Redundancy on MiVoice 5000 Server and Cluster Server

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AMT/PTD/PBX/0083/13/4/EN

Mitel®

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CONTENTS

1 ABOUT THIS DOCUMENT

1.1 PURPOSE OF THIS DOCUMENT

This document describes how to install redundancy on MiVoice 5000 Server. This mechanism prevents hardware failures on a MiVoice 5000 Server and Cluster Server MiVoice 5000 platform.

Flow separation is no longer treated in this document.

For redundant systems with flow separation, see the document AMT/PTD/PBX/0101 - Telephony and Administration flow Separation - Implementation Manual.

1.2 APPLICATION FIELD

64-bits CentOS 7 must first be installed (64-bits machine) before installing Mitel applications running with Linux as of MiVoice 5000 Manager R6.3, MiVoice 5000 Cluster server and MiVoice 5000 Manager V3.3.

CentOS 7 can only be used during a first installation.

Reference documents for CentOS installation:

- Centos 7.x and Double attachment – AMT/PTD/PBX/0059
- Mitel 5000 Gateways and MiVoice 5000 Server Implementation - AMT/PTD/PBX/0151/EN
- Mitel XD–XL–XS–XS12–XS6–500 and MiVoice 5000 Server Operating Manual - AMT/PTD/PBX/0080

2 SHORT GUIDE AND RECOMMENDATIONS ON HOW TO IMPLEMENT REDUNDANCY

This section gives a brief description of how to implement redundancy.

The different environments are illustrated at the end of this section.

Redundancy is a functional security mode based on the use of two servers:

- A main (Master) server for nominal operation,
- A secondary (Slave) server for resuming the operation if the main server fails (resulting in a switchover from Master to Slave).

Only one virtual address must be defined while installing the redundancy which allows the connected devices to communicate with the active machine only.

If the two servers are on the same network (LAN), the redundancy is LAN type redundancy.

If the two servers are not on the same network, the redundancy is WAN type redundancy.

The link to the ETHERNET network of these servers can be set up either:

- Through **simple attachment**: only one interface connected by a single cable. In this case, the physical interface "**eth**" of each server is used.
- Through **double attachment**: two interfaces linked together by two separate cables. In this case, the virtual interface "**bondx**" (bonding mode) is used; this is the only network view which allows a switchover from one physical interface to the other if any of them fails.

Note: The name of these interfaces may vary according to server type (emx instead of ethx, for instance).

The configuration in double attachment is handled in the document Centos 7.x and Double attachment – AMT/PTD/PBX/0059.

To facilitate the procedure, it is advisable to set each server (main and secondary server) to double attachment. This is the default configuration (factory configuration) of the servers provided by Mitel.

However, the user can work in simple attachment mode by deactivating the virtual interface **bond0** and reconfiguring the **eth0** interface on each server.

In summary, the rules for and order of implementation are:

- In all cases, start by installing the operating system on each server.
- In case of redundancy with double attachment:
  - Double attachment must always be configured first before implementing redundancy.
  - Redundancy must then be installed with the bond0 interface on each server.

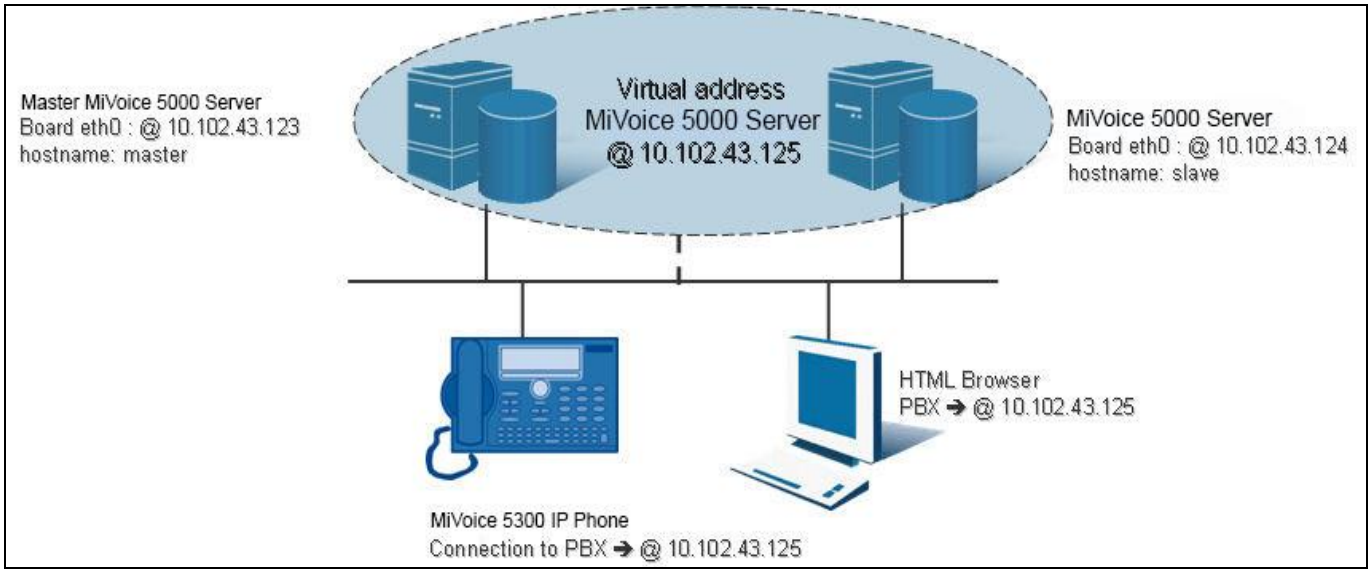
Note: Double attachment is not necessary for virtual machines.

- In case of redundancy without double attachment:
  - Redundancy must be implemented with the eth0 interface on each server.

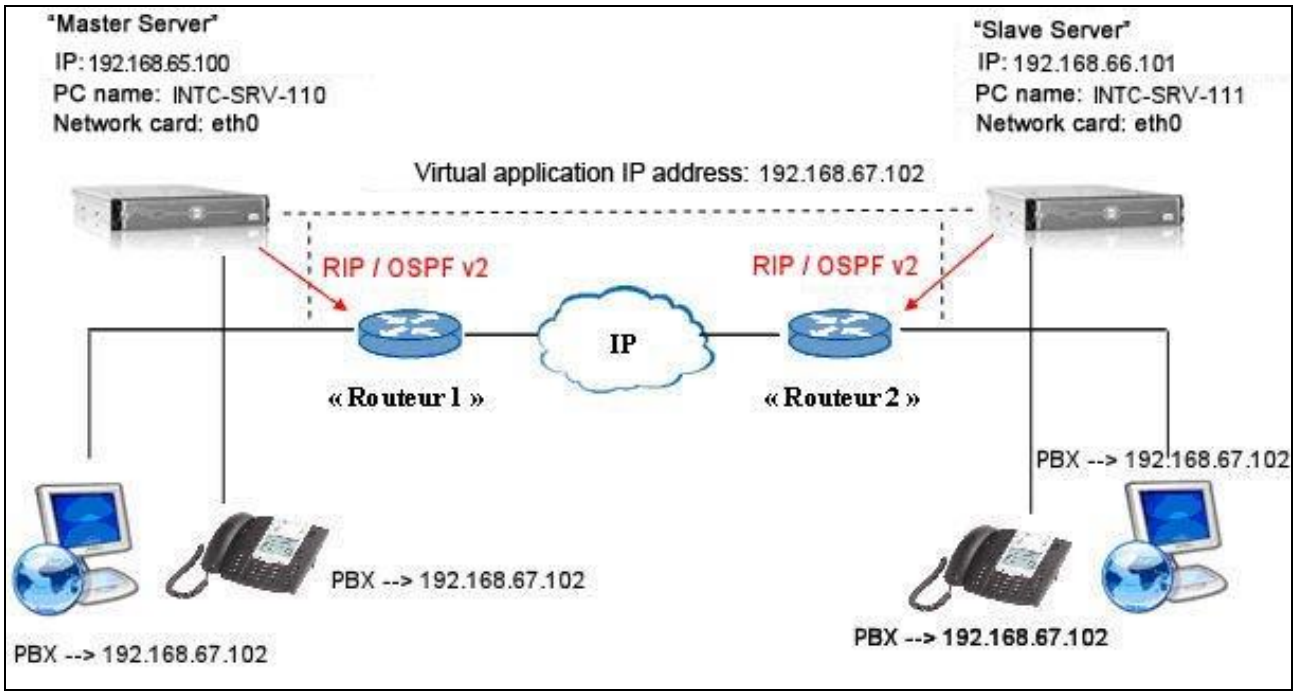
Example of environments

For each of these environments, see the section concerned for details of the procedure.

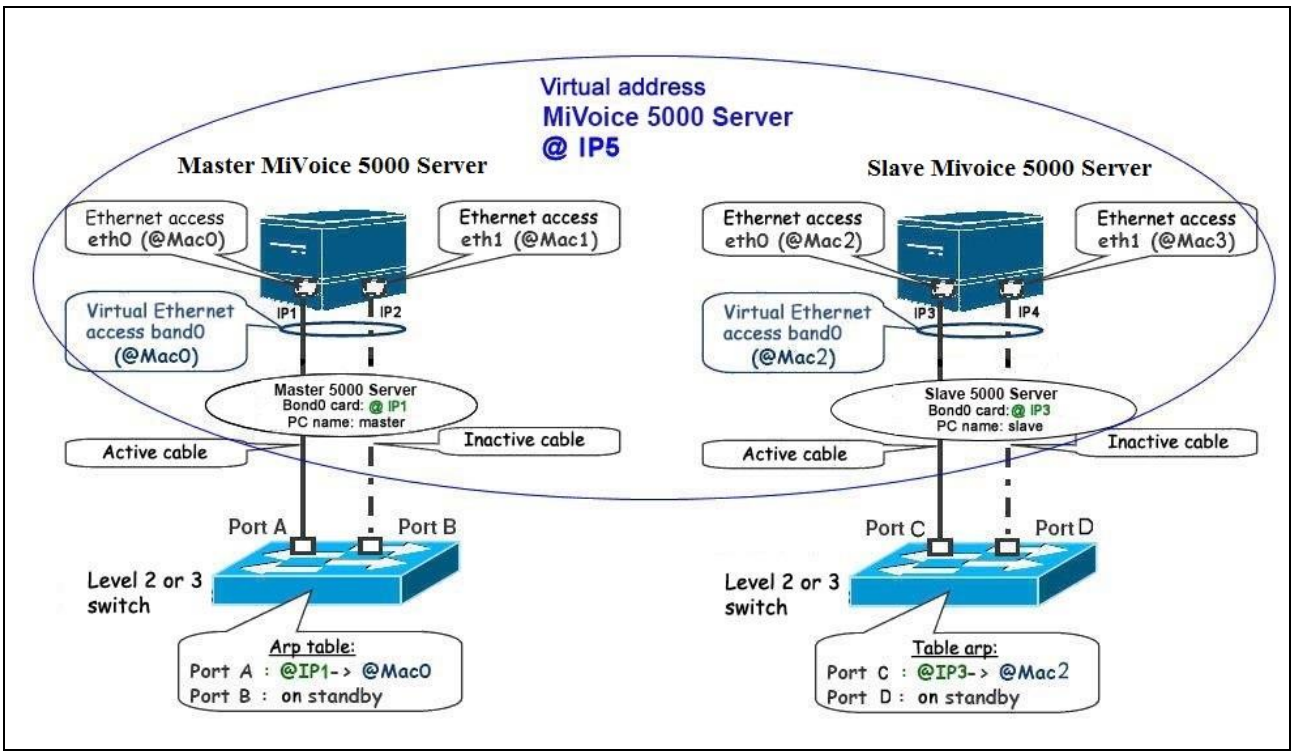
LAN redundancy without double attachment



