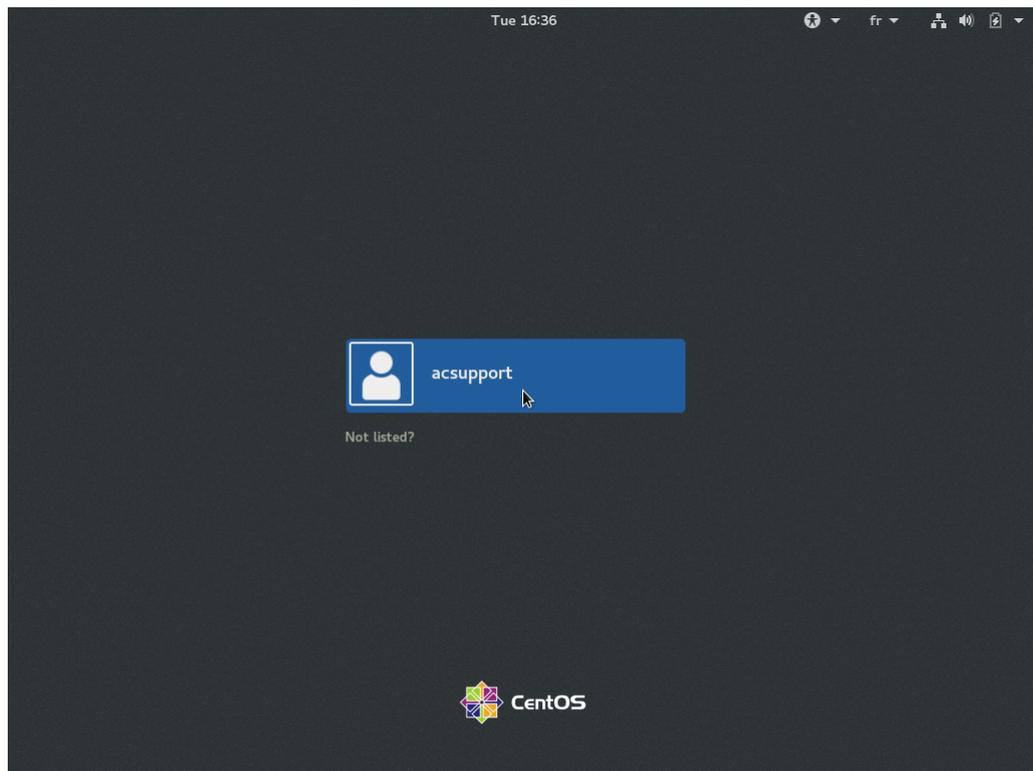
Tip

During the install, three scripts are added to facilitate operation:

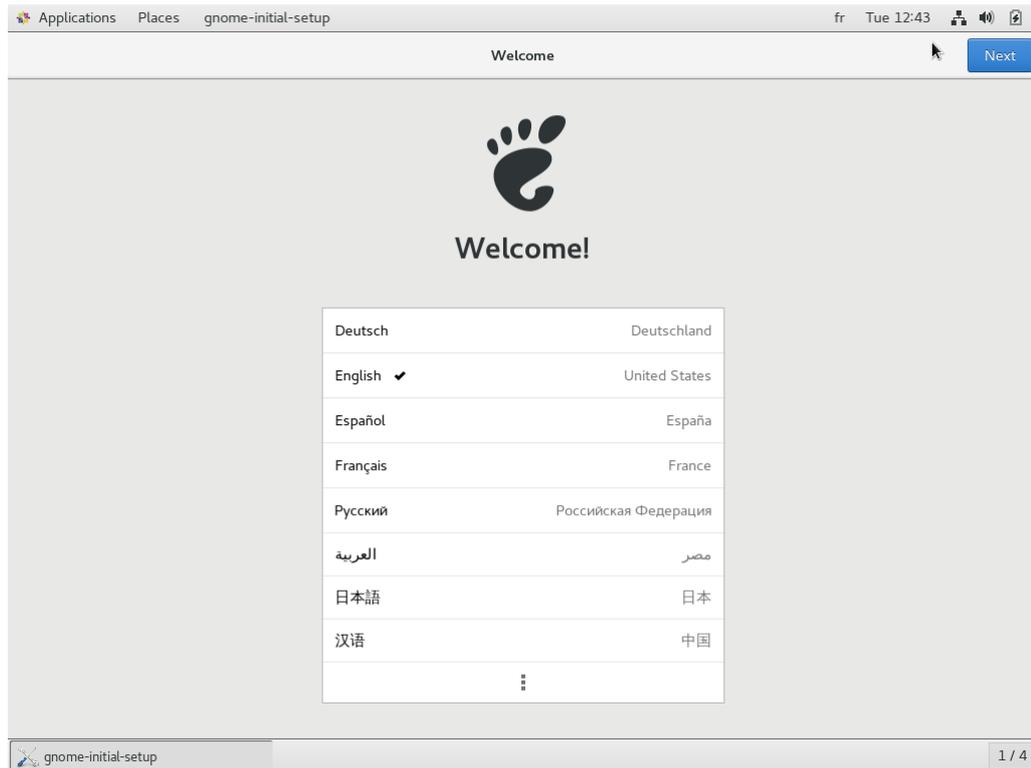
- **aclogvi** to vi /activecircle/cell/data/Log/lastcell.txt
- **aclogtail** to tail -F /activecircle/cell/data/Log/lastcell.txt
- **accheckup** to run the Active Circle checkup script

After reboot, the gui login screen will be displayed.

Figure 18. GUI Login



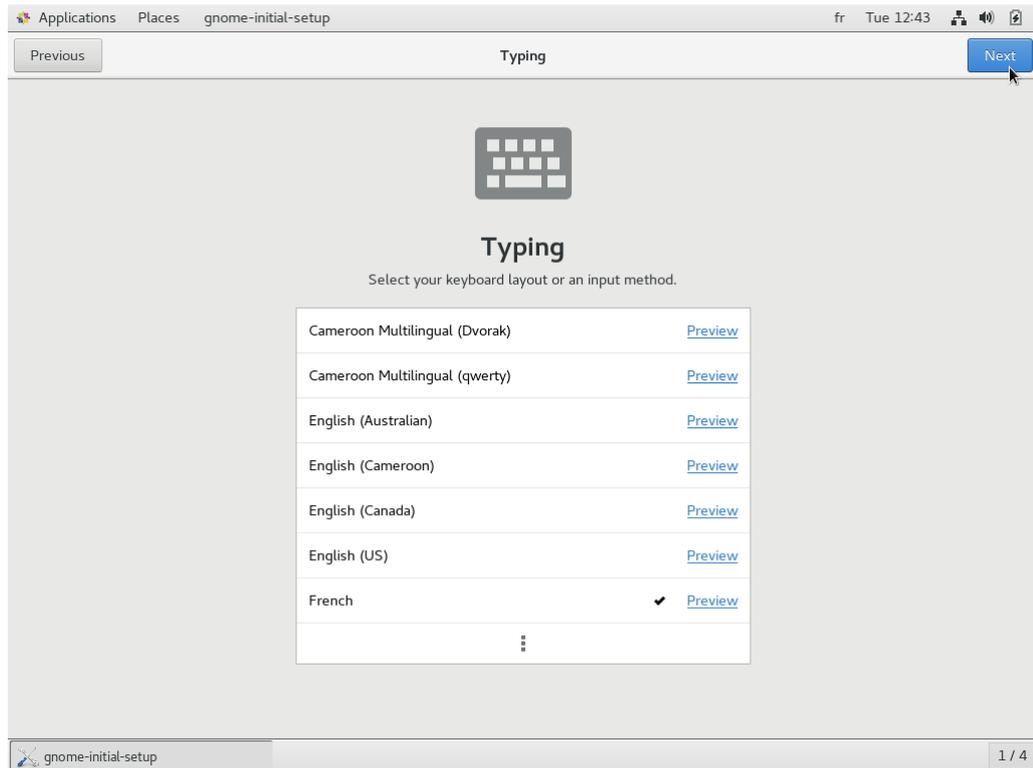
Log in with the acsupport default credentials (acsupport/acsupport) or with your own credentials.

Figure 19. Gnome Initial Setup - Default Language

Keep **English - United States** as the default language.

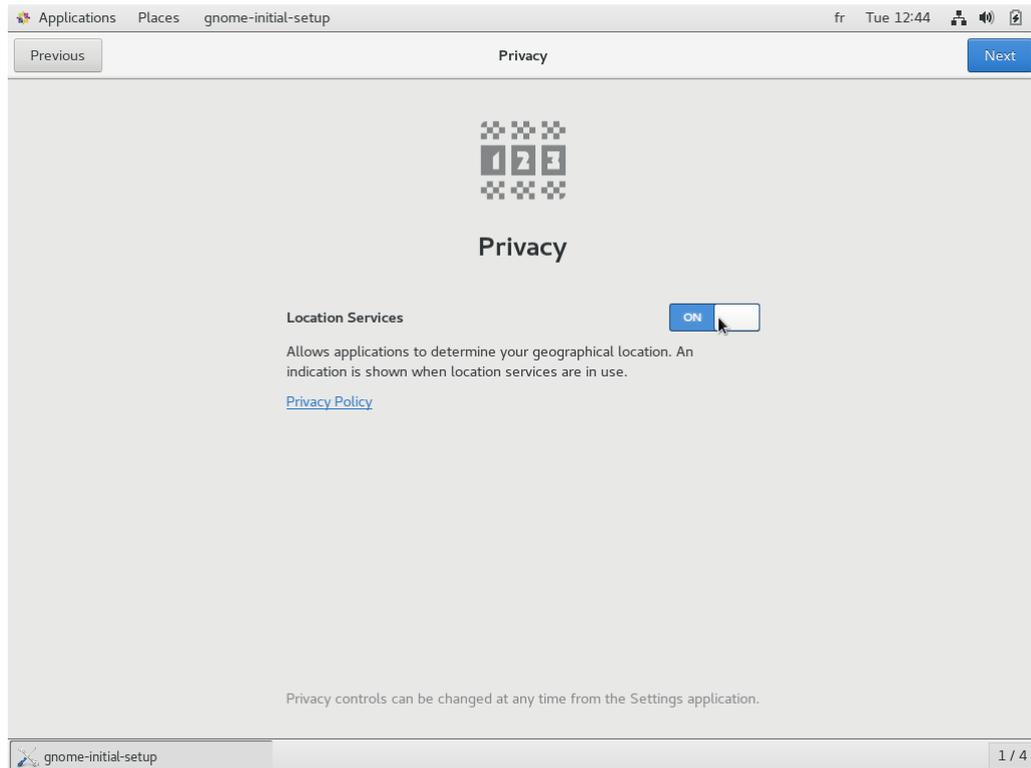
Click on **Next** to continue.

Figure 20. Gnome Initial Setup - Default Keyboard



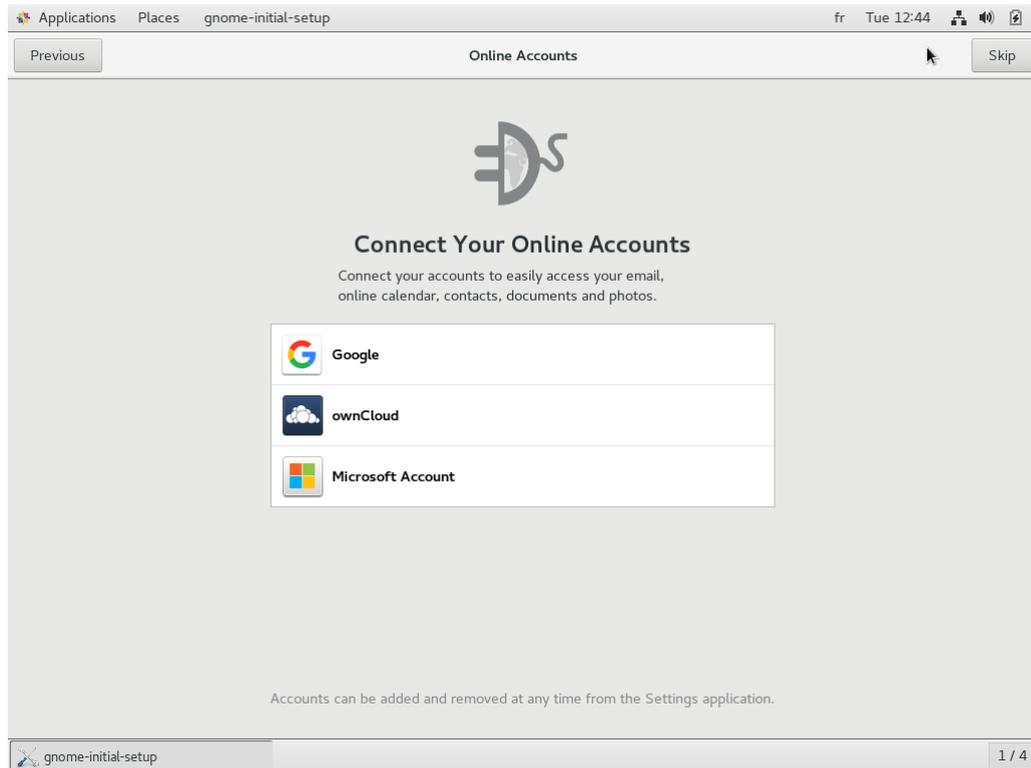
If needed adapt the default keyboard.

Click on **Next** to continue.

Figure 21. Gnome Initial Setup - Privacy

Click on **ON** Location Services to desactivated it.

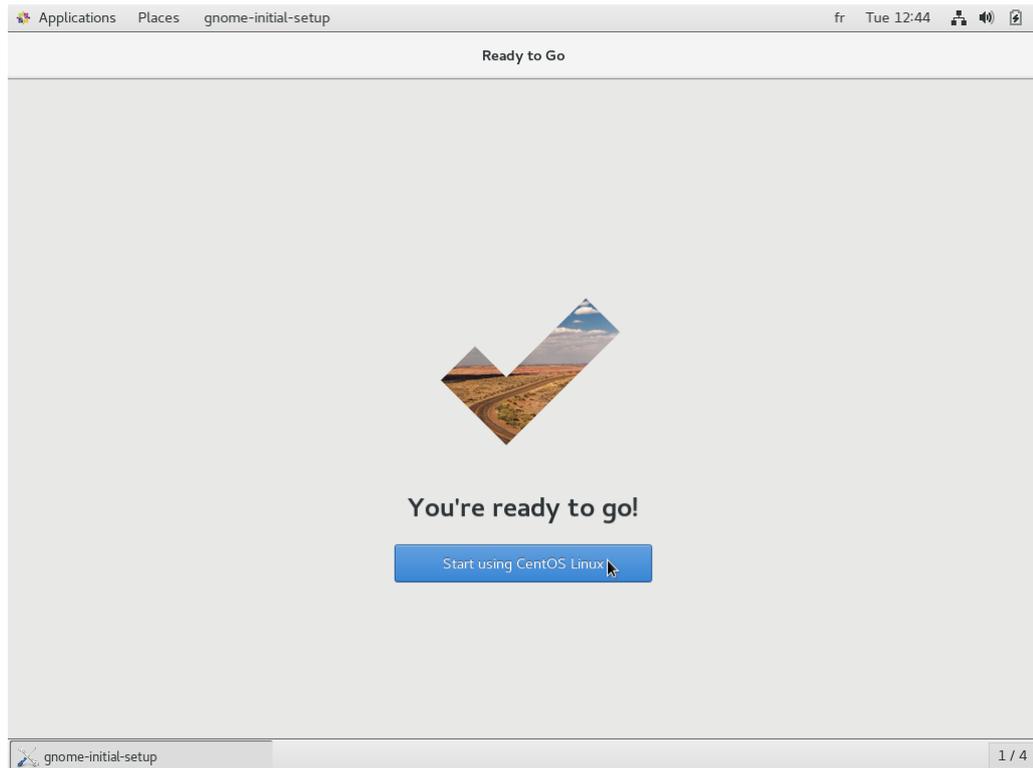
Then, click on **Next** to continue.

Figure 22. Gnome Initial Setup - Online Accounts

Don't connect your online accounts.

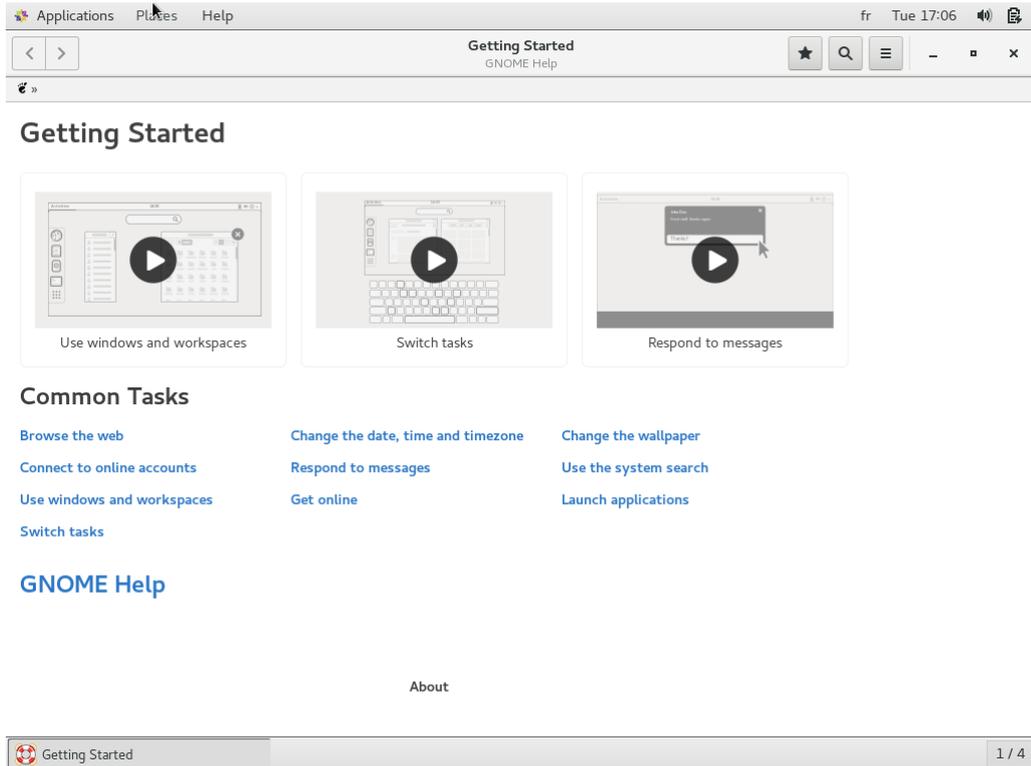
Click on **Skip** to continue.

Figure 23. Gnome Initial Setup - Ready to Go



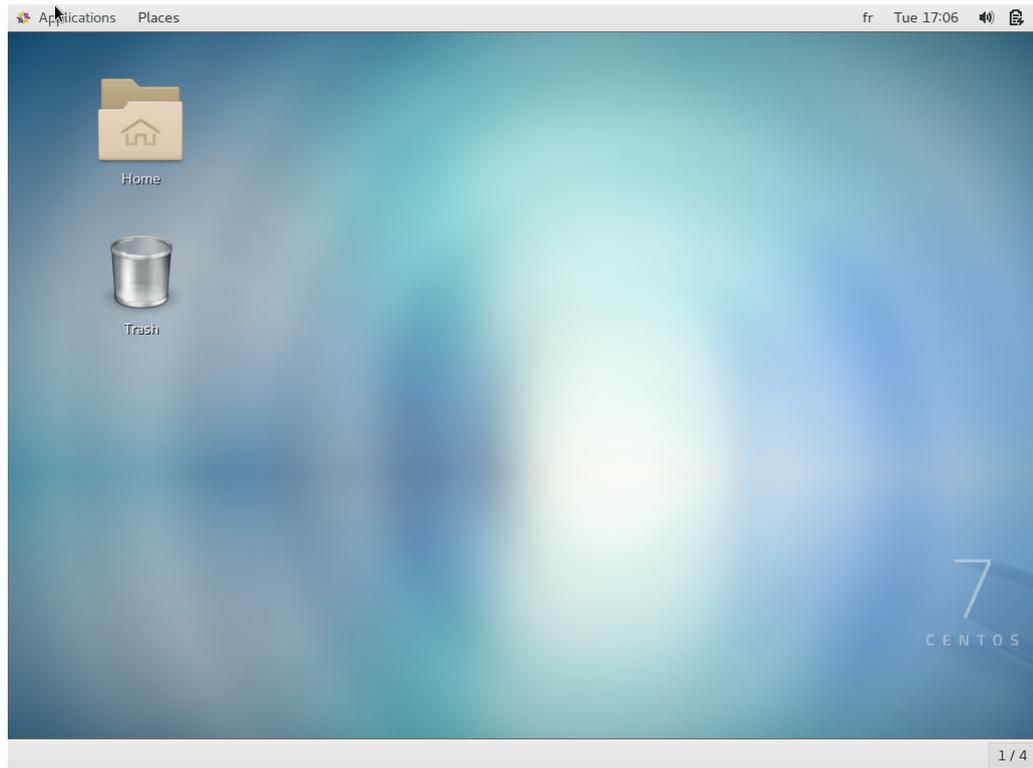
Click on Start using CentOS Linux to continue.

Figure 24. Getting Started



Click on **X** to close the tutorial and continue.

Figure 25. Home Page



Your OS is now ready for configuring Active Circle partitions.

Configuring File System

During installation, the system partitions needed for the operating system were created. Now, an additional set of partitions need to be created and configured specifically for use by the Active Circle storage system. This chapter provides an overview of the partition types, explains how to format them and describes how to mount file systems on the partitions.



Tip

Please contact an Active Circle systems engineer to validate the configuration of the Active Circle partitions.

You must be root to configure file system. Open a terminal and log in as root with this command: `su -`

Partitions used by Active Circle

This section describes the file systems used by an Active Circle node (server).

/activecircle

This file system corresponds to the partition containing the binaries, configuration files and metadata that belongs to the Active Circle system.



Important

In Active Media Library (AML) configurations, you need to create an additional partition for storing the metadata of the second node (since both nodes will be running on the same server).

Name of partition: `/bckactivecircle`

This partition should be configured the same way as the `/activecircle` partition (size, formatting, mounting and fstab entry).

/cache

This file system corresponds to disk space used as a *buffer* in the Active Circle system. All the data stored in the archiving system pass through this temporary storage area.



Note

- The cache should be large enough to hold 1.5 times the total volume of files read and written in the short term (1 to 7 days).
- If very large files are being stored (hundreds of gigabytes), the cache must hold at least 1,5 times the size of the largest file that will be deposited.
- In a configuration with tape archiving without disk storage, the cache will hold all the data waiting to be archived.

Data Partitions for use in Active Circle Disk Pools

The size of the data partitions should be **maximum 16 TB**. Each partition needs to be defined by a **LUN** (logical unit number) and have a **label**. Each data partition should correspond to a disk volume.

The file system type should be **ext4** for optimal performance. Processing of commands like **fsck** is significantly faster on this file system compared to earlier types.

Local Partition. This is the standard case where the file system is available through a single server. A local partition is connected to a single Active Circle node and it must be accessible by the operating system on that server. The file system must be defined in the file `/etc/fstab` to ensure constant availability of the mount point with the prefix `/data` (this name is a suggestion).

Shared Partition. This will be the case where the file system is accessible by multiple servers in a SAN architecture. **The file system should NOT be declared in the file `/etc/fstab`.** Mounting and unmounting of shared partitions are managed solely by the `activecircle` service. The hardware architecture needs to be configured to give access to the LUNs from multiple nodes in an environment where the file system will be shared by the servers. This requires:

- A network with a **SAN** architecture
- A **zoning** configuration allowing shared access.

Multipath I/O environments are supported.



Important

Each shared partition must correspond to a LUN representing a single disk volume. This means that each partition must correspond to a separate device (or a device mapping in a multipath environment). The shared disk volumes must not be divided into further partitions using the operating system, as multiple partitions per volume is not allowed for shared storage configurations in Active Circle.



Note

The size of the different partitions should be determined with the help of an Active Circle system engineer, according to the expected usage.

Examples of Active Circle partition sizes:

<code>/activecircle</code>	500 GB for a configuration of 100,000,000 files.
<code>/cache</code>	2 TB to more than 6 TB , depending on the usage.
Partitions for disk pools	Minimum 1 TB — maximum 16 TB. Use LUNs of 4 TB as standard partition size.

Formatting Disk Volumes

This section describes the command options for formatting the three different types of partitions used by the Active Circle system.

/activecircle:

```
mkfs -t ext4 -i 10240 -L /activecircle /dev/sdv
```

where 'v' is the device letter of the disk volume (letters w-z used in the following commands).

/cache:

```
mkfs -t ext4 -i 10240 -L /cache /dev/sdw
```

File systems corresponding to the partitions to be attached to disk pools:

```
mkfs -t ext4 -j -i 5120000 -L /data1 /dev/sdx
```

```
mkfs -t ext4 -j -i 5120000 -L /data2 /dev/sdy
```

```
mkfs -t ext4 -j -i 5120000 -L /data3 /dev/sdz
```

(add more as needed)

File System Checking

To avoid performance and availability issues due to frequent file system checks on several partitions at the same time, you need to define parameters for when **fsck** should run full checks on shared partitions. Run the **tune2fs** command with the **-c** and **-i** options:

```
Partition 1:      tune2fs -c 200 -i 200d /device/path1
Partition 2:      tune2fs -c 201 -i 201d /device/path2
Partition 3:      tune2fs -c 203 -i 203d /device/path3
Partition nn:     tune2fs -c 2nn -i 2nnd /device/path_nn
```

Explanation of the options:

- c Specifies the number of mounts between each file system check by **fsck**
- i Specifies the number of days between each file system check by **fsck**

As shown in the command examples, the values should be staggered for each partition, to avoid several partitions being checked at the same time. Run the **tune2fs** command for as many partitions as you need, while increasing the values by one for each partition. The settings specified above will make sure that an automatic forced full check on a partition will only be performed if there are at least 200 mounts or 200 days since the last check.

Mounting File Systems

When the file systems have been formatted, you need to make them available through mount points for each partition. Mounting should be performed automatically when the system is started. This section describes the necessary procedures.



Important

Data partitions used for shared disk pools should *NOT* be mounted by the operating system during server startup. Mounting of shared data partitions is handled automatically by Active Circle. The procedures in this section do not apply to file systems on shared data partitions.

Create the mount points (unless they already exist):

```
mkdir /activecircle
mkdir /cache
mkdir /data1
mkdir /data2
mkdir /dataN
```

Add the labels to the file `/etc/fstab`:

```
LABEL=/activecircle /activecircle ext4 noatime 1 2
LABEL=/cache /cache ext4 noatime 1 2
LABEL=/data1 /data1 ext4 defaults 1 2
LABEL=/data2 /data2 ext4 defaults 1 2
```

Mount all the partitions by typing the command: `mount -a`

Verify that the mounting was successful by typing the command: `mount`. All the partitions should be listed.

This completes the installation and configuration of the operating system.

Installing the Active Circle software

This section provides all the information required for installing the Active Circle storage system.

The installation package can be downloaded from the [Active Circle FTP server](#). Contact your sales representative for more information.

Before proceeding with the installation of the Active Circle software, please verify the prerequisites described in the *Active Circle Installation Guide*.



Tip

You must be root to install the Active Circle software. Open a terminal and log in as root with this command: `su -`

Installation File Parameters

The installation distribution package is a binary file using this naming convention:

`ac-<version>.bin`

where "`<version>`" is the Active Circle distribution version.



Important

Verify that the installation file can be executed. Run this command to make it executable:

```
chmod +x ac-4.6.1.bin
```

Installing the First Node

Setting up an Active Circle configuration (also called a 'circle') involves installing two or more Active Circle nodes. The first node is installed independently, while the second node needs to be created through the first node and then be installed on the other server using a reference obtained at the first node.

The installation of the first node allows you to define a number of general parameters that will apply to your Circle. Consequently, the installation process differs slightly from that of the subsequent nodes.

If you are installing two nodes on the same server in an Active Media Library (AML) configuration, the installation parameters are slightly different. Please see ["Single Machine Configuration: Active Media Library"](#) for more information.

Running the Initial Installation

Copy the installation package file to the server you are installing the software on. Open a terminal window, change to the directory to which you copied the installation file and run the following command. Replace the values for domain (`-d`) and node name (`-c`) according to your setup.

```
./ac-4.6.1.bin -s -i /activecircle -t /cache -m 4000 -d SubDomain-A1.Domain-A -c node-01
```

The output will confirm the values of the parameters you specified:

```
Setup
-----

Installation path: /activecircle
Node name       : node-01
Domain name     : SubDomain-A1.Domain-A
Circle pack size : 32
Startup script  : on
NAS temp dir    : /cache
Node heap memory : 4000 MB
Locale         : en_US.UTF-8

Do you want to continue? [yes or no]
```

If the information is correct, type **yes** and press **Enter**. Type **no** and press **Enter** to stop the installation.

The following lines (or something very similar) appear:

```
Installing Active Circle Linux version

Machine hardware name: x86_64
Processor type : x86_64
Hardware platform : x86_64
Installing x86_64 Active Circle version

Third-party product licenses installed in /activecircle/licenses.

Active Circle Node setup
-----

I   Starting...
```

A series of messages will appear detailing the progress of the installation. When it is finished, you will see:

```
I   Node setup succeeded

Active Circle setup completed
To start Active Circle, type "service activecircle start"
```

Circle Configuration: Installing Additional Nodes



Important

Before installing the Active Circle software on a new node, *you must first declare the new node* in the Active Circle Administration Tool. When you add a new node to an Active Circle configuration, a unique key to identify that node is generated by the system. This key is required when installing the software for a new node.

Declaring the Node in the Administration tool

Make sure Active Circle is already running on the initial node you installed.

1. Start the Active Circle Administration interface on the system where the first node is installed:

```
/activecircle/admin/bin/admin &
```

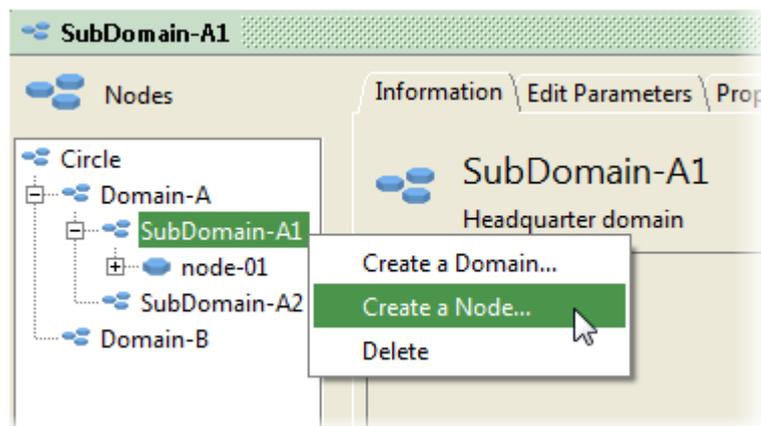
2. Log on to an administrator session:

Login: **admin**

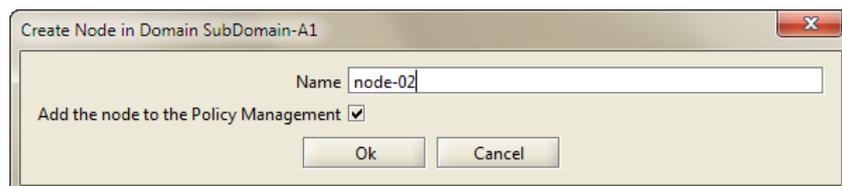
Password: **1234** (default, see the *Active Circle Administration Guide* for how to change this)

3. Create the second node:

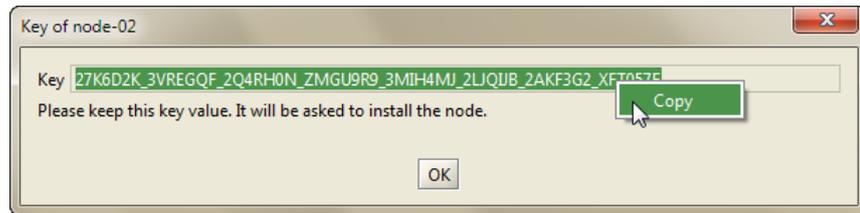
- In the **Nodes** view, expand the domains tree.
- Right-click on the domain or sub-domain of the first node and select **Create a Node** from the context menu.



- Type the name of the new node and validate with the **OK** button.



- A key value is displayed by the application. Please keep this key (copy it by right-clicking on it with the mouse).



Running the installation on the second node

Copy the Active Circle installation package file (the same as was used for installing the first node) to the server you are installing the software on. Open a terminal window on the server and execute the following command, replacing the parameter values according to your environment:

```
.Jac-4.6.1.bin -s -i /activecircle -t /cache -m 4000 -k <keyvalue>
```

The *keyvalue* for the option `-k` is the unique key provided by the Administration tool during creation of the node you are installing on.

The rest of the installation proceeds as described above in [“Running the Initial Installation”](#).

At the end of the process, you should receive the messages `Node setup succeeded` and `Active Circle setup completed`.

You can use the Administration tool to check that you can access the newly created resources. For more information on how to configure nodes, please refer to the *Active Circle Administration Guide*.

Single Machine Configuration: Active Media Library

It is possible to install and run multiple Active Circle nodes on a single server. This possibility is reserved only for archiving on LTO tapes in TAR format. To do this, you must follow a specific installation procedure and conform to certain constraints when managing these nodes. This procedure applies to the product **Active Media Library™** (AML).



Note

A backup procedure for Active Circle metadata must be implemented on AML configurations to reduce the risk of data loss.

Installation Process

When installing the initial node on the server, you must perform a standard installation (as described in [Installing the first node](#) above). However, you should use **AML** as the name of the domain (-d) and **activenode** as the name of the node (-c). The command would then be:

```
/jac-4.6.1.bin -s -i /activecircle -t /cache -m 4000 -d AML -c activenode
```

Once you have installed the first node, you will need to declare the additional node in the normal way through the Administration Tool as described under [Installing additional nodes](#). Use **backupnode** as the name of the node you create using the Administration Tool.

Once the second node is declared, you can install another instance of Active Circle on the same server where you installed the first node. The installation command would be:

```
/jac-4.6.1.bin -s -i /bckactivecircle -m 4000 -k <keyvalue> -S  
bckactivecircle
```



Important

Active Media Library is a bundled product with specific prerequisites. Please respect the indicated values for path, domain name, node name and service name for these configurations.

For more information

For more details on system configuration, shared partitions and Active Circle software installation options, see the *Active Circle Installation Guide*.

For more information, contact your Active Circle representative or send an e-mail to customer-support@active-circle.com.

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