CentOS 7 and Double Attachment

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AMT/PTD/NMA/0059/5/9/EN

Mitel®

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CONTENTS

1 ABOUT THIS DOCUMENT

1.1 PURPOSE OF THE DOCUMENT

This document describes the main installation phases for the operating system CentOS 7. It indicates the minimum configuration required to use MiVoice 5000 applications in Linux.

1.2 APPLICATION FIELD

64 bits CentOS 7 must first be installed (64 bits machine) before installing Mitel applications running with Linux.

CentOS 7 can only be used for a first installation.

Reference documents for the installation of CentOS:

- MiVoice 5000 Manager - Installation and configuration - AMT/PTD/NMA/0040/EN
- Mitel 5000 Gateways - Functional description and hardware installation- AMT/PTD/PBX/0150/EN
- Mitel 5000 Gateways and MiVoice 5000 Server - Commissioning - AMT/PTD/PBX/0151/EN
- MiVoice 5000 Manager - Redundancy and Double attachment - AMT/PTD/NMA/0046/EN
- MiVoice 5000 Server - Redundancy and Double attachment - AMT/PTD/NMA/0083/EN

1.3 TERMINOLOGY

- BOND0 : Virtual network interface
- DRBD : Distributed Replicated Block Device
- ETH0 or EM1 : Main network interface
- ETH1 or EM2 : Secondary or backup network interface
- MMI : Man Machine Interface
- IP : Internet Protocol
- LAN : Local Area Network
- MAC : Media Access Control
- PC : Personal Computer
- RAID1 : Redundant Array of Inexpensive Disks (level 1 = mirroring)
- WAN : Wide Area Network

2 INSTALLING CENTOS 7

This chapter explains how to install CentOS from the Mitel CentOS 7 DVD.

Note: Installing CentOS on a virtual machine is the same as installing CentOS on a physical machine.

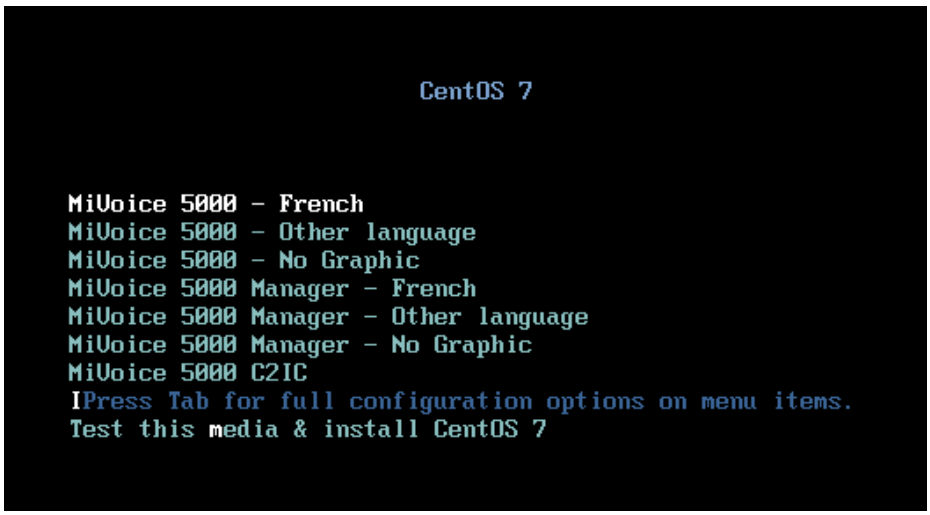
2.1 INSTALLING FROM THE DVD

To install CentOS 7, place the Mitel CentOS 7 DVD in your DVD/CD-ROM drive and restart your system from the DVD/CD-ROM.

The installation program then checks your system and tries to identify and start from your DVD/CD-ROM drive.

Note: It may be necessary to edit the BIOS in order to first start from the DVD/CD-ROM and to start in legacy BIOS mode instead of UEFI mode.

- Wait for the Centos 7 welcome screen to open (do not press any key until this screen opens).



Using the arrows, choose the type of system to install.

For a MiVoice 5000 Server :

- **MiVoice 5000 Server – No Graphic**

For a MiVoice 5000 Manager :

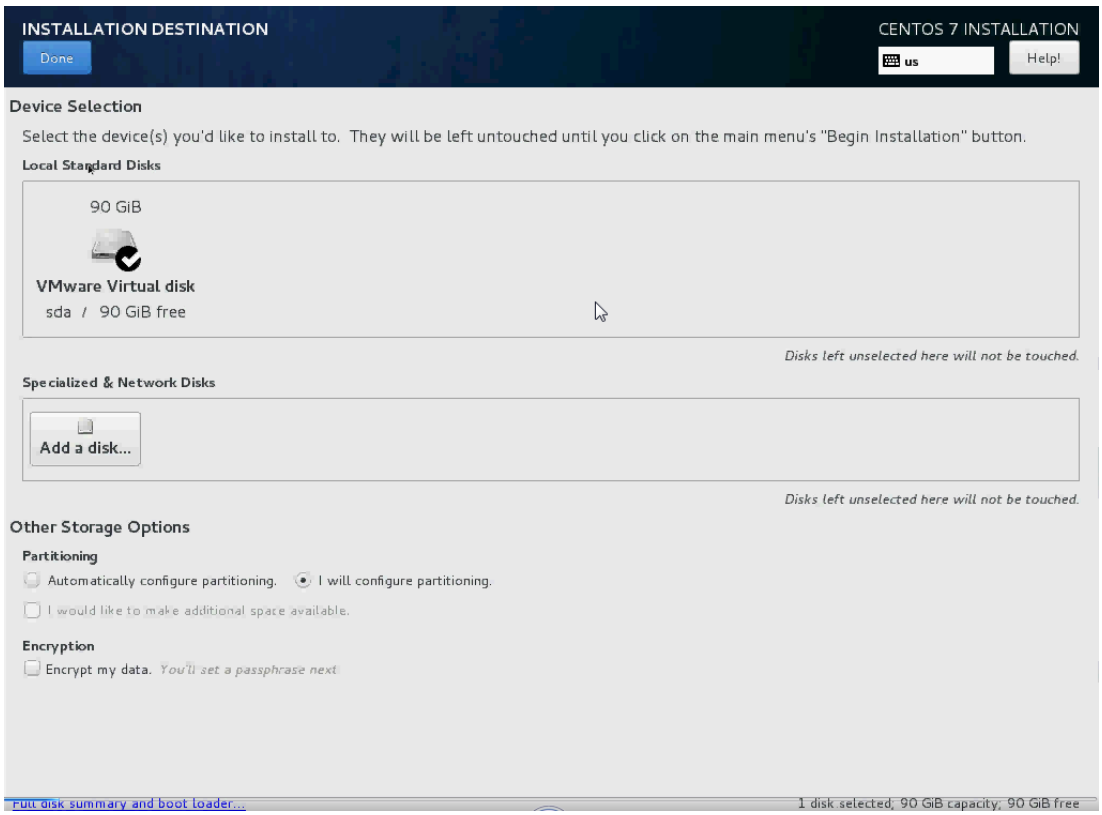
- **MiVoice 5000 Manager – No Graphic**

ATTENTION : For a secure installation, select only this choice, the others being strongly discouraged.

- Then click **Enter**.
- Then click **Continue**.

- The following window opens.

- Click, as indicated, on the **SYSTEM** icon that displays a warning.

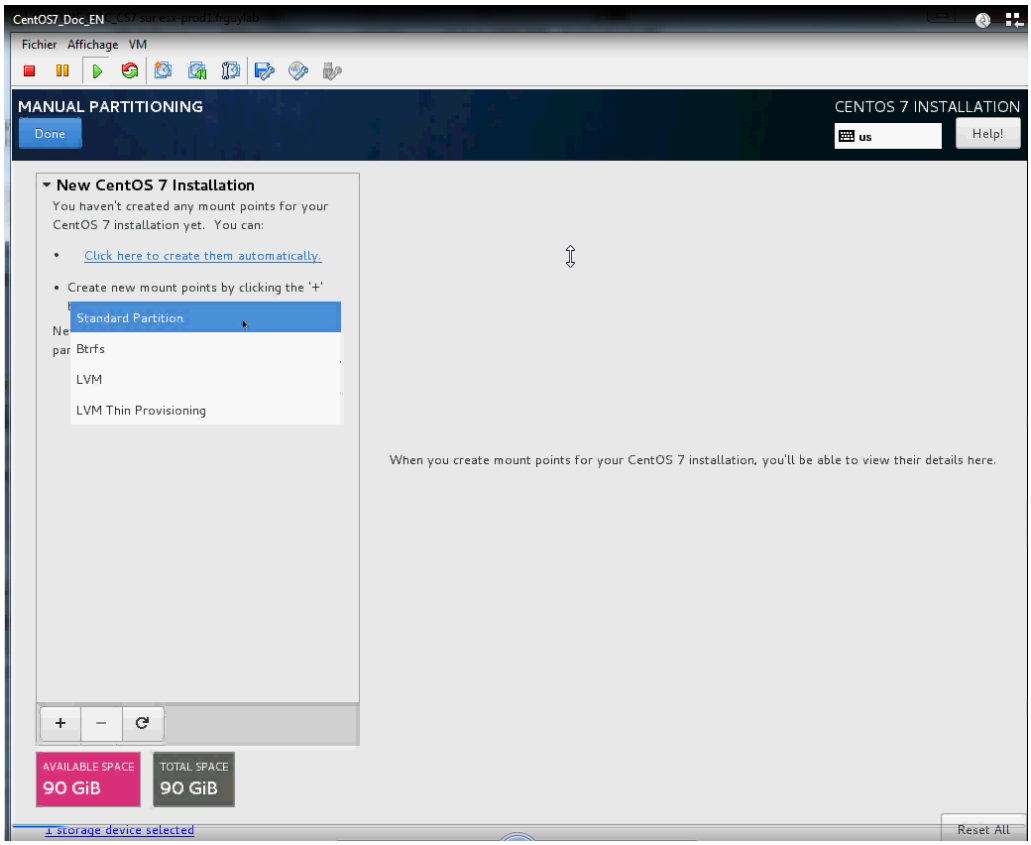


Check the following information indicated by default:

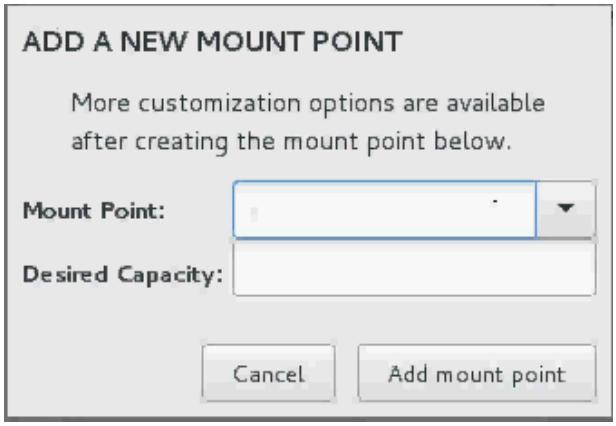
- Tick the box **I will configure partitioning**
- The disk is actually the one on which Centos 7 must be installed.

Then click **Done** on the top left side.

The partitioning screen then opens:



- Choose the new mounting points which will use the following partitioning pattern: **Standard partition**
- Create the mounting points and the associated capacities by clicking **+**



Depending on the system:

For a non-redundant MiVoice 5000 Server (and non-redundant MiVoice 5000 Cluster Server), see Section 2.1.1.

For a redundant MiVoice 5000 Server (and redundant MiVoice 5000 Cluster Server), see Section 2.1.2.

For a non-redundant MiVoice 5000 Manager, see Section 2.1.3.

For a redundant MiVoice 5000 Manager, see Section 2.1.4.

2.1.1 PARTITIONING THE SYSTEM FOR A NON-REDUNDANT MIVOICE 5000 SERVER

This partitioning also applies to a non-redundant Cluster Server.

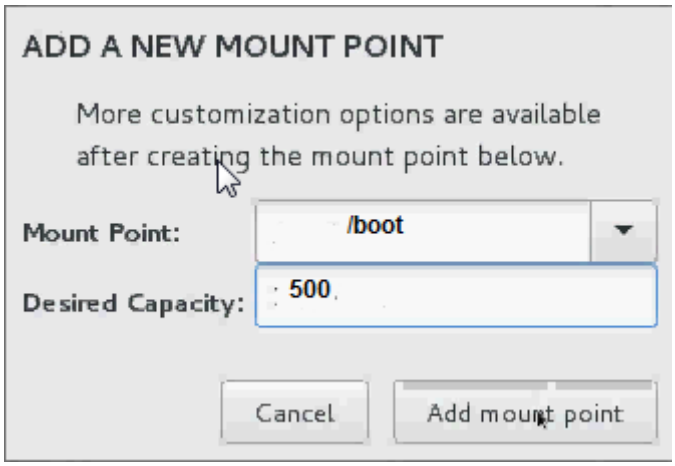
For a non-redundant MiVoice 5000 Server configuration, the partitioning must be carried out as follows:

- **Recommended partitioning for a non-redundant MiVoice 5000 Server**

	MOUNTING POINT	TYPE	SIZE
Partition 1	/boot	xfs	500 MB
Partition 2	/	xfs	40 000 MB (40 GB)
Partition 3		Swap	4 000 MB (4 GB)
Partition 4	/var/log	xfs	4 000 MB (4 GB)
Partition 5	/opt/a5000	xfs	40 000 Mo (40 Go)

- From the "**ADD NEW MOUNT POINT"** screen:
- Successively add the new partitions and associated capacities as indicated in the above table.

Example for Partition 1



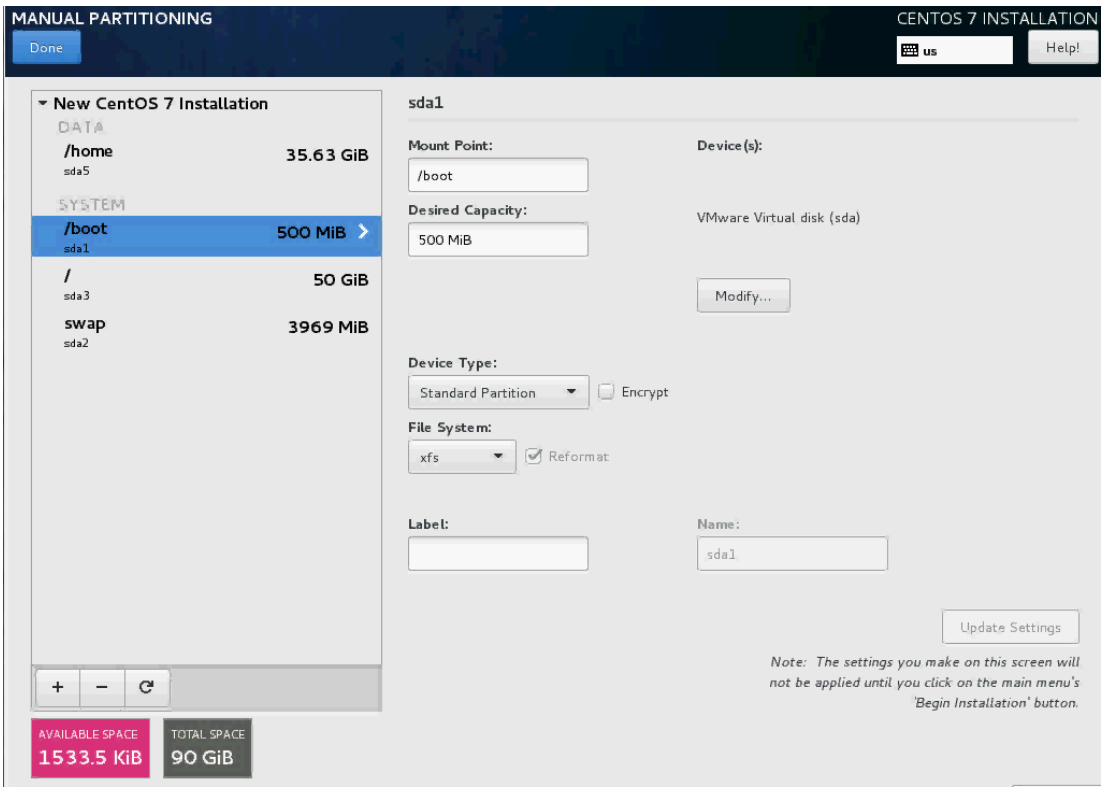
Warning: **If necessary, activate the numeric keypad to enter the digits.**

Note: **This field can also be filled in manually.**

- Click **Add** mount **point**.

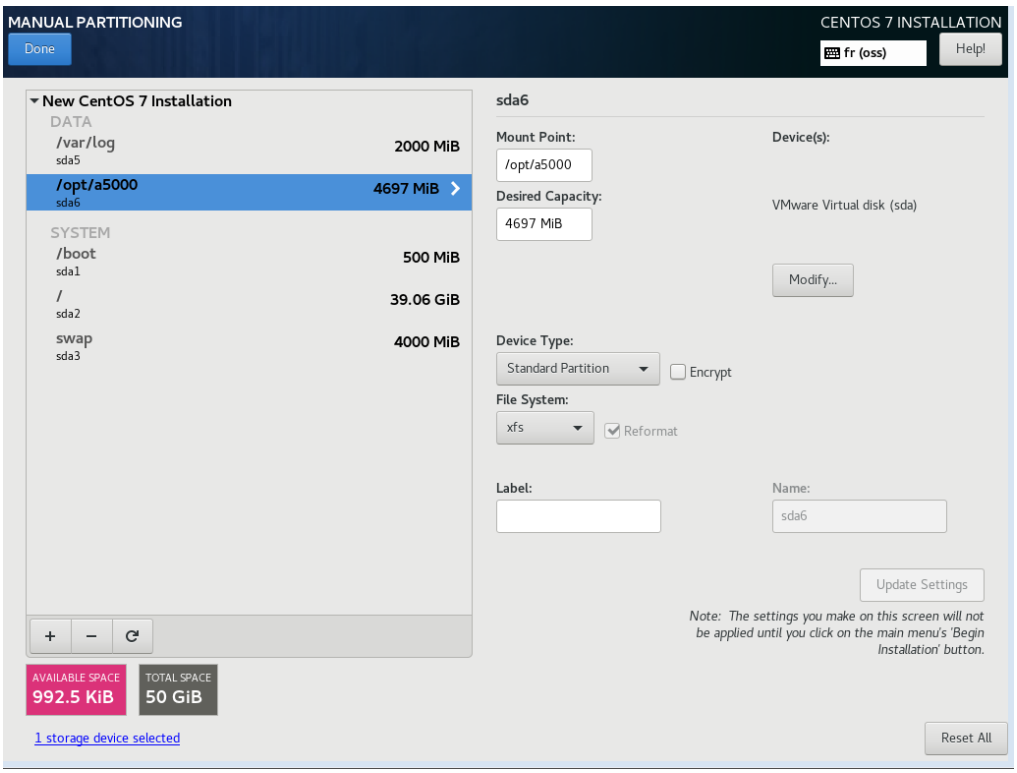
In the next screen, enter the following information for each new partition:

- **DeviceType** (options). Select **Standard partition.**
- **File system** (options)



- Repeat the operation for the other partitions.

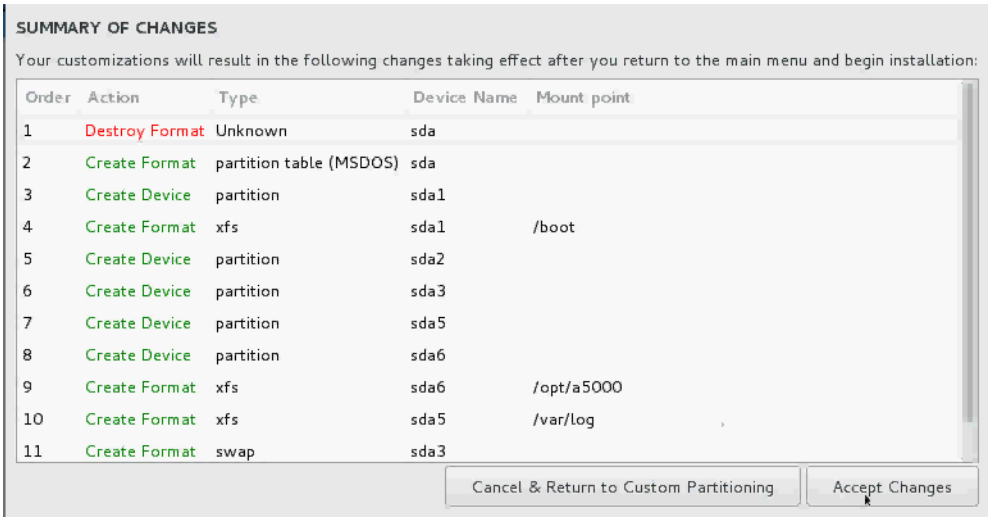
In the end, the screen displays the list of created partitions and their characteristics.



At the end of the partitioning operation, click **Done**.

Note: Note the name of the redundant partition /opt/a5000 (here sda3); it will be required during the installation of redundancy.

- A summary of the modifications is then displayed:

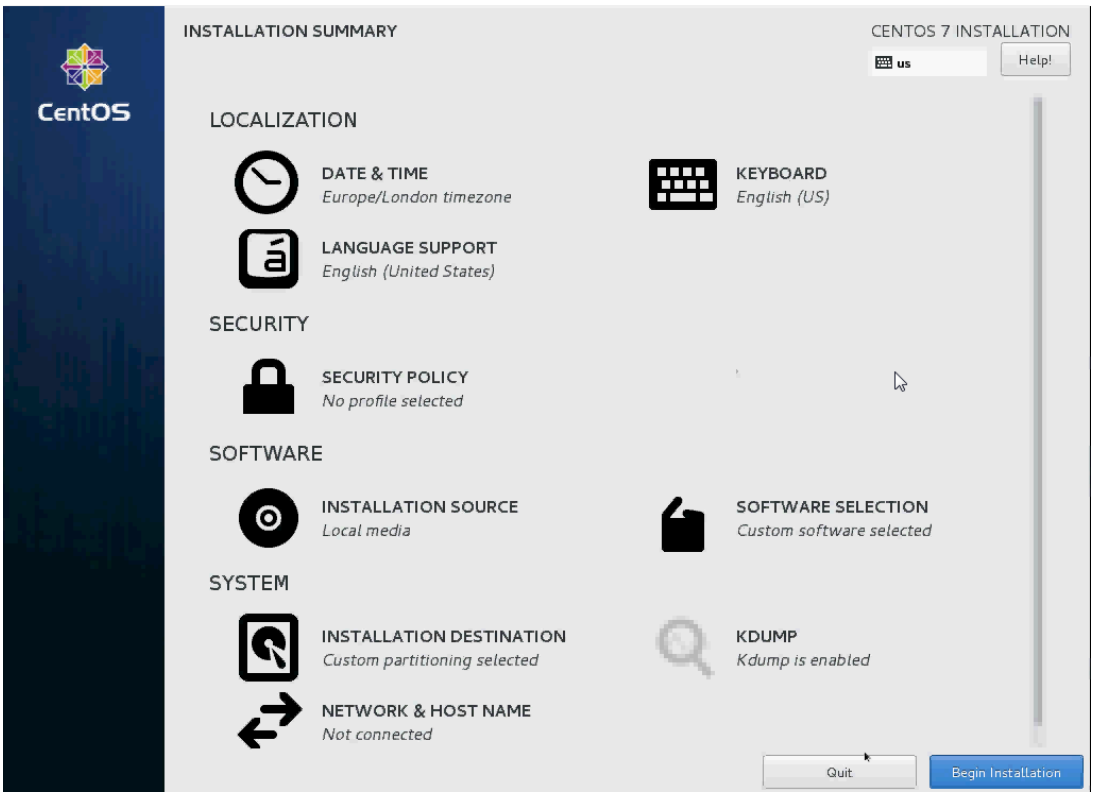


- Check the configuration of the different partitions:

Note: Note the name of the redundant partition /opt/a5000 (here sda6); it will be required during the installation of redundancy.

- Click **Accept Changes**.

The welcome screen is displayed:



See Section 2.2.

2.1.2 PARTITIONING THE SYSTEM FOR A REDUNDANT MIVOICE 5000 SERVER

This partitioning also applies to a redundant Cluster Server.

For a redundant MiVoice 5000 Server configuration, the partitioning must be carried out as follows:

Recommended partitioning for a redundant MiVoice 5000 Server

	MOUNTING POINT	TYPE	SIZE
Partition 1	/boot	xfs	500 MB
Partition 2	/	xfs	40 000 MB (40 GB)
Partition 3		Swap	4 000 MB (4 GB)
Partition 4	/var/log	xfs	4 000 MB (4 GB)
Partition 5	/opt/a5000	xfs	40 000 Mo (40 Go)

Since the procedure is the same as for MiVoice 5000 Server, see Section 2.1.1.

At the end of the partitioning operation, see Section 2.2.

2.1.3 PARTITIONING A NON-REDUNDANT MIVOICE 5000 MANAGER SYSTEM

For a non-redundant MiVoice 5000 Manager configuration, the partitioning must be carried out as follows:

Recommended partitioning for a non-redundant MiVoice 5000 Manager

	MOUNTING POINT	TYPE	SIZE
Partition 1	/boot	xfs	500 MB
Partition 2	/	xfs	40 000 MB (40 GB)
Partition 3		Swap	4 000 (4 GB)
Partition 4	/var/log	xfs	4 000 MB (4 GB)
Partition 5	/home	xfs	(Fill the remaining disk space up to the authorised maximum size)

Since the procedure is the same as for MiVoice 5000 Server, see Section 2.1.1.

At the end of the partitioning operation, see Section 2.2.

2.1.4 PARTITIONING A REDUNDANT MIVOICE 5000 MANAGER SYSTEM

For a redundant MiVoice 5000 Manager configuration, the partitioning must be carried out as follows:

Recommended partitioning for a redundant MiVoice 5000 Manager

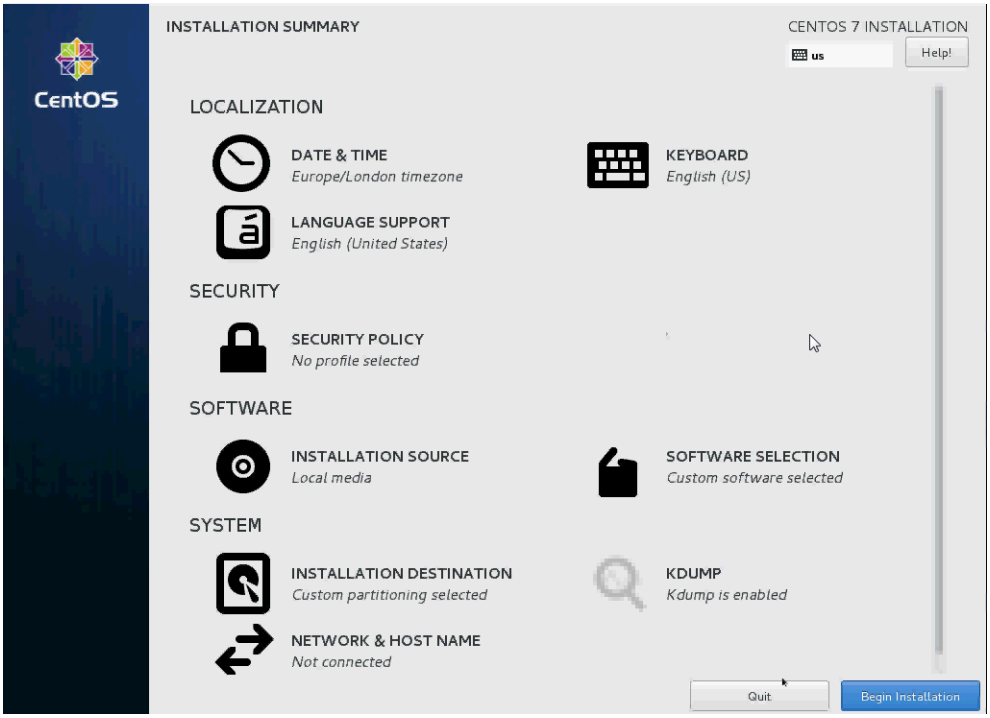
	MOUNTING POINT	TYPE	SIZE
Partition 1	/boot	xfs	500 MB
Partition 2	/	xfs	40 000 MB (40 GB)
Partition 3		Swap	4 000 (4 GB)
Partition 4	/var/log	xfs	4 000 MB (4 GB)
Partition 5	/opt/a5000	xfs	See the Product Guide. The disk space must be evaluated according to the configuration.

Since the procedure is the same as for MiVoice 5000 Server, see Section 2.1.1.

At the end of the partitioning operation, see Section 2.2.

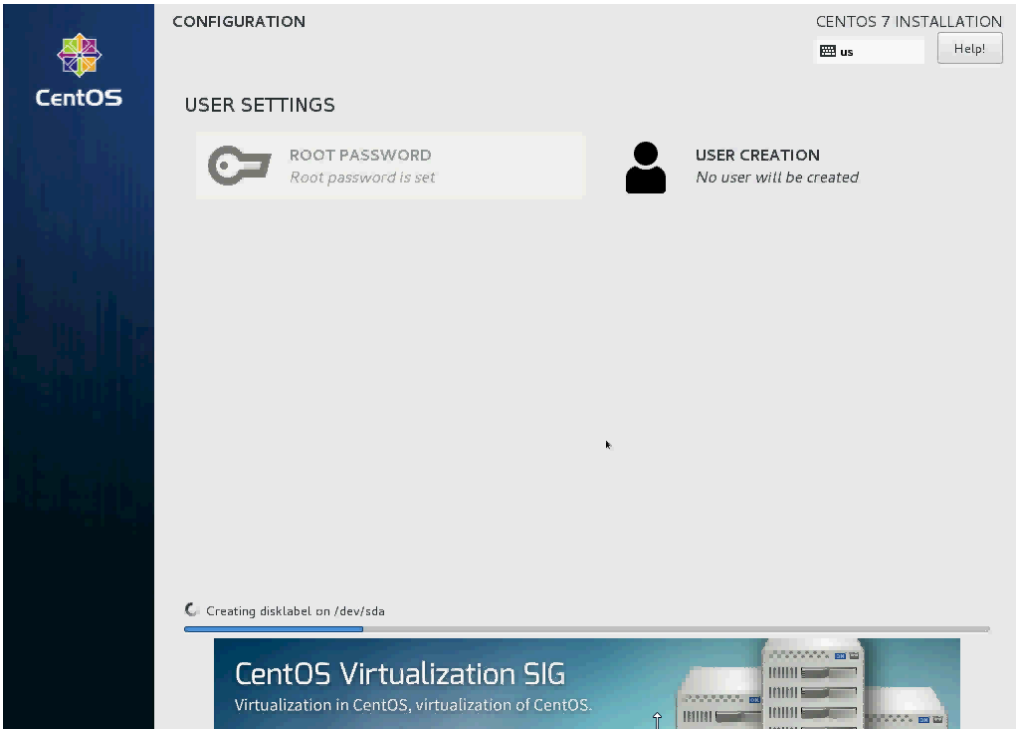
2.2 STARTING THE INSTALLATION

At the end of the partitioning operation carried out in the previous sections, the welcome screen opens:



- Click **Begin installation**.

The installation starts.

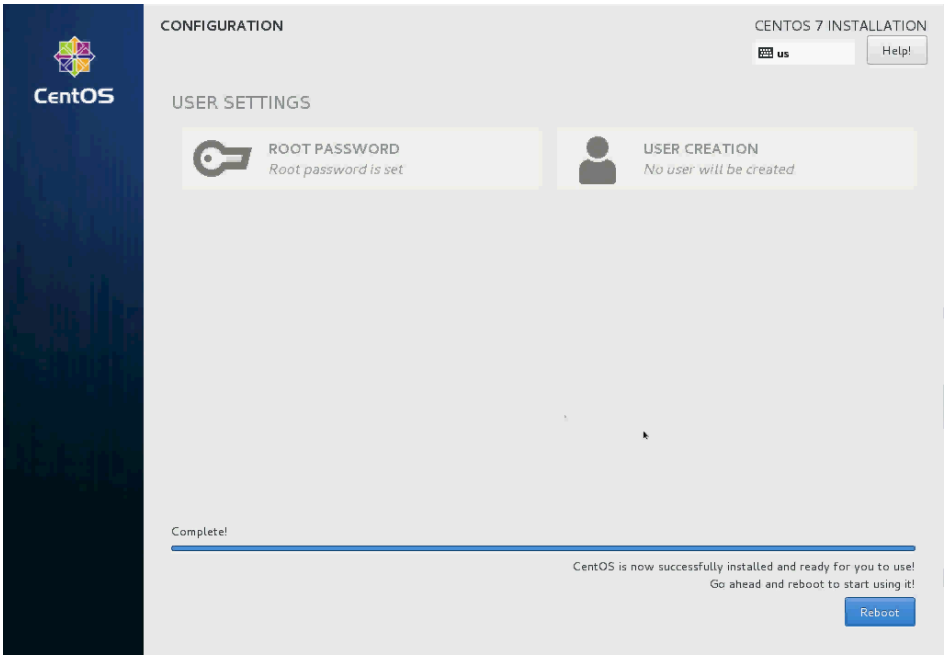


The previously created partitions are formatted.

The packages are transferred and installed automatically.

At this stage, you can no longer do anything until all the packages are installed. The duration of the installation depends on the number of packages installed and the power of your PC.

Wait for the end of the installation; the following screen opens:



Warning: If the installation has been made from a DVD, remove the DVD before restarting.

- Click **Reboot**.

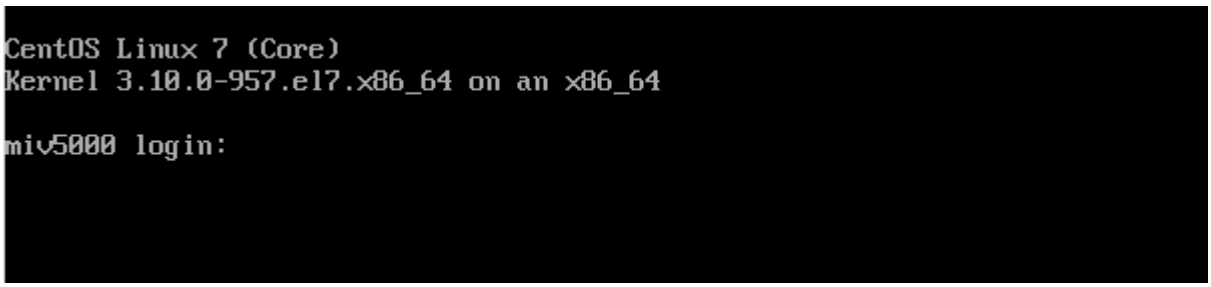
Note: For some types of servers, it may be necessary to perform a hard boot (ON/OFF).

Then see Section 2.3.

2.3 LOGIN ROOT TO CENTOS 7

- After the start sequence, the login screen appears:
  - Enter the **User name** (by default **root**)
  - Enter the **Password** (by default **Mitel5000**).

Warning: **By default, the numeric keypad is not active; so, it must be activated.**



Modify the system language and keyboard language.

Depending on the language you want, type the following:

- To French:

  # localectl set-keymap fr

- To English:

  localectl set-keymap us

The additional configurations, Double Attached configuration, and the installation of the application itself are described in the following paragraphs.

2.4 CHANGING THE NETWORK CONFIGURATION AFTER INSTALLING CENTOS

To change the (static) network configuration at the end of the installation, never use the Network administration tool.

- Log on as root.
- Edit the file **/etc/sysconfig/network-scripts/ifcfg-eth0**
  - Force to "no" the value of the parameter NM_CONTROLLED (if the line is present).
  - Modify the IP addresses of the parameters GATEWAY, IPADDR, NETMASK
  - Delete the line of the parameter PREFIX
  - Force to "**yes**" the value of the parameter **DEFROUTE**
- Back up these modifications.

Warning: For a redundant MiVoice 5000 Cluster Server or MiVoice 5000 Manager, the IP addresses must be fixed.

2.5 CHANGING THE DNS CONFIGURATION

- Log on as **root**
- Edit the file **resolve.conf** in the directory **/etc/**
  - Add a new line with the new name and IP address in question.

Example : `nameserver 8.8.8.8`

- Back up these modifications.

2.6 CHANGING THE HOSTNAME

Warning: **While configuring the MiVoice 5000 Manager network, the PC name (hostname) should not contain the character "." (The character "period"). Example: the name host can then be used whereas the name host.domain.com should not be used.**

- Log on to the **root** account with the password **Mitel5000**.
- In the terminal window, type in the following command to give a name to the machine:

  hostnamectl set-hostname miv5000

As a result of this command the prompt can be used to check the name, by typing in the hostname command:

[root@**miv5000** ~]# hostname

miv5000

Warning: **For a redundant configuration, the master and slave servers should be able to carry out the DNS resolution. The file "hosts" must be used on each server in case of redundancy.**

- Go to the directory **etc**, edit the host file, add to this file the ip / name of the master and slave Mivoice 5000 as follows:

```
127.0.0.1   localhost localhost.localdomain localhost4 localhost4.localdomain4
192.168.0.101  miv5000-master
192.168.0.102  miv5000-slave
::1         localhost localhost.localdomain localhost6 localhost6.localdomain6
```

- Check that the resolution is actually working by typing in the command:

ping miv5000-slave

2.7 CHANGING THE ROOT PASSWORD CONFIGURATION AFTER INSTALLING CENTOS

To change a password in Centos, type in the command **passwd** and enter the new password.

2.8 CONFIGURING THE FIREWALL

CentOS offers firewall protection for the system's security.

If the firewall is **Disabled**, the system allows full access to any active service and port. No connection to the system is denied or rejected.

If the firewall is enabled, the system is configured to reject incoming connections that are not responses to outgoing requests, such as DNS responses or DHC requests. If access to the services executed on this system is necessary, you can choose to authorise specific services via the firewall.

It is possible to use a firewall for Mitel applications, but it must be configured in such a way that it does not filter the ports required by the applications to work correctly.

The list of ports that should not be filtered is given in the installation documents for the products in question.

To know the current configuration of the firewall:

Open a terminal and type in the following commands:

systemctl status iptables

To configure the firewall:

- Log on as **root**.
- Right-click the desktop then click **Open in a terminal**.
- Configure the file **iptables** in the directorry **/etc/sysconfig**.
-
- **To disable the firewall:**

Open a terminal and type in the following commands:

systemctl stop iptables

systemctl disable iptables

2.9 DEPLOYING A WATCHDOG ON DELL PLATFORMS

Deploying a watchdog allows the PC to restart automatically if CentOS crashes. This deployment requires the presence of DELL OPENMANAGE SERVER ADMINISTRATOR on the DELL PC.

Note: DELL platforms, ex factory, have DELL OPENMANAGE SERVER ADMINISTRATOR pre-installed.

2.9.1 INSTALLING DELL OPENMANAGE

- Insert the CDROM or DVDROM containing the component **OM-SrvAdmin-Dell-Web-LX-*.tar.gz** in the server drive of the slave PC.
- Double-click the desktop icon. Double-click the CD-ROM/DVD-ROM drive icon.
- Copy the component **OM-SrvAdmin-Dell-Web-LX-*.tar.gz** in **/tmp**
- Click Menu **Applications** > **System tools** > **File navigator**
- Go to the **/tmp** directory.
- Type in the following command:
  tar -zxvf OM-SrvAdmin-Dell-Web-LX-*.tar.gz
- In /tmp, go to the directory **/tmp/linux/supportscripts**.
- Double-click the icon **srvadmin-install.sh** and select the option **Start in a terminal**.
- Enter **y** in response to the question: **Do you agree to the above licence terms?**
- Successively select the following components and install them by pressing **i**:

- **Server Administrator Web Server Interface**
- **Instrumentation Server**
- **Storage Management**

- Upon display of the message **"Do you want the Server Administrator services started"**, type in **"y"** and press Enter.
- Right-click the cdrom icon on the desktop to eject the CD-ROM or DVDROM.

- Test the function by double-clicking the **Launch Server Administrator** icon.

Note: OpenManage can also be started in a web browser from the server or a remote server, via this url: https://@IP:1311n.

Note: If the message "Secure connection failure" is displayed, add an exception; click obtain certificate then confirm the security exception.

- THE INSTALLATION OF DELL OPENMANAGE SERVER ADMINISTRATOR HAS BEEN COMPLETED.

2.9.2 CONFIGURING WATCHDOG

Deploying a watchdog allows the PC to restart automatically if CentOS crashes. This deployment requires the presence of DELL OPENMANAGE SERVER ADMINISTRATOR on the DELL PC (see installation above).

- Start DELL OpenManage via a web browser from the server or a remote server, via this url: **https://127.0.0.1:1311**

Note: If a message "**Secure connection failure**" is displayed, add an exception; click **obtain certificate** then confirm the security exception.

- Log on to the **root** account with the password **Mitel5000**
- In the System **Properties** tab, go to the Automatic **recovery** menu.
- Select the **Restart system** radio button, then enter **300** in the **System reset clock** field.
- Click **Apply.**

The configuration of watchdog has been completed.

3 CONFIGURING DOUBLE ATTACHMENT ON MIVOICE 5000 SERVER

This procedure is applicable to both redundant and non-redundant systems. For redundant systems, this procedure must be followed on each PC (master and slave PC).

3.1 CREATING THE BONDING FILE

- Go to the directory (My computer) **/etc/modprobe.d**
- Create the file **bonding.conf**
- Add the line in bold as follows:

  alias bond0 bonding
- Save the modifications made in the file **bonding.conf**.

3.2 MODIFYING THE FILE IFCFG-BOND0

- Go to the directory (My computer) **/etc/sysconfig/network-scripts**,
- Copy/paste the file **ifcfg-eth0** in **ifcfg-bond0**
- Then modify the **file ifcfg-bond0** as follows (modifications in bold): the lines in bold must be added or modified).

NAME=**bond0**
DEVICE=**bond0**
TYPE=**bond**
ONBOOT=yes
BOOTPROTO=none
IPADDR=192.168.0.200
NETMASK=255.255.255.0
GATEWAY=192.168.0.254
DEFROUTE=yes
PEERDNS=yes
PEERROUTES=yes
IPV4_FAILURE_FATAL=no
IPV6INIT=yes
IPV6_AUTOCONF=yes
IPV6_DEFROUTE=yes
IPV6_PEERDNS=yes
IPV6_PEERROUTES=yes
IPV6_FAILURE_FATAL=no
USERCTL=no
BONDING_OPTS="miimon=100 mode=1 primary=eth0"

- For other parameters not listed above, leave the default values.
- Save the modifications made in the file **ifcfg-bond0**.

3.3 MODIFYING THE FILE IFCFG-ETH0

- Then modify the file **ifcfg-eth0** as follows (modifications in bold). The lines in bold must be added).

NAME=eth0
DEVICE=eth0
TYPE=Ethernet
ONBOOT=yes
BOOTPROTO=none
#IPADDR=192.168.0.200
#NETMASK=255.255.255.0
#GATEWAY=192.168.0.254
DEFROUTE=yes
PEERDNS=yes
PEERROUTES=yes
IPV4_FAILURE_FATAL=no
IPV6INIT=yes
IPV6_AUTOCONF=yes
IPV6_DEFROUTE=yes
IPV6_PEERDNS=yes
IPV6_PEERROUTES=yes
IPV6_FAILURE_FATAL=no
USERCTL=no
MASTER=bond0
SLAVE=yes

** This line must be added as a comment (#).

- For other parameters not listed above, leave the default values. It is not necessary to indicate the network configuration (IP address, subnet mask, etc.) in the files ifcfg-eth0 and ifcfg-eth1.
- Save the modifications made in this file

3.4 CREATING THE FILE IFCFG-ETH01

- Go to the directory /etc/sysconfig/network-scripts
- Copy/paste the file **ifcfg-eth0** in **ifcfg-eth1**
- Then modify the file **ifcfg-eth1** as follows (modifications in bold). The lines in bold must be added).

NAME=eth1
DEVICE=eth1
TYPE=Ethernet
ONBOOT=yes
BOOTPROTO=none
#IPADDR=192.168.0.200
#NETMASK=255.255.255.0
#GATEWAY=192.168.0.254
DEFROUTE=yes
PEERDNS=yes
PEERROUTES=yes
IPV4_FAILURE_FATAL=no
IPV6INIT=yes
IPV6_AUTOCONF=yes
IPV6_DEFROUTE=yes
IPV6_PEERDNS=yes
IPV6_PEERROUTES=yes
IPV6_FAILURE_FATAL=no
USERCTL=no
MASTER=bond0
SLAVE=yes

* The MAC address is given as an example.
** This line must be added as a comment (#).

- For other parameters not listed above, leave the default values. It is not necessary to indicate the network configuration (IP address, subnet mask, etc.) in the files ifcfg-eth0 and ifcfg-eth1.
- Save the modifications made in this file
- Open a terminal and restart the network:

  systemctl restart network

3.5 CHECKING THE WORKING OF DOUBLE ATTACHMENT

The following points must be checked:

- The four items bond0, eth0, eth1 and Lo must be listed.
- The three interfaces bond0, eth0 and eth1 must have the same Mac address, that of Ethernet access eth0.
- Only interface bond0 is associated with the virtual IP address used by the MiVoice 5000 Server software and works in "MASTER" mode.
- The two interfaces eth0 and eth1 now work in "SLAVE" mode.
- Open a terminal window, go to **Application>Terminal**
- Upon prompt, type in the following command: **ifconfig**
- Check the above information, displayed below in bold:

bond0: flags=5187<UP,BROADCAST,**RUNNING,MASTER**,MULTICAST> mtu 1500
inet 10.1.1.251 netmask 255.255.0.0 broadcast 10.1.255.255
inet6 fe80::1618:77ff:fe45:bea7 prefixlen 64 scopeid 0x20<link>
ether 14:18:77:45:be:a7 txqueuelen 0 (Ethernet)
RX packets 10697720 bytes 3815773003 (3.5 GiB)
RX errors 0 dropped 1476 overruns 0 frame 0
TX packets 31741430 bytes 11469804817 (10.6 GiB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

eth0: flags=6147<UP,BROADCAST,SLAVE,MULTICAST> mtu 1500
ether 14:18:77:45:be:a7 txqueuelen 1000 (Ethernet)
RX packets 0 bytes 0 (0.0 B)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 0 bytes 0 (0.0 B)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
device interrupt 18

eth1: flags=6211<UP,BROADCAST,RUNNING,SLAVE,MULTICAST> mtu 1500
ether 14:18:77:45:be:a7 txqueuelen 1000 (Ethernet)
RX packets 10698880 bytes 3815908347 (3.5 GiB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 31742719 bytes 11470162921 (10.6 GiB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
device interrupt 19

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
inet 127.0.0.1 netmask 255.0.0.0
inet6 ::1 prefixlen 128 scopeid 0x10<host>
loop txqueuelen 0 (Local loop)
RX packets 24094972 bytes 10685725721 (9.9 GiB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 24094972 bytes 10685725721 (9.9 GiB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

3.6 INSTALLING THE MIVOICE 5000 APPLICATION

Install the application in question using the following documents:

- MiVoice 5000 Server and Mitel 5000 Gateways - Commissioning - AMT/PTD/PBX/0151
- MiVoice 5000 Server - Redundancy - AMT/PTD/NMA/0083
- MiVoice 5000 Manager - Installation and configuration - AMT/PTD/NMA/0040
- MiVoice 5000 Manager - Redundancy - AMT/PTD/NMA/0046
- MiVoice 5000 Server/Manager - Upgrading to R6.3 - AMT/PTD/NMA/0161