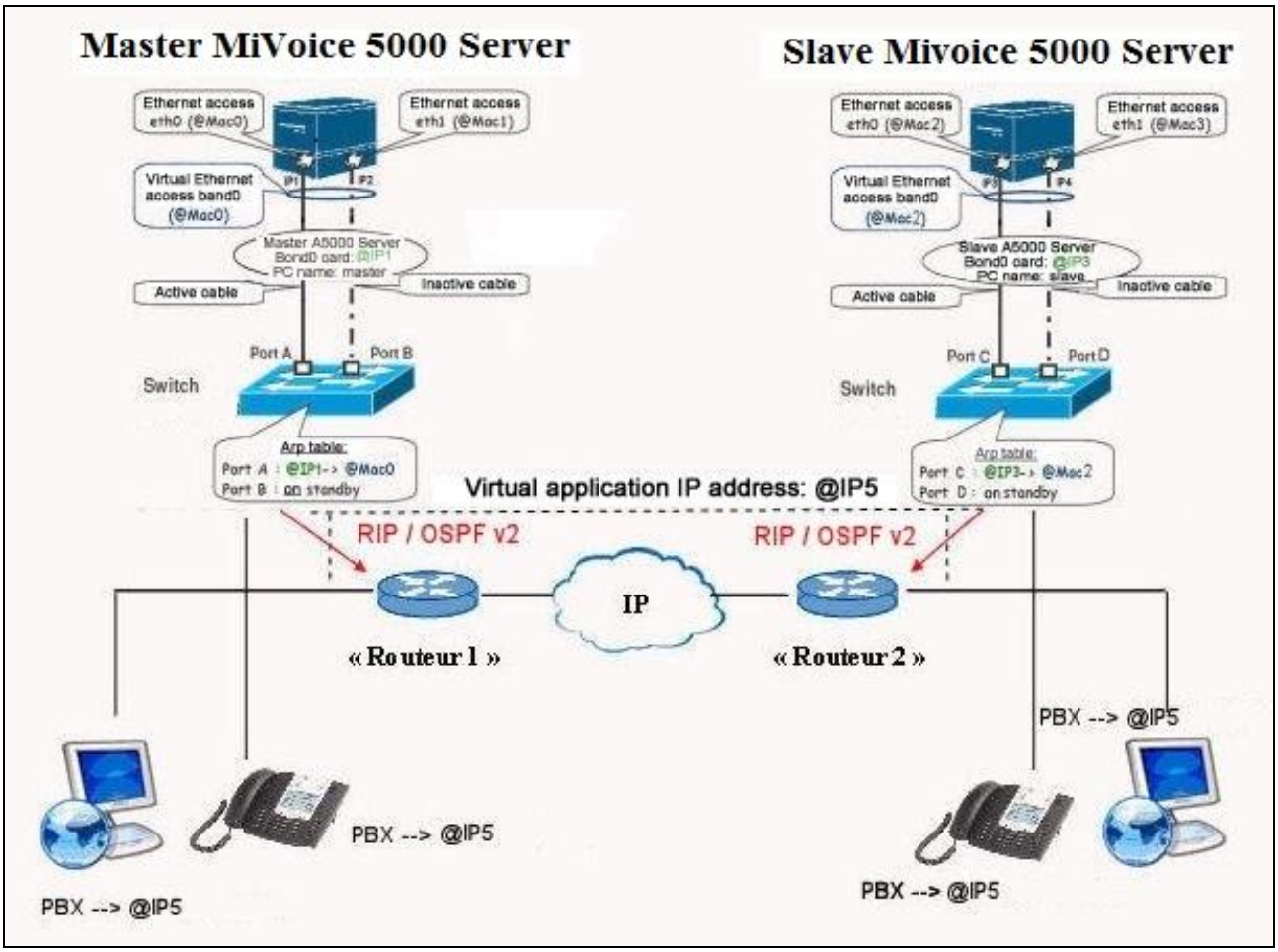
WAN redundancy without double attachment



LAN redundancy with double attachment



WAN redundancy with double attachment



3 INSTALLING REDUNDANCY

CAUTION: Network interface names

In this chapter, the basic or backup Ethernet access will be called ethx. This name must be adapted to the type of server or operating mode used:

- **emx for certain server types**
- **bondx in case of double attachment**
- **eth0 must, therefore, be replaced if necessary with em1, bond0 or br0.**
- **eth1 must be replaced with em2 where necessary.**

3.1 PRINCIPLE OF REDUNDANCY

Redundancy ensures service continuity in case the active server fails or becomes inaccessible.

The solution is based on the use of the software Corosync and DRBD in a Centos 7.x environment.

- Corosync for mutual PC monitoring and switchover management
- DRBD for data replication.

Only one virtual IP address is used to address the active PC; this virtual IP address is assigned dynamically to the active PC. This way, systems (telephone, applications, etc.) always use a single IP address (the virtual IP address) and the same IP address, no matter the active address.

3.1.1 DEFENCE MECHANISMS FOLLOWING A HARDWARE FAILURE

Defence mechanisms are:

The master MiVoice 5000 Server has a hardware failure:

- The virtual IP address becomes active on the slave MiVoice 5000 Server.
- The services are started on the slave MiVoice 5000 Server.

The master MiVoice 5000 Server PC becomes operational again:

- If Failback mode = ON
  - The virtual IP address automatically becomes active on the master MiVoice 5000 Server.
  - The services are automatically started on the master MiVoice 5000 Server.
- If Failback mode = OFF
  - If manually activated by the administrator, the virtual IP address becomes active on the master MiVoice 5000 Server PC.

3.1.2 DEFENCE MECHANISMS IN CASE OF NETWORK DISCONNECTION

In case of network disconnection (behaviour not dependent on Failback mode), the behaviour of redundancy depends on ping configuration and redundancy type (LAN or WAN).

3.1.2.1 Using Corosync with the ping function: general principle

Upgrading to Corosync allows you to use the system's ping function.

The ping function is used to test the connection to the default gateway (router):

- If ping is working: nominal case
- If ping does not work from the master MiVoice 5000 Server PC, the master MiVoice 5000 Server PC is disabled (service shutdown, virtual IP address becomes inactive) and the slave MiVoice 5000 Server PC becomes active (service startup, virtual IP address becomes active).

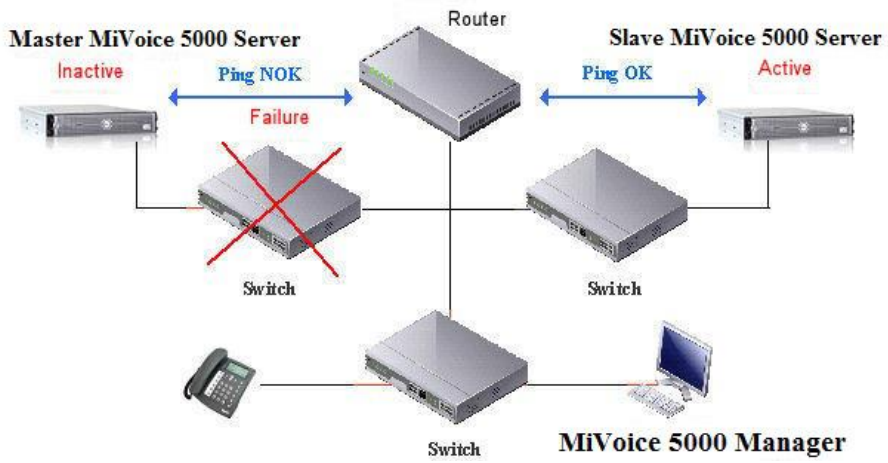
Note: A MiVoice 5000 Server PC without access to the router can never be active.

- If none of the two MiVoice 5000 Server PCs has access to its router, then the MiVoice 5000 Server is no longer working on any of the two PCs (the services are stopped, the virtual IP address becomes inactive). This case is not really a problem because the loss of default gateway isolates the MiVoice 5000 Server PC VLAN from the rest of the network.

3.1.2.2 Using Corosync with the ping function LAN redundancy

Before the failure, the master MiVoice 5000 Server PC had been active, and the slave MiVoice 5000 Server PC passive (inactive).

After the failure:



The master MiVoice 5000 Server PC was deactivated upon a ping NOK. The slave MiVoice 5000 Server PC became active after 10 seconds of network failure.

The services (here the master MiVoice 5000 Server PC) are deactivated 20 seconds after the router connection is lost.

Introducing this ping helps avoid having two active MiVoice 5000 Server PCs on a LAN configuration. In fact, without this test the master MiVoice 5000 Server PC would also be active when the network fails.

There are two possibilities after a network failure:

- One MiVoice 5000 Server PC is active and the other passive (inactive): in this case, when the network connection is restored, the passive MiVoice 5000 Server PC automatically synchronises

with the MiVoice 5000 Server PC that is active after the network failure. In the above example the data on the master MiVoice 5000 Server PC will be overwritten by the data on the slave MiVoice 5000 Server PC.

- Both MiVoice 5000 Server PCs are passive (inactive): the services restart normally on any of the two PCs when the network connections are restored.

3.1.2.3 Using Corosync with the ping function: WAN redundancy

Introducing this ping helps avoid having two active MiVoice 5000 Server PCs at the same time on a WAN configuration, unless the failure occurs between the 2 routers, on the WAN link.

Before the failure, the master MiVoice 5000 Server PC had been active, and the slave MiVoice 5000 Server PC passive (inactive).

There are three possibilities after a network failure:

- One MiVoice 5000 Server PC is active and the other passive (inactive): in this case, when the network connection is restored, the passive MiVoice 5000 Server PC automatically synchronises with the MiVoice 5000 Server PC that is active after the network failure. In our example the data on the master MiVoice 5000 Server PC will be overwritten by the data on the slave MiVoice 5000 Server PC.
- Both MiVoice 5000 Server PCs are passive (inactive): the services restart normally on any of the two PCs when the network connections are restored.
- The two active MiVoice 5000 Server machines (case of network failure on the WAN link between the two routers): the services restart normally on the master MiVoice 5000 Server PC when the network connection is restored and the data of the slave MiVoice 5000 Server PC are overwritten by those of the master MiVoice 5000 Server PC.

Therefore, all cases of network failure are not fully managed through this "ping" option in WAN redundancy.

3.1.2.4 Using Corosync without the ping function

In case of network disconnection:

- The virtual IP address becomes active on both the master and slave MiVoice 5000 Server PCs.
- The services are started on the master and slave MiVoice 5000 Server PCs.

Network connections are restored:

- The virtual IP address automatically becomes active on the master MiVoice 5000 Server.
- The services are automatically restarted on the master MiVoice 5000 Server.
- The services are started on the slave MiVoice 5000 Server PC.

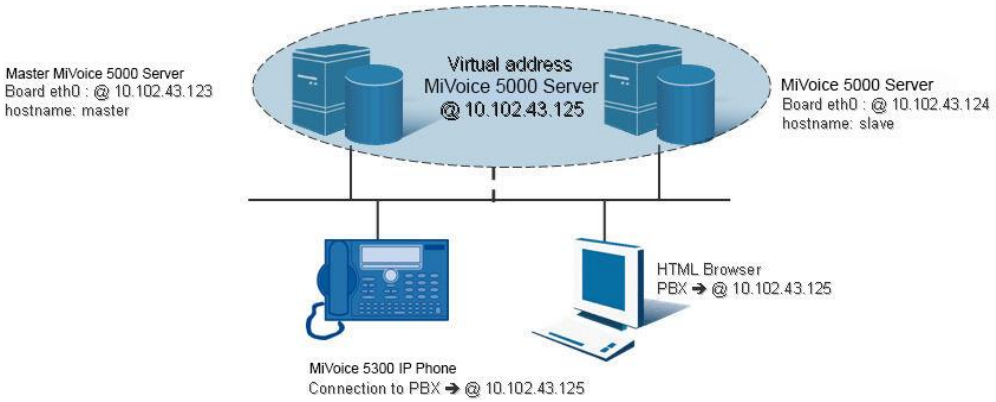
CAUTION: The data status may differ between the master and slave MiVoice 5000 Server PCs. The data used is the data on the active MiVoice 5000 Server PC prior to the network disconnection.

3.2 INSTALLING LAN REDUNDANCY WITHOUT DOUBLE ATTACHMENT

The following configuration is described in this chapter:

- The two MiVoice 5000 Server PCs are located on the same LAN at the customer's.
- Each MiVoice 5000 Server PC has only one network card.
- The virtual IP address used must be on the same subnet as the physical addresses of the two MiVoice 5000 Server PCs.
- The physical and virtual IP addresses must be fixed.

This architecture is represented on the diagram below.



CAUTION: For a configuration with two network cards (dual double attachment), refer to the chapter "LAN redundancy with double attachment" for the configuration to be performed in the redundancy scripts.

Note: Double attachment is not necessary for virtual machines.

3.2.1 REDUNDANCY INSTALLATION PREREQUISITES

Before installing redundancy, on both PCs:

- Install the operating system.
- Deactivate the Network Manager service.
- Configure the firewall.
- Collect the information needed to install redundancy.

These steps are described in detail in the following paragraphs.

3.2.1.1 *Installing the operating system*

Before installing redundancy, first install the operating system Centos 7.x on each MiVoice 5000 Server PC, following the instructions given in the installation guide for each of these operating systems.

Check that time-stamping is the same on the two machines, or that both machines point to the same NTP server.

For virtual machines (VM) provided by Mitel, the names of the master and slave machines must be modified so they do not have the same name. See **Renaming the MiVoice 5000 Server PC.**

CAUTION: The size of the partition to be made redundant must be the same on the master and slave MiVoice 5000 Server PCs.

3.2.1.2 *Configuring the firewall.*

If the firewall is activated, the following ports must be open on each machine:

- Port 7788 TCP : DRBD
- Port 5405 UDP : Corosync

To know the current firewall configuration

Type in the following commands:

systemctl status iptables

To configure the firewall:

- Log on as **root**.
- Configure the file **iptables** in the directory **/etc/sysconfig**.

To disable the firewall:

Type the following commands:

systemctl stop iptables

systemctl disable iptables

3.2.1.3 *Collecting the information needed to install redundancy*

The following information must be collected and available before running the local redundancy installation scripts:

- The licences associated with the master MiVoice 5000 Server PC dongle (functions sold to the customer)
- The redundancy licence associated with the slave MiVoice 5000 Server PC
- The IP address of the master MiVoice 5000 Server PC
- The IP address of the slave MiVoice 5000 Server PC
- The virtual IP address of the MiVoice 5000 Server PC
- The prefix of the mask associated with the virtual IP address

CAUTION: Enter the prefix value of the mask. For example, the prefix 24 corresponds to mask 255.255.255.0. See the Section Mask/prefix conversion for the table of correspondence.

- The name of the master MiVoice 5000 Server PC
- The name of the slave MiVoice 5000 Server PC
- The IP address of the gateway (router) to be pinged (connectivity test)

CAUTION: The PC name should not start with a number.
The name of the Master PC must be different from that of the Slave PC.

To rename the PCs, refer to the paragraph **Renaming the MiVoice 5000 Server PC**.

- The label of the master MiVoice 5000 Server PC Ethernet interface for the Corosync link
- The label of the slave MiVoice 5000 Server PC Ethernet interface for the Corosync link
- The label of the master MiVoice 5000 Server PC Ethernet interface for the virtual IP address
- The label of the slave MiVoice 5000 Server PC Ethernet interface for the virtual IP address
- The name of the partition to be made redundant on the master MiVoice 5000 Server PC
- The name of the partition to be made redundant on the slave MiVoice 5000 Server PC
- The operating mode of redundancy following a hardware failure: the master PC can be reactivated, and the slave PC returned to standby mode, automatically (Failback = ON) or manually (Failback = ON). Mitel recommends setting this mode to OFF.

CAUTION: The size of the partition to be made redundant must be the same on the master and slave MiVoice 5000 Server PCs.
The label of the Ethernet interface used by the virtual IP address must be the same on the master and slave MiVoice 5000 Server PCs.

3.2.1.4 Name input and resolution on the master PC

- Log on to the **root** account with the password **Mitel5000 on the master PC**.
- Type in the command below to give a name to the master PC: **hostnamectl set-hostname master-miv5000**
- With this command the prompt is used to check the name, by typing in the **hostname** command:
- [root@**master-miv5000** ~]# hostname
- **master-miv5000**
- Go to the **etc**. directory, edit the hosts file, add to this file the IP addresses / name of the master and slave MiVoice 5000 as follows:

127.0.0.1 localhost localhost.localdomain localhost4 localhost4.localdomain4

192.168.0.200 master-miv5000

192.168.0.201 slave-miv5000

::1 localhost localhost.localdomain localhost6 localhost6.localdomain6

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

  ping slave-miv5000

3.2.1.5 Obtaining the name of the partition to be made redundant on the master PC:

- Type in the **mount** command and check the name of the partition device to be made redundant (**/opt/a5000**) on the master MiVoice 5000 Server PC: **sda3 (this name may be different depending on the PC)**.

3.2.1.6 Name input and resolution on the slave PC

- Log on to the **root** account with the password **Mitel5000 on the slave PC.**
- Type in the command below to give a name to the **slave** PC: **hostnamectl set-hostname slave-miv5000**
- With this command the prompt is used to check the name, by typing in the **hostname** command:

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

  slave-miv5000
- Go to the **etc**. directory, edit the **hosts** file, add to this file the IP addresses / name of the master and slave MiVoice 5000 as follows:

127.0.0.1 localhost localhost.localdomain localhost4 localhost4.localdomain4

192.168.0.200 master-miv5000

192.168.0.201 slave-miv5000

::1 localhost localhost.localdomain localhost6 localhost6.localdomain6

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

  ping master-miv5000

3.2.1.7 Obtaining the name of the partition to be made redundant on the slave PC:

- Type in the **mount** command and check the name of the partition device to be made redundant (**/opt/a5000**) on the slave MiVoice 5000 Server PC: **sda3 (this name may be different depending on the PC)**.

CAUTION: The size of the partition to be made redundant must be the same on the master and slave MiVoice 5000 Server PCs (40 GB or above).

CAUTION: The name of the Ethernet interface must be the same on the master and slave MiVoice 5000 Server PCs.

3.2.2 INSTALLING AND CONFIGURING REDUNDANCY ON THE MASTER PC

Log on to the **root** account with the password **Mitel5000 on the master PC.**

- **From the CD/DVD:**
  - Define a mount point:
    #mkdir /mnt/iso
  - Insert the CD/DVD and enter:
    mount /dev/cdrom /mnt/iso
- **From the iso file:**
  - Define a mount point:
    #mkdir /mnt/iso
  - Retrieve the iso image **ACS_A5000_R7.0_RC_AXYY.iso** from the Mitel Website and copy it in the directoty **/tmp**,
  - Mount the iso image in the directory **/mnt/iso**,
    #mount -o loop /tmp/ACS_A5000_R7.0_RC_AXYY.iso /mnt/iso
  - Go to the directory **/cdutils/redhat/utils/bin/dupliv2**
  - .Run the installation script with the command**./install_redondance.script**

The script below is run. Answer the different questions.

- PC Master(1) or Slave (0): **1**
- Master IP address: **192.168.0.200**
- Master hostname: **master-miv5000**
- Slave IP address: **192.168.0.201**
- Slave hostname: **slave-miv5000**
- Virtual IP address: **192.168.0.202**
- Virtual IP netmask: **24**
- Do you want a 2nd IP address: **0**
- Redundancy LAN(0) or WAN(1): **0**
- Master Ethernet board for redundancy: **eth0 in single attachment (this name may be different depending on the machine) and bond0 in double attachment**
- Slave Ethernet board for redundancy: **eth0 in single attachment (this name may be different depending on the machine) and bond0 in double attachment**
- Ethernet board for applications: **eth0 in single attachment (this name may be different depending on the machine) and bond0 in double attachment**
- Do you want to ping an IP address: **1 (if there is a gateway IP address), or 0 (if there is no gateway IP address)**
- IP address to ping: **192.168.0.254 (gateway IP address)**
- Master partition: **sda3 (this name may be different depending on the PC).**
- Slave partition: **sda3 (this name may be different depending on the PC).**
- Redundancy deadtime (in seconds): **10**
- Auto failback: **OFF**
- LDAP controlled by redundancy : **1**

- After checking the redundancy configuration parameters, answer **1** to the question: **do you want to apply these settings: Yes(1) / No(0)**
- Check that the installation scripts are running correctly:
- Answer **yes** to the prompt T**o abort waiting enter** '**yes**'.
- Wait for the end of the initialisation.
- Check the synchronisation status on the master PC:
- Type in the command **cat /proc/drbd**.
- The following information must be displayed:
  cs :WFConnection ro :Primary/Unknown ds :UpToDate/Unknown

REDUNDANCY INSTALLATION AND CONFIGURATION ON THE MASTER PC HAS BEEN COMPLETED.

3.2.3 INSTALLING AND CONFIGURING REDUNDANCY ON THE SLAVE PC

CAUTION: The size of the partition to be made redundant must be the same on the master and slave MiVoice 5000 Server PCs.
The label of the Ethernet interface used by the virtual IP address must be the same on the master and slave MiVoice 5000 Server PCs.

- Log on to the **root** account with the password **Mitel5000 on the slave PC.**

➢ **From the CD/DVD:**

- Define a mount point:

  #mkdir /mnt/iso

- Insert the CD/DVD and enter:

  mount /dev/cdrom /mnt/iso

➢ **From the iso file:**

- Define a mount point:

  #mkdir /mnt/iso

- Retrieve the iso image **ACS_A5000_R7.0_RC_AXYY.iso** from the Mitel Website and copy it in the directoty **/tmp**,
- Mount the iso image in the directory **/mnt/iso**,

  #mount -o loop /tmp/ACS_A5000_R7.0_RC_AXYY.iso /mnt/iso

- Go to the directory **/cdutils/redhat/utils/bin/dupliv2**
- .Run the installation script with the command**./install_redondance.script**

The script below is run. Answer the different questions.

```
PC Master(1) or Slave (0): 0
-    Master IP address: 192.168.0.200
-    Master hostname: master-miv5000
-    Slave IP address: 192.168.0.201
-    Slave hostname: slave-miv5000
-    Virtual IP address: 192.168.0.202
-        Virtual IP netmask: 24
-        Do you want a 2nd IP address: 0
-    Redundancy LAN(0) or WAN(1): 0
-    Master Ethernet board for redundancy: eth0 in single attachment (this name may be different depending on the machine) and bond0 in double attachment bond0
-    Slave Ethernet board for redundancy: eth0 in single attachment (this name may be different depending on the machine) and bond0 in double attachment bond0
-    Ethernet board for applications : eth0 in single attachment (this name may be different depending on the machine) and bond0 in double attachment bond0
-    Do you want to ping an IP address: 1 (if there is a gateway IP address), or 0 (if there is no gateway IP address)
-    IP address to ping: 192.168.0.254 (gateway IP address)
-    Master partition: sda3 (this name may be different depending on the PC).
-    Slave partition: sda3 (this name may be different depending on the PC).
-    Redundancy deadtime (in seconds): 10
-    Auto failback: OFF
-    LDAP controlled by redundancy : 1
```

- After checking the redundancy configuration parameters, answer **1** to the question: **`do you want to apply these settings: Yes(1) / No(0)`**
- Check that the installation scripts are running correctly.
- Check that synchronisation on the slave machine is starting and progressing:
  - A terminal window automatically opens and the following information appears:

`[=>.....] sync' ed: 20.5% (15912/20000)`

- Check that synchronisation on the slave machine has been completed.
  - Type in the command **cat /proc/drbd**.
  - The following information must be displayed:

`cs :Connected ro :Secondary/ Primary ds :UpToDate/UpToDate`

THE INSTALLATION AND CONFIGURATION OF REDUNDANCY ON THE SLAVE PC AND THE SYNCHRONISATION OF THE MASTER AND SLAVE PC HAVE BEEN COMPLETED.

3.2.4 INSTALLING AND CONFIGURING MIVOICE 5000 ON THE MASTER PC

3.2.4.1 Installing the application

CAUTION: The version of MiVoice R6.x may change. See "SHIPMENT AUTHORISATION".

- Log on to the **root** account with the password Mitel5000 on the master PC.
- Go to the **Install5000** directory and run the installation script:

#cd /mnt/iso/install5000
#./first_install.sh

At the end, in the screen displayed, chose **F5**, Type **Enter**

- Check that the installation scripts are running correctly: report **OK** on each line.

3.2.4.2 Application configuration

- After the installation phase, the configuration phase starts automatically.
- IP address configuration screen of the Telephony network:
  - **Enter your choice [ ] ?** Select the value associated with the virtual IP address from those proposed by default (192.168.0.202) for the telephony network then press **Enter** to keep this value.
  - **You choose 192.168.0.202, do you confirm [Y]/N?** Press **Y** to confirm the selection then press **Enter** to go to the next section.
- Administration network configuration screen (in case of Administration and Telephony flow separation). The value proposed by default is **No**:
  - **Do you want to configure management IP network Y(es)/N(o) ?** Press **N** then Enter.
- Country configuration screen (locating menu labels and displaying sets). The value proposed by default is **FRA**:
  - **Do you want to change configuration Y(es)/N(o)?** Press **N** then **Enter** to keep this value, or press **Y** then **Enter** to change it.

- In case of change: **Do you confirm Y(es)/N(o)?** Press **Y** to confirm the selection then press **Enter** to go to the next section.

- Spoken language configuration screen (definition of the 5 spoken languages used by the Announcements, IVB and IVR function of the MEDIA SERVER service):

  - **Do you want to change configuration Y/ [N]?** Press **N** then **Enter** to keep the 5 spoken languages defined by default, or press **Y** then **Enter** to change them.
  - In case of change: **Do you confirm (Y/N)?** Press **Y** to confirm the selection then press **Enter** to go to the next section.

- Licence configuration screen (**do not enter any licence**).

  - **Do you want to change configuration Y(es)/N(o) ?** Press **N** then Enter.

- MiVoice 5000 Configuration / MediaServer BVI Duplication
  - **You are in duplication mode, do you want to replicate messages and signatures Y/[N]:**

- PARI configuration screen The value proposed by default is **123456789**:

  - **Do you want to change configuration Y(es)/N(o)?** Press **N** then **Enter**.

- Installation screen for the services managed by AMP. The following values are proposed by default:

  - **DHCP: 0**
  - **FTP: 0**
  - **TFTP: 1**
  - **SYSLOG: 0**
  - **SSH: 0**
  - **ANNOUNCEMENT: 1**
  - **IVR: 1**
  - **| IVB: 0**
  - **Conference 1**

  - **Do you want to change configuration Y(es)/N(o)?** Press **Y** then **Enter**.

On the services management screen, change the values for the SSH and SYSLOG lines:

- **DHCP: 0**
- **FTP: 0**
- **TFTP: 1**
- **SYSLOG: 1**
- **SSH: 1**
- **ANNOUNCEMENT: 1**
- **IVR: 1**
- **| IVB: 0**
- **Conference 1**

  - **Do you confirm Y(es)/N(o)?** Press **Y** to confirm the general parameter input of the installation then press **Enter** to go to the next section.

- Configuration screen for starting the services automatically. The following values are proposed by default:

  - **FTP: 0**
  - **TMA: 1**
  - **DHCP: 0**
    - **Do you want to change configuration Y(es)/N(o)?** Press **N** then **Enter** to go to the next section.

- Screen for configuring the deployment options of terminals 67xxi. The following values are proposed by default:

  - LLDP ENABLED: **0**
  - TERMINAL VLAN:
  - PC VLAN:
    - **Do you want to change configuration Y(es)/N(o)?** Press **N** then **Enter** to go to the next section.

- The installation's general parameters configuration screen: Installation name and number (IID)

  - **Do you want to configure name/IID Y(es)/N(o)** Press **Y** then **Enter**.
  - **Name:** enter the installation name. Press **Enter**.
  - **IID**: enter the IID (**ZABPQMCDU**). Press **Enter**.
  - **Do you confirm Y(es)/N(o)?** Press **Y** to confirm the general parameter input of the installation then press **Enter** to go to the next section.

- Numbering plan configuration screen: numbering plan length.

  - **Do you want to configure Numbering Length Y(es)/N(o):** Press **Y** then **Enter**.
  - **Numbering Length:** enter the numbering plan length. Press **Enter**.
  - **Do you confirm Y(es)/N(o)?** Press **Y** to confirm the numbering plan length input then press **Enter** to go to the next section.

- Configuration screen for call distribution 0: number of the subscription assigned to the day and reduced service of call distribution 0 and the DID number assigned to call distribution 0.

  - **Do you want to configure Call Distribution Y(es)/N(o):** Press **Y** then **Enter**.
  - **Subscriber:** enter the number assigned to the day and reduced service of call distribution 0. Press **Enter**.
  - **DID:** enter the DID number assigned to call distribution 0. Press **Enter**.
  - **Do you confirm Y(es)/N(o)?** Press **Y** to confirm the parameter input of call distribution 0 then press **Enter** to go to the next section.

- SNMP demon configuration screen.

  - **Would you dedicate your SNMP daemon? [Y]/N:** Press **Y** then **Enter**.

- Subscription configuration screen: automatic subscription configuration.

  - **Do you want to configure Subscribers Y(es)/N(o):** Press **Y** then **Enter**.
  - **Creation:** press **1** to authorise automatic subscription creation
  - **IVB CREATION:** press **0**. Press **Enter**.
  - **UNIFIED IVB:** press **0**. Press **Enter**.
  - **First:** enter the first local subscription number. Press **Enter**.
  - **Last:** enter the last local subscription number. Press **Enter**.
  - **DID Number length:** enter the DID number length
  - **First DID:** enter the first DID number of the external block 0 associated with the First/Last block. Press **Enter**.

- **First Public DID:** enter the first public DID number associated with external block 0 Press **Enter**.
- **| IVB:** do not enter anything. Press **Enter**.
- **Common Subscriber:** enter the general-purpose local subscription number. Press **Enter**.
- **Additional Subscriptions:** enter the number of subscribers to be created. Press **Enter**.
- **Subscriber password:** enter the subscriptions' default password.
- **General Sets authentication:** press 1 to allow automatic creation of MD5 authentication password.
- **Do you confirm Y(es)/N(o)?** Press **Y** to confirm the subscriptions' configuration parameter input then press **Enter** to go to the next section.

- The screen then displays a summary of the configuration made:

```
*-------------------------------------------------*
| Summary:                                        |
*-------------------------------------------------*
| IPADR =              192.168.0.202              |
| NAME =               A5000                      |
| IID =                130967001                  |
| FIRST =              2000                       |
| LAST=                2999                       |
| DID numbering length 4                          |
| First DID =          2000                       |
| IVB =                                           |
| Numbering length  =   4                         |
| COUNTRY =            FRA                        |
| PARI =               123456789                  |
| START UP TYPE =      TOTAL                      |
| DEDICATED SNMPD =    Y                          |
*-------------------------------------------------*
Do you want to apply your change Y(es)/N(o)/R(econfigure) ?
```

- If the summary is not correct, press **R** to restart the pre-configuration from the country configuration screen.
- If the summary is correct, press **Y** if the values displayed are correct then press **Enter** to confirm.

THE INSTALLATION AND CONFIGURATION OF MiVoice 5000 ON THE MASTER PC HAS BEEN COMPLETED.

3.2.5 INSTALLING AND CONFIGURING MIVOICE 5000 ON THE SLAVE PC

3.2.5.1 Installing the application

- Log on to the **root** account with the password **Mitel5000** on the slave PC**.**
- On the slave machine, type the following command:

/cdutils/redhat/utils/bin/dupliv2/files/hb_takeover

- Check that the switchover to the **master machine** has taken place correctly (wait for the **master** PC to restart).
  - Type in the command **cat /proc/drbd**.
  - The following information must be displayed:

    cs :Connected st : Primary/Secondary ds :UpToDate/UpToDate

- Go to the **Install5000** directory and run the installation script:

  #**cd /mnt/iso/install5000**
  #**./first_install.sh**

At the end, in the screen displayed, chose **F5**, Type **Enter**

- Check that the installation scripts are running correctly: report **OK** on each line.

3.2.5.2 Application configuration

- After the installation phase, the configuration phase starts automatically.

To be configured in the same way as the master machine:

- IP address configuration screen of the Telephony network:
  - **Enter your choice [ ] ?** Select the value associated with the virtual IP address from those proposed by default (192.168.0.202) for the telephony network then press **Enter** to keep this value.
  - **You choose 192.168.0.202, do you confirm [Y]/N?** Press **Y** to confirm the selection then press **Enter** to go to the next section.
- Administration network configuration screen (in case of Administration and Telephony flow separation). The value proposed by default is **No**:
  - **Do you want to configure management IP network Y(es)/N(o)?** Press **N** then Enter.
- Country configuration screen (locating menu labels and displaying sets). The value proposed by default is **FRA**:
  - **Do you want to change configuration Y(es)/N(o)?** Press **N** then **Enter** to keep this value, or press **Y** then **Enter** to change it.
  - In case of change: **Do you confirm Y(es)/N(o)?** Press **Y** to confirm the selection then press **Enter** to go to the next section.
- Licence configuration screen (**do not enter any licence**).
  - **Do you want to change configuration Y(es)/N(o)?** Press **N** then Enter.

- MiVoice 5000 Configuration / MediaServer BVI Duplication
  - You are in duplication mode, do you want to replicate messages and signatures Y/[N]:

- PARI configuration screen The value proposed by default is **123456789**:

  - **Do you want to change configuration Y(es)/N(o)?** Press **N** then **Enter**.

- Installation screen for the services managed by AMP. The following values are proposed by default:
  - **DHCP: 0**
  - **FTP: 0**
  - **TFTP: 1**
  - **SYSLOG: 0**
  - **SSH: 0**
  - **ANNOUNCEMENT: 1**
  - **IVR: 1**
  - **| IVB: 0**
  - **Conference: 1**
  - **Do you want to change configuration Y(es)/N(o)?** Press **N** then **Enter** to go to the next section.

- Configuration screen for starting the services automatically. The following values are proposed by default:

  - **FTP: 0**
  - **TMA: 1**
  - **DHCP: 0**
  - **Do you want to change configuration Y(es)/N(o)?** Press **N** then **Enter** to go to the next section.

- Screen for configuring the deployment options of terminals 67xxi. The following values are proposed by default:

  - LLDP ENABLED: **0**
  - TERMINAL VLAN:
  - PC VLAN:
  - **Do you want to change configuration Y(es)/N(o)?** Press **N** then **Enter** to go to the next section.

- The installation's general parameters configuration screen: Installation name and number (IID)
  - **Do you want to configure name/IID Y(es)/N(o)** Press **Y** then **Enter**.
  - **Name:** enter the installation name. Press **Enter**.
  - **IID**: enter the IID (**ZABPQMCDU**). Press **Enter**.
  - **Do you confirm Y(es)/N(o)?** Press **Y** to confirm the general parameter input of the installation then press **Enter** to go to the next section.

- Numbering plan configuration screen: numbering plan length.

  - **Do you want to configure Numbering Length Y(es)/N(o):** Press **Y** then **Enter**.
  - **Numbering Length:** enter the numbering plan length. Press **Enter**.
  - **Do you confirm Y(es)/N(o)?** Press **Y** to confirm the numbering plan length input then press **Enter** to go to the next section.

- Configuration screen for call distribution 0: number of the subscription assigned to the day and reduced service of call distribution 0 and the DID number assigned to call distribution 0.

  - **Do you want to configure Call Distribution Y(es)/N(o)** : Press **Y** then **Enter**.
  - **Subscriber:** enter the number assigned to the day and reduced service of call distribution 0. Press **Enter**.
  - **DID:** enter the DID number assigned to call distribution 0. Press **Enter**.
  - **Do you confirm Y(es)/N(o)?** Press **Y** to confirm the parameter input of call distribution 0 then press **Enter** to go to the next section.
  -

- SNMP demon configuration screen.

  - **Would you dedicate your SNMP daemon? [Y]/N:** Press **Y** then **Enter**.

- Subscriptions configuration screen: automatic configuration of subscriptions (same configuration as on the Master PC.

  - **Do you want to configure Subscribers Y(es)/N(o)** : Press **Y** then **Enter**.
  - **Creation:** press **1** to authorise automatic subscription creation.
  - **IVB CREATION:** press **0**. Press **Enter**.
  - **UNIFIED IVB:** press **0**. Press **Enter**.
  - **First:** enter the first local subscription number. Press **Enter**.
  - **Last:** enter the last local subscription number. Press **Enter**.
  - **DID Number length:** enter the DID number length
  - **First DID:** enter the first DID number of the external block 0 associated with the First/Last block. Press **Enter**.
  - **First Public DID:** enter the first public DID number associated with external block 0 Press **Enter**.
  - **| IVB:** do not enter anything Press **Enter**.
  - **Common Subscriber:** enter the general-purpose local subscription number. Press **Enter**.
  - **Additional Subscriptions:** enter the number of subscribers to be created. Press **Enter**.
  - **Subscriber password:** enter the subscriptions' default password.
  - **General Sets authentication:** press **1** to allow automatic creation of MD5 authentication password.
  - **Do you confirm Y(es)/N(o)?** Press **Y** to confirm the subscriptions' configuration parameter input then press **Enter** to go to the next section.

- The screen then displays a summary of the configuration made:

```
*-------------------------------------------------*
| Summary:                                        |
*-------------------------------------------------*
| IPADR =              192.168.0.202              |
| NAME =               A5000                      |
| IID =                130967001                  |
| FIRST =              2000                       |
| LAST=                2999                       |
| DID numbering length 4                          |
| First DID =          2000                       |
| IVB =                                           |
| Numbering length  =   4                         |
| COUNTRY =            FRA                        |
| PARI =               123456789                  |
| START UP TYPE =      TOTAL                      |
| DEDICATED SNMPD =    Y                          |
*-------------------------------------------------*
Do you want to apply your change Y(es)/N(o)/R(econfigure) ?
```

- If the summary is not correct, press **R** to restart the pre-configuration from the country configuration screen.
- If the summary is correct, press **Y** if the values displayed are correct then press **Enter** to confirm.

THE INSTALLATION AND CONFIGURATION OF MiVoice 5000 ON THE SLAVE PC HAS BEEN COMPLETED.

3.2.6 RUNNING THE REDUNDANCY START SCRIPT ON THE SLAVE PC

- Log on to the **root** account with the password Mitel5000 on the **slave** PC.
- Go to the directory **/cdutils/redhat/utils/bin/dupliv2**
- Run the command **./start_redondance.**

CAUTION: **At the end of its execution, this script switches automatically to the master MiVoice 5000 Server PC which becomes active. The virtual address of the master MiVoice 5000 Server PC becomes active and the virtual address on the slave A5000 Server PC becomes inactive.**

Unmount the CD / DVD:

#cd
#umount /mnt/iso

THE RUNNING OF THE REDUNDANCY START SCRIPT ON THE SLAVE PC HAS BEEN COMPLETED.

3.2.7 RUNNING THE REDUNDANCY START SCRIPT ON THE MASTER PC

- Log on to the **root** account with the password **Mitel5000** on the **master** PC.
- Check that the change to the master PC (following the running of the redundancy start script on the slave PC) has taken place correctly:
  - Type in the command **cat /proc/drbd**.
  - The following information must be displayed:

```
cs :Connected ro : Primary/Secondary ds :UpToDate/UpToDate
```

- Go to the directory **.. /cdutils/redhat/utils/bin/dupliv2**
- Run the command **./start_redondance.script**

THE RUNNING OF THE REDUNDANCY START SCRIPT ON THE MASTER PC HAS BEEN COMPLETED.

Unmount the CD / DVD:

#cd
#umount /mnt/iso

3.3 CENTOS 7.X SECURITY PATCHES ON THE MASTER AND SLAVE PCS

Refer to the document AMT/PTD/NMA/0062 - Updating the R6.x security patches on OS CentOS 7.x.

Main steps:

- Install the security patches .iso image provided by Mitel on the slave machine
- Run the installation script on the slave machine ;
- Reboot the slave machine (**Shutdown -r now)**
- Install the security patches .iso image provided by Mitel on the master machine
- Run the installation script on the master machine ;
- Reboot the master machine (**Shutdown -r now)**

3.4 DECLARING LICENCES

3.4.1 PRECAUTIONS FOR USE

The installation code is unique, and the generated keycode can only work with an installation code.

If an installation code is generated without obtaining a new keycode, the functions subject to a licence are closed within one hour.

To manage different cases requiring a change of installation code during the system's service life, especially for cases during 24/7 working period, it is now possible to change the installation code without first asking Mitel for an authorisation.

After this change, you will no longer have the right to make any modification, you must contact Aastra to indicate your reasons for this change (user modification, physical replacement of the platform, network modification, etc.).

After analysing your request, you will again be authorised to modify the installation code.

During a consultation on the AKOP licence server ("search for a key"), the right to modify the installation code on the identification number concerned is indicated via the following information:

- Modification of installation code allowed
- Modification of installation code not allowed.

Reminder: the IID number is the installation number and you must ensure that it is regularly called. If this is not the case, some error messages will appear in the logbook after one month (as of R5.4) then the functions are locked.

Note: The data entered on the master MiVoice 5000 Server PC is automatically updated on the slave MiVoice 5000 Server PC. The slave Licence tab is used to view the licences for the slave PC.

CAUTION: **If the master MiVoice 5000 Server PC is active, the redundancy licence is not seen as open on it.**

If the slave MiVoice 5000 Server PC becomes active after a switchover, the licences are only valid for 30 days. As from D-7, a message is displayed daily in the PC logbook reminding the administrator that the licences will soon expire.

In case of switchover to the slave Server, all the licences, including the redundancy licence, are seen as open on this PC.

The message Duplex operation in slave mode appears on the welcome page of the slave MiVoice 5000 Server PC when this latter is active.

Checking the validity of the virtual dongle

A periodic check is made on the activity passing through the IP access and the IID number for the ID of this dongle type.

As from the 31st day, a message is displayed in the logbook mentioning the absence of activity on any of these two accesses.

If no activity is detected for the next 30 days, the licence is withdrawn.

3.4.2 ENTER THE LICENCES ON THE MASTER MIVOICE 5000 SERVER PC.

Note: From the AMP, check that the IP address of the PTx is that of the virtual IP address.

From **Webadmin** of the **master** PC

Preliminary operations:

- Regenerate the installation code from the IP address and IID from Menu **System>info>Licenses.**
- Connect to the MITEL (AKOP) licence server to regenerate the licences.

Then on the **master** PC:

- On the master MiVoice 5000 Server machine in Menu **System > Info > Licences** enter the licence needed by the client.

The functions in question are then authorised on the **master** PC.

It is advisable to make a call from outside to check the validity of the key immediately.

It is advisable to save this licence as a text file.

3.4.3 ENTER THE LICENCES ON THE SLAVE MIVOICE 5000 SERVER PC.

Note: From the AMP, check that the IP address of the PTx is that of the virtual IP address.

On the **master** PC desktop, double-click the shortcut "**Change to slave**".

From **Webadmin** of the **slave** PC

Preliminary operations:

- Regenerate the installation code from the IP address and IID from Menu **System>info>Licenses – Slave** tab.
- Connect to the MITEL (AKOP) licence server to regenerate the licences.

Then on the **slave** PC:

- On the **slave** MiVoice 5000 Server in Menu **System>Info>Licences** enter the redundancy licence.

It is advisable to make a call from outside to check the validity of the key immediately.

It is advisable to save this licence as a text file.

3.4.4 SWITCHING TO THE MASTER PC

On the slave machine:

- Go to the directory **/cdutils/redhat/utils/bin/dupliv2**
- Enter the following command:

  /hb_takeover
- Check that the switchover to the **master machine** has taken place correctly (wait for the **master** PC to restart).

3.4.5 SWITCHOVER TESTS

- On the **master** PC:
- Restart the master machine
- Check that the switchover to the **slave** PC has taken place correctly (wait for the **master** PC to restart).

On the **slave** PC:

- Type in the command **cat /proc/drbd**.
- The following information must be displayed:

cs :Connected ro: Primary/Secondary ds :UpToDate/UpToDate

- Log on to the AMP of the slave machine:
- **Duplex operation in slave mode** appears on the welcome page. Check that the redundancy licence has been activated (30 days/30 days).
- Restart the slave machine
- Check that the switchover to the **master** PC has taken place correctly (wait for the **slave** PC to restart).

On the **master** PC:

- Type in the command **cat /proc/drbd**.
- The following information must be displayed:

cs :Connected ro: Primary/Secondary ds :UpToDate/UpToDate

THE INSTALLATION OF REDUNDANT MiVoice 5000 SERVER HAS BEEN COMPLETED.

3.5 INSTALLING REDUNDANCY WITH DOUBLE ATTACHMENT

This is the default configuration (factory configuration) of the servers provided by Mitel.

However, the user can work in simple attachment mode by deactivating the virtual interface **bond0** and reconfiguring the **eth0** interface on each server.

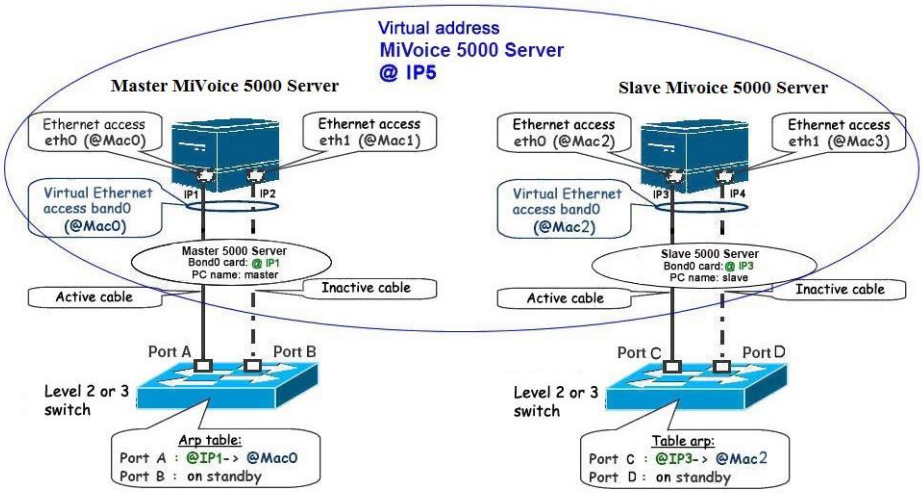
Note: Double attachment is not necessary for virtual machines.

The following configuration is described in this chapter:

- The two MiVoice 5000 Server PCs are located on the same LAN at the customer's.
- Each MiVoice 5000 Server PC has two Ethernet accesses.
- The virtual IP address used must be on the same subnet as the physical addresses of the two MiVoice 5000 Server PCs.
- The physical and virtual IP addresses must be fixed.
- The two Ethernet accesses of each MiVoice 5000 PC are connected either:
  - to the same active element (level 2 or level 3 switch)
  - to two distinct active elements

The bonding mode used is active backup. This mode is a simple Ethernet protection with switchover. Only one interface is active at a time. Once its failure is detected, another interface is activated and takes over. The bandwidth does not change.

This architecture is represented on the diagram below.



3.5.1 REDUNDANCY INSTALLATION PREREQUISITES

Before installing redundancy, on both PCs:

- Install the operating system.
- Configure the firewall.
- Collect the information needed to install redundancy.

3.5.1.1 Install the operating system.

Before installing redundancy, first install the operating system Centos 7.x on each MiVoice 5000 Server PC, following the instructions given in the installation guide for each of these operating systems.

Check that time-stamping is the same on the two machines, or that both machines point to the same NTP server.

For virtual machines (VM) provided by Mitel, the names of the master and slave machines must be modified so they do not have the same name. See Renaming the MiVoice 5000 Server PC.

CAUTION: The size of the partition to be made redundant must be the same on the master and slave MiVoice 5000 Server PCs.

3.5.1.2 Configure the firewall.

If the firewall is activated, the following ports must be open on each machine:

- Port 7788 TCP : DRBD
- Port 5405 UDP : Corosync

To know the current firewall configuration

Type in the following commands:

systemctl status iptables

To configure the firewall:

- Log on as **root.**
- Configure the file **iptables** in the directory **/etc/sysconfig**.

To disable the firewall:

Type in the following commands:

systemctl stop iptables

systemctl disable iptables

3.5.1.3 *Collect the information needed to install redundancy.*

The following information must be collected and available before starting the local redundancy installation scripts:

- The licences associated with the master MiVoice 5000 Server (functions sold to the customer)
- The redundancy licence associated with the new version of the slave MiVoice 5000 Server PC
- The IP address of the master MiVoice 5000 Server PC
- The IP address of the slave MiVoice 5000 Server PC
- The virtual IP address of the MiVoice 5000 Server PC
- The prefix of the mask associated with the virtual IP address
- The name of the master MiVoice 5000 Server PC
- The name of the slave MiVoice 5000 Server PC

CAUTION: The PC name should not start with a number.
The name of the Master PC must be different from that of the Slave PC.

The IP address of the gateway (router) to be pinged (connectivity test)

- The label of the master MiVoice 5000 Server PC Ethernet interface for the Corosync link
- The label of the slave MiVoice 5000 Server PC Ethernet interface for the Corosync link
- The label of the master MiVoice 5000 Server PC Ethernet interface for the virtual IP address
- The label of the slave MiVoice 5000 Server PC Ethernet interface for the virtual IP address
- The name of the partition to be made redundant on the master MiVoice 5000 Server PC
- The name of the partition to be made redundant on the slave MiVoice 5000 Server PC
- The operating mode of redundancy (**Failback**) after a hardware failure: the master PC can be reactivated, and the slave PC returned to standby mode, automatically (**Failback** set to **ON**) or manually (**Failback** set **OFF**). Mitel recommends setting this mode to OFF.

CAUTION: The size of the partition to be made redundant must be the same on the master and slave MiVoice 5000 Server PCs.
The label of the Ethernet interface used by the virtual IP address must be the same on the master and slave MiVoice 5000 Server PCs.

3.5.1.4 Name input and resolution on the master PC

- Log on to the **root** account with the password **Mitel5000 on the master PC.**
- Type in the command below to give a name to the master PC: **hostnamectl set-hostname master-miv5000**
- With this command the prompt is used to check the name, by typing in the hostname command:
- [root@**master-miv5000** ~]# hostname
- **master-miv5000**

- Go to the **etc**. directory, edit the hosts file, add to this file the IP addresses / name of the master and slave MiVoice 5000 as follows:

127.0.0.1 localhost localhost.localdomain localhost4 localhost4.localdomain4

192.168.0.200 master-miv5000

192.168.0.201 slave-miv5000

::1 localhost localhost.localdomain localhost6 localhost6.localdomain6

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

  ping slave-miv5000

3.5.1.5 Obtaining the name of the partition to be made redundant on the master PC:

- Type in the **mount** command and check the name of the partition device to be made redundant (**/opt/a5000**) on the master MiVoice 5000 Server PC: **sda3 (this name may be different depending on the PC).**

3.5.1.6 Name input and resolution on the slave PC

- Log on to the **root** account with the password **Mitel5000 on the slave PC.**
- Type in the command below to give a name to the **slave** PC: **hostnamectl set-hostname slave-miv5000**
- With this command the prompt is used to check the name, by typing in the **hostname** command:

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

  slave-miv5000

- Go to the **etc**. directory, edit the **hosts** file, add to this file the IP addresses / name of the master and slave MiVoice 5000 as follows:

127.0.0.1 localhost localhost.localdomain localhost4 localhost4.localdomain4

192.168.0.200 master-miv5000

192.168.0.201 slave-miv5000

::1 localhost localhost.localdomain localhost6 localhost6.localdomain6

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

  ping master-miv5000

3.5.1.7 Obtaining the name of the partition to be made redundant on the slave PC:

- Type in the **mount** command and check the name of the partition device to be made redundant (**/opt/a5000**) on the slave MiVoice 5000 Server PC: **sda3 (this name may be different depending on the PC)**.

CAUTION: The size of the partition to be made redundant must be the same on the master and slave MiVoice 5000 Server PCs (40 GB or above).

CAUTION: The name of the Ethernet interface must be the same on the master and slave MiVoice 5000 Server PCs.

3.5.2 INSTALLING AND CONFIGURING REDUNDANCY ON THE MASTER PC

- Log on to the **root** account with the password **Mitel5000 on the master PC.**

➢ **From the CD/DVD:**

- Define a mount point:

  #mkdir /mnt/iso

- Insert the CD/DVD and enter:

  mount /dev/cdrom /mnt/iso

➢ **From the iso file:**

- Define a mount point:

  #mkdir /mnt/iso

- Retrieve the iso image **ACS_A5000_R7.0_RC_AXYY.iso** from the Mitel Website and copy it in the directoty **/tmp**,
- Mount the iso image in the directory **/mnt/iso**,

  #mount -o loop /tmp/ACS_A5000_R7.0_RC_AXYY.iso /mnt/iso

- Go to the directory **/cdutils/redhat/utils/bin/dupliv2**
- .Run the installation script with the command**./install_redondance.script**

The script below is run. Answer the different questions.

- PC Master(1) or Slave (0): **1**
- Master IP address: **192.168.0.200**
- Master hostname: **master-miv5000**
- Slave IP address: **192.168.0.201**
- Slave hostname: **slave-miv5000**
- Virtual IP address: **192.168.0.202**
- Virtual IP netmask: **24**
- Do you want a 2nd IP address: **0**
- Redundancy LAN(0) or WAN(1): **0**
- Master Ethernet board for redundancy: **bond0**
- Slave Ethernet board for redundancy: **bond0**
- Ethernet board for applications: **bond0**
- Do you want to ping an IP address: **1 (if there is a gateway IP address), or 0 (if there is no gateway IP address)**
- IP address to ping: **192.168.0.254 (gateway IP address)**
- Master partition: **hda5 (this name may be different depending on the PC)**
- Slave partition: **hda5 (this name may be different depending on the PC)**
- Redundancy deadtime (in seconds): **10**
- Auto failback: **OFF**
- LDAP controlled by redundancy : **1**

- After checking the redundancy configuration parameters, answer **1** to the question: **do you want to apply these settings: Yes(1) / No(0)**
- Check that the installation scripts are running correctly:
- Answer **yes** to the prompt T**o abort waiting enter** '**yes**'.
- Wait for the end of the initialisation.

- Check the synchronisation status on the master PC:
- Type in the command **cat /proc/drbd**.
- The following information must be displayed:

```
cs :WFConnection st :Primary/Unknown ds :UpToDate/Unknown
```

REDUNDANCY INSTALLATION AND CONFIGURATION ON THE MASTER PC HAS BEEN COMPLETED.

3.5.3 INSTALLING AND CONFIGURING REDUNDANCY ON THE SLAVE PC

- Log on to the **root** account with the password **Mitel5000 on the slave PC.**

➢ **From the CD/DVD:**

- Define a mount point:

  #mkdir /mnt/iso

- Insert the CD/DVD and enter:

  mount /dev/cdrom /mnt/iso

➢ **From the iso file:**

- Define a mount point:

  #mkdir /mnt/iso

- Retrieve the iso image **ACS_A5000_R7.0_RC_AXYY.iso** from the Mitel Website and copy it in the directoty **/tmp**,
- Mount the iso image in the directory **/mnt/iso**,

  #mount -o loop /tmp/ACS_A5000_R7.0_RC_AXYY.iso /mnt/iso

- Go to the directory **/cdutils/redhat/utils/bin/dupliv2**
- .Run the installation script with the command**./install_redondance.script**

The script below is run. Answer the different questions.

```
PC Master(1) or Slave (0): 0
-    Master IP address: 192.168.0.200
-    Master hostname: master-miv5000
-    Slave IP address: 192.168.0.201
-    Slave hostname: slave-miv5000
-    Virtual IP address: 192.168.0.202
-        Virtual IP netmask: 24
-        Do you want a 2nd IP address: 0
-    Redundancy LAN(0) or WAN(1): 0
-    Master Ethernet board for redundancy: bond0
-    Slave Ethernet board for redundancy: bond0
-    Ethernet board for applications : bond0
-    Do you want to ping an IP address: 1 (if there is a gateway
     IP address), or 0 (if there is no gateway IP address)
-    IP address to ping: 192.168.0.254 (gateway IP address)
-    Master partition: sda3 (this name may be different depending
on the PC).
-    Slave partition: sda3 (this name may be different depending
on the PC).
-    Redundancy deadtime (in seconds): 10
-    Auto failback: OFF
-    LDAP controlled by redundancy : 1
```

- After checking the redundancy configuration parameters, answer **1** to the question: **`do you want to apply these settings: Yes(1) / No(0)`**
- Check that the installation scripts are running correctly.
- Check that synchronisation on the slave machine is starting and progressing:
  - A terminal window automatically opens and the following information appears:

`[=>.....] sync' ed: 20.5% (15912/20000)`

- Check that synchronisation on the slave machine has been completed.
  - Type in the command **cat /proc/drbd**.
  - The following information must be displayed:

`cs :Connected ro:Secondary/ Primary ds :UpToDate/UpToDate`

THE INSTALLATION AND CONFIGURATION OF REDUNDANCY ON THE SLAVE PC AND THE SYNCHRONISATION OF THE MASTER AND SLAVE PC HAVE BEEN COMPLETED.

3.5.4 INSTALLING AND CONFIGURING MIVOICE 5000 FOR RELEASES ≥ R6.3 ON THE MASTER PC

3.5.4.1 Installing the application

CAUTION: The version of MiVoice R6.x may change. See "SHIPMENT AUTHORISATION".

- Log on to the **root** account with the password Mitel5000 on the master PC.

➢ **From the CD/DVD:**

- Define a mount point:

#mkdir /mnt/iso

- Insert the CD/DVD and enter:

mount /dev/cdrom /mnt/iso

➢ **From the iso file:**

- Define a mount point:

#mkdir /mnt/iso

- Retrieve the iso image **ACS_A5000_R7.0_RC_AXYY.iso** from the Mitel Website and copy it in the directoty **/tmp**,
- Mount the iso image in the directory **/mnt/iso**,

#mount -o loop /tmp/ACS_A5000_R7.0_RC_AXYY.iso /mnt/iso

- Go to the **Install5000** directory and run the installation script:

#**cd /mnt/iso/install5000**
#**./first_install.sh**

At the end, in the screen displayed, chose **F5**, Type **Enter**

- Check that the installation scripts are running correctly: report **OK** on each line.

3.5.4.2 Application configuration

- After the installation phase, the configuration phase starts automatically.

- IP address configuration screen of the Telephony network:

  - **Enter your choice [ ] ?** Select the value associated with the virtual IP address from those proposed by default (192.168.0.202) for the telephony network then press **Enter** to keep this value.
  - **You choose 192.168.0.202, do you confirm [Y]/N?** Press **Y** to confirm the selection then press **Enter** to go to the next section.

- Administration network configuration screen (in case of Administration and Telephony flow separation). The value proposed by default is **No**:

  - **Do you want to configure management IP network Y(es)/N(o)?** Press **N** then Enter.

- Country configuration screen (locating menu labels and displaying sets). The value proposed by default is **FRA**:

  - **Do you want to change configuration Y(es)/N(o)?** Press **N** then **Enter** to keep this value, or press **Y** then **Enter** to change it.
  - In case of change: **Do you confirm Y(es)/N(o)?** Press **Y** to confirm the selection then press **Enter** to go to the next section.

- Spoken language configuration screen (definition of the 5 spoken languages used by the Announcements, IVB and IVR function of the MEDIA SERVER service):

  - **Do you want to change configuration Y/ [N] ?** Press **N** then **Enter** to keep the 5 spoken languages defined by default, or press **Y** then **Enter** to change them.
  - In case of change: **Do you confirm (Y/N)?** Press **Y** to confirm the selection then press **Enter** to go to the next section.

- Licence configuration screen (**do not enter any licence**).

  - **Do you want to change configuration Y(es)/N(o)?** Press **N** then Enter.

- MiVoice 5000 Configuration / MediaServer BVI Duplication
  - **You are in duplication mode, do you want to replicate messages and signatures Y/[N]:**

- PARI configuration screen The value proposed by default is **123456789**:

  - **Do you want to change configuration Y(es)/N(o)?** Press **N** then **Enter**.

- Installation screen for the services managed by AMP. The following values are proposed by default:

  - **DHCP: 0**
  - **FTP: 0**
  - **TFTP: 1**
  - **SYSLOG: 0**
  - **SSH: 0**

- **ANNOUNCEMENT: 1**
- **IVR: 1**
- **| IVB: 0**
- **Conference 1**

  - **Do you want to change configuration Y(es)/N(o)?** Press **Y** then **Enter**.

On the services management screen, change the values for the SSH and SYSLOG lines:

- **DHCP: 0**
- **FTP: 0**
- **TFTP: 1**
- **SYSLOG: 1**
- **SSH: 1**
- **ANNOUNCEMENT: 1**
- **IVR: 1**
- **| IVB: 0**
- **Conference 1**

  - **Do you confirm Y(es)/N(o)?** Press **Y** to confirm the general parameter input of the installation then press **Enter** to go to the next section.

- Configuration screen for starting the services automatically. The following values are proposed by default:

  - **FTP: 0**
  - **TMA: 1**
  - **DHCP: 0**
    - **Do you want to change configuration Y(es)/N(o)?** Press **N** then **Enter** to go to the next section.

- Screen for configuring the deployment options of terminals 67xxi. The following values are proposed by default:

  - LLDP ENABLED: **0**
  - TERMINAL VLAN:
  - PC VLAN:
    - **Do you want to change configuration Y(es)/N(o)?** Press **N** then **Enter** to go to the next section.

- The installation's general parameters configuration screen: Installation name and number (IID)
  - **Do you want to configure name/IID Y(es)/N(o)** Press **Y** then **Enter**.
  - **Name:** enter the installation name. Press **Enter**.
  - **IID**: enter the IID (**ZABPQMCDU**). Press **Enter**.
  - **Do you confirm Y(es)/N(o)?** Press **Y** to confirm the general parameter input of the installation then press **Enter** to go to the next section.

- Numbering plan configuration screen: numbering plan length.
  - **Do you want to configure Numbering Length Y(es)/N(o):** Press **Y** then **Enter**.
  - **Numbering Length:** enter the numbering plan length. Press **Enter**.
  - **Do you confirm Y(es)/N(o)?** Press **Y** to confirm the numbering plan length input then press **Enter** to go to the next section.

- Configuration screen for call distribution 0: number of the subscription assigned to the day and reduced service of call distribution 0 and the DID number assigned to call distribution 0.

  - **Do you want to configure Call Distribution Y(es)/N(o):** Press **Y** then **Enter**.
  - **Subscriber:** enter the number assigned to the day and reduced service of call distribution 0. Press **Enter**.
  - **DID:** enter the DID number assigned to call distribution 0. Press **Enter**.
  - **Do you confirm Y(es)/N(o)?** Press **Y** to confirm the parameter input of call distribution 0 then press **Enter** to go to the next section.

- Subscription configuration screen: automatic subscription configuration.

  - **Do you want to configure Subscribers Y(es)/N(o):** Press **Y** then **Enter**.
  - **Creation:** press **1** to authorise automatic subscription creation
  - **IVB CREATION:** press **0**. Press **Enter**.
  - **UNIFIED IVB:** press **0**. Press **Enter**.
  - **First:** enter the first local subscription number. Press **Enter**.
  - **Last:** enter the last local subscription number. Press **Enter**.
  - **DID Number length:** enter the DID number length
  - **First DID:** enter the first DID number of the external block 0 associated with the First/Last block. Press **Enter**.

- **First Public DID:** enter the first public DID number associated with external block 0 Press **Enter**.
- **| IVB:** do not enter anything. Press **Enter**.
- **Common Subscriber:** enter the general-purpose local subscription number. Press **Enter**.
- **Additional Subscriptions:** enter the number of subscribers to be created. Press **Enter**.
- **Subscriber password:** enter the subscriptions' default password.
- **General Sets authentication:** press 1 to allow automatic creation of MD5 authentication password.
- **Do you confirm Y(es)/N(o)?** Press **Y** to confirm the subscriptions' configuration parameter input then press **Enter** to go to the next section.

- SNMP demon configuration screen.

  - **Would you dedicate your SNMP daemon? [Y]/N:** Press **Y** then **Enter**.

- The screen then displays a summary of the configuration made:

```
*-------------------------------------------------*
| Summary:                                        |
*-------------------------------------------------*
| IPADR =              192.168.0.202              |
| NAME =               A5000                      |
| IID =                130967001                  |
| FIRST =              2000                       |
| LAST=                2999                       |
| DID numbering length 4                          |
| First DID =          2000                       |
| IVB =                                           |
| Numbering length  =   4                         |
| COUNTRY =            FRA                        |
| PARI =               123456789                  |
| START UP TYPE =      TOTAL                      |
| DEDICATED SNMPD =    Y                          |
*-------------------------------------------------*
Do you want to apply your change Y(es)/N(o)/R(econfigure) ?
```

- If the summary is not correct, press **R** to restart the pre-configuration from the country configuration screen.
- If the summary is correct, press **Y** if the values displayed are correct then press **Enter** to confirm.

THE INSTALLATION AND CONFIGURATION OF MiVoice 5000 R6.x ON THE MASTER PC HAS BEEN COMPLETED.

3.5.5 INSTALLING AND CONFIGURING MIVOICE 5000 ON THE SLAVE PC

3.5.5.1 Installing the application

Log on to the **root** account with the password **Mitel5000** on the slave PC**.**

On the slave machine:

- Go to the directory /**cdutils/redhat/utils/bin/dupliv2**
- Enter the command: **hb_takeover**
- Check that the switchover to the **master machine** has taken place correctly (wait for the **master** PC to restart).

  Type in the command **cat /proc/drbd**.

  The following information must be displayed:

  cs :Connected st : Primary/Secondary ds :UpToDate/UpToDate

- Go to the **Install5000** directory and run the installation script:

  #**cd /mnt/iso/install5000**
  #**./first_install.sh**

At the end, in the screen displayed, chose **F5**, Type **Enter**

- Check that the installation scripts are running correctly: report **OK** on each line.

3.5.5.2 Application configuration

- After the installation phase, the configuration phase starts automatically.

To be configured in the same way as the master machine:

- IP address configuration screen of the Telephony network:
  - **Enter your choice [ ] ?** Select the value associated with the virtual IP address from those proposed by default (192.168.0.202) for the telephony network then press **Enter** to keep this value.
  - **You choose 192.168.0.202, do you confirm [Y]/N?** Press **Y** to confirm the selection then press **Enter** to go to the next section.
- Administration network configuration screen (in case of Administration and Telephony flow separation). The value proposed by default is **No**:
  - **Do you want to configure management IP network Y(es)/N(o)?** Press **N** then Enter.
- Country configuration screen (locating menu labels and displaying sets). The value proposed by default is **FRA**:
  - **Do you want to change configuration Y(es)/N(o)?** Press **N** then **Enter** to keep this value, or press **Y** then **Enter** to change it.
  - In case of change: **Do you confirm Y(es)/N(o)?** Press **Y** to confirm the selection then press **Enter** to go to the next section.
- Licence configuration screen (**do not enter any licence**).

- **Do you want to change configuration Y(es)/N(o)?** Press **N** then Enter.

- MiVoice 5000 Configuration / MediaServer BVI Duplication
  - You are in duplication mode, do you want to replicate messages and signatures Y/[N]:

- PARI configuration screen The value proposed by default is **123456789**:

  - **Do you want to change configuration Y(es)/N(o)?** Press **N** then **Enter**.

- Installation screen for the services managed by AMP. The following values are proposed by default:
  - **DHCP: 0**
  - **FTP: 0**
  - **TFTP: 1**
  - **SYSLOG: 0**
  - **SSH: 0**
  - **ANNOUNCEMENT: 1**
  - **IVR: 1**
  - **| IVB: 0**
  - **Conference: 1**
  - **Do you want to change configuration Y(es)/N(o)?** Press **N** then **Enter** to go to the next section.

- Configuration screen for starting the services automatically. The following values are proposed by default:

  - **FTP: 0**
  - **TMA: 1**
  - **DHCP: 0**
  - **Do you want to change configuration Y(es)/N(o)?** Press **N** then **Enter** to go to the next section.

- Screen for configuring the deployment options of terminals 67xxi. The following values are proposed by default:

  - LLDP ENABLED: **0**
  - TERMINAL VLAN:
  - PC VLAN:
  - **Do you want to change configuration Y(es)/N(o)?** Press **N** then **Enter** to go to the next section.

- The installation's general parameters configuration screen: Installation name and number (IID)
  - **Do you want to configure name/IID Y(es)/N(o)** Press **Y** then **Enter**.
  - **Name:** enter the installation name. Press **Enter**.
  - **IID**: enter the IID (**ZABPQMCDU**). Press **Enter**.
  - **Do you confirm Y(es)/N(o)?** Press **Y** to confirm the general parameter input of the installation then press **Enter** to go to the next section.

- Numbering plan configuration screen: numbering plan length.

  - **Do you want to configure Numbering Length Y(es)/N(o):** Press **Y** then **Enter**.
  - **Numbering Length:** enter the numbering plan length. Press **Enter**.

- **Do you confirm Y(es)/N(o)?** Press **Y** to confirm the numbering plan length input then press **Enter** to go to the next section.

- Configuration screen for call distribution 0: number of the subscription assigned to the day and reduced service of call distribution 0 and the DID number assigned to call distribution 0.

  - **Do you want to configure Call Distribution Y(es)/N(o)**: Press **Y** then **Enter**.
  - **Subscriber:** enter the number assigned to the day and reduced service of call distribution 0. Press **Enter**.
  - **DID:** enter the DID number assigned to call distribution 0. Press **Enter**.
  - **Do you confirm Y(es)/N(o)?** Press **Y** to confirm the parameter input of call distribution 0 then press **Enter** to go to the next section.

- Subscription configuration screen: automatic subscription configuration

  - **Do you want to configure Subscribers Y(es)/N(o)**: Press **Y** then **Enter**.
  - **Creation:** press **1** to authorise automatic subscription creation.
  - **IVB CREATION:** press **0**. Press **Enter**.
  - **UNIFIED IVB:** press **0**. Press **Enter**.
  - **First:** enter the first local subscription number. Press **Enter**.
  - **Last:** enter the last local subscription number. Press **Enter**.
  - **DID Number length:** enter the DID number length
  - **First DID:** enter the first DID number of the external block 0 associated with the First/Last block. Press **Enter**.
  - **First Public DID:** enter the first public DID number associated with external block 0 Press **Enter**.
  - **| IVB:** do not enter anything Press **Enter**.
  - **Common Subscriber:** enter the general-purpose local subscription number. Press **Enter**.
  - **Additional Subscriptions:** enter the number of subscribers to be created. Press **Enter**.
  - **Subscriber password:** enter the subscriptions' default password.
  - **General Sets authentication:** press **1** to allow automatic creation of MD5 authentication password.
  - **Do you confirm Y(es)/N(o)?** Press **Y** to confirm the subscriptions' configuration parameter input then press **Enter** to go to the next section.

- SNMP demon configuration screen.

  - **Would you dedicate your SNMP daemon? [Y]/N:** Press **Y** then **Enter**.

- The screen then displays a summary of the configuration made:

```
*-------------------------------------------------*
| Summary:                                        |
*-------------------------------------------------*
| IPADR =              192.168.0.202              |
| NAME =               A5000                      |
| IID =                130967001                  |
| FIRST =              2000                       |
| LAST=                2999                       |
| DID numbering length 4                          |
| First DID =          2000                       |
| IVB =                                           |
| Numbering length  =   4                         |
| COUNTRY =            FRA                        |
| PARI =               123456789                  |
| START UP TYPE =      TOTAL                      |
| DEDICATED SNMPD =    Y                          |
*-------------------------------------------------*
Do you want to apply your change Y(es)/N(o)/R(econfigure) ?
```

- If the summary is not correct, press **R** to restart the pre-configuration from the country configuration screen.
- If the summary is correct, press **Y** if the values displayed are correct then press **Enter** to confirm.

THE INSTALLATION AND CONFIGURATION OF MiVoice 5000 R6.x ON THE SLAVE PC HAS BEEN COMPLETED.

3.5.6 RUNNING THE REDUNDANCY START SCRIPT ON THE SLAVE PC

- Log on to the **root** account with the password Mitel5000 on the **slave** PC.
- Go to the directory /**cdutils/redhat/utils/bin/dupliv2**
- Run the command **./start_redondance.script**

CAUTION: **At the end of its execution, this script switches automatically to the master MiVoice 5000 Server PC which becomes active. The virtual address of the master MiVoice 5000 Server PC becomes active and the virtual address on the slave A5000 Server PC becomes inactive.**

THE RUNNING OF THE REDUNDANCY START SCRIPT ON THE SLAVE PC HAS BEEN COMPLETED.

Unmount the CD/DVD:

cd
#umount /mnt/iso

3.5.7 RUNNING THE REDUNDANCY START SCRIPT ON THE MASTER PC

- Log on to the **root** account with the password **Mitel5000** on the **master** PC.
- Check that the change to the master PC (following the running of the redundancy start script on the slave PC) has taken place correctly:

  Type in the command **cat /proc/drbd**.

  The following information must be displayed:

```
cs :Connected ro : Primary/Secondary ds :UpToDate/UpToDate
```

- Go to the directory **/cdutils/redhat/utils/bin/dupliv2**
- Run the command **./start_redondance.script**

THE RUNNING OF THE REDUNDANCY START SCRIPT ON THE MASTER PC HAS BEEN COMPLETED.

Unmount the CD or DVD:

#cd
#umount /mnt/iso

.

3.5.8 DECLARING LICENCES

3.5.8.1 Precautions for use

The installation code is unique, and the generated keycode can only work with an installation code.

If an installation code is generated without obtaining a new keycode, the functions subject to a licence are closed within one hour.

To manage different cases requiring a change of installation code during the system's service life, especially for cases during 24/7 working period, it is now possible to change the installation code without first asking Mitel for an authorisation.

After this change, you will no longer have the right to make any modification, you must contact Aastra to indicate your reasons for this change (user modification, physical replacement of the platform, network modification, etc.).

After analysing your request, you will again be authorised to modify the installation code.

During a consultation on the AKOP licence server ("search for a key"), the right to modify the installation code on the identification number concerned is indicated via the following information:

- Modification of installation code allowed
- Modification of installation code not allowed.

Reminder: the IID number is the installation number and you must ensure that it is regularly called. If this is not the case, some error messages will appear in the logbook after one month (as of R5.4) then the functions are locked.

Note: The data entered on the master MiVoice 5000 Server PC is automatically updated on the slave MiVoice 5000 Server PC. The slave Licence tab is used to view the licences for the slave PC.

CAUTION: **If the master MiVoice 5000 Server PC is active, the redundancy licence is not seen as open on it.**

If the slave MiVoice 5000 Server PC becomes active after a switchover, the licences are only valid for 30 days. As from D-7, a message is displayed daily in the PC logbook reminding the administrator that the licences will soon expire.

In case of switchover to the slave Server, all the licences, including the redundancy licence, are seen as open on this PC.

The message Duplex operation in slave mode appears on the welcome page of the slave MiVoice 5000 Server PC when this latter is active.

Checking the validity of the virtual dongle

A periodic check is made on the activity passing through the IP access and the IID number for the ID of this dongle type.

As from the 31st day, a message is displayed in the logbook mentioning the absence of activity on any of these two accesses.

If no activity is detected for the next 30 days, the licence is withdrawn.

3.5.8.2 Enter the licences on the master MiVoice 5000 Server PC.

From **Webadmin** of the **master** PC

Preliminary operations:

- Regenerate the installation code from the IP address and IID from Menu **System > info > Licenses.**
- Connect to the MITEL (AKOP) licence server to regenerate the licences.

Then on the **master** PC:

- On the master MiVoice 5000 Server machine in Menu **System>Info>Licences** enter the licence needed by the client.

The functions in question are then authorised on the **master** PC.

It is advisable to make a call from outside to check the validity of the key immediately.

It is advisable to save this licence as a text file.

3.5.8.3 Enter the licences on the slave MiVoice 5000 Server PC.

On the **master** PC desktop, double-click the shortcut "**Change to slave**".

From **Webadmin** of the **slave** PC

Preliminary operations:

- Regenerate the installation code from the IP address and IID from Menu **System > info > Licenses – Slave** tab.
- Connect to the MITEL (AKOP) licence server to regenerate the licences.

Then on the **slave** PC:

- On the **slave** MiVoice 5000 Server in Menu **System>Info>Licences** enter the redundancy licence.

It is advisable to make a call from outside to check the validity of the key immediately.

It is advisable to save this licence as a text file.

3.5.9 SWITCHING TO THE MASTER PC

On the slave machine:

- Go to the directory **/cdutils/redhat/utils/bin/dupliv2**
- Enter the following command:

  /hb.standby
- Check that the switchover has taken place correctly.

3.5.10 SWITCHOVER TESTS

- On the **master** PC:
- Restart the master machine
- Check that the switchover to the **slave** PC has taken place correctly (wait for the **master** PC to restart).

On the **slave** PC:

Type in the command **cat /proc/drbd**.

The following information must be displayed:

cs :Connected ro: Primary/Secondary ds :UpToDate/UpToDate

- Log on to the AMP of the slave machine:
- **Duplex operation in slave mode** appears on the welcome page. Check that the redundancy licence has been activated (30 days/30 days).
- Restart the slave machine
- Check that the switchover to the **master** PC has taken place correctly (wait for the **slave** PC to restart).

On the **master** PC:

Type in the command **cat /proc/drbd**.

The following information must be displayed:

cs :Connected ro: Primary/Secondary ds :UpToDate/UpToDate

THE INSTALLATION OF REDUNDANT MiVoice 5000 SERVER HAS BEEN COMPLETED.

.

3.5.11 CENTOS 7.X SECURITY PATCHES ON THE MASTER AND SLAVE PCS

Refer to the document AMT/PTD/NMA/0062 - Updating the R6.x security patches on Redhat and CentOS 7.x.

4 UPGRADING A REDUNDANT MIVOICE 5000 SERVER

The different types of upgrades to R6.4 considered are:

- Upgrading a configuration from ≥ R6.3 to higher releases, (with or without updating the patches).
- Upgrading a configuration from < R6.3 to release higher or equal at R6.3. In this case an upgrade is mandatory, with full reinstallation of CentOS 7.x. See document AMT/PTD/PBX/0168.

Upgrading by Repository is the recommended method. Refer to the document AMT/PTD/PBX/0155.

4.1.1 CASE OF UPGRADE REQUIRING A REMOTE ACCESS

When the installer cannot intervene locally on the physical or virtual machines via the graphic interface, it is necessary to set up an SSH session with the master and slave machines.

Any command or execution must then be performed on command lines (Linux).

These are also indicated in the various procedures if necessary.

For a remote access, connection must be via the IP address of the physical machine, and not via the virtual IP address which remains inaccessible.

4.2 UPGRADING A CONFIGURATION FROM ≥ R6.3 TO A U.

This procedure applies, if necessary, on an already operational redundant MiVoice 5000 Server ≥ R6.3 platform; upgrade this latter with a new MiVoice 5000 Server software R6.4 containing some anomaly corrections or functional upgrades.

The application is upgraded while retaining the installed operating system.

Initial status

- CentOS 7.x
- MiVoice 5000 Server ≥ R6.3
- Active "master" server

Final status

- Operating system not changed
- MiVoice 5000 Server new release in a higher version
- Active "master" server

Reminder: Update by repository is a simple method of updating the operating system or installing the latest security patches, by connecting to the public Mitel server.

Security patches:

Depending on the case:

- Not installed in the initial state > Patches must be installed.
- Installed in the initial state but not up to date (a more recent release is available) > Patch upgrade is optional.
- Installed in the initial state and up to date compared to the most up-to-date release available > No patch update.

4.2.1 MAIN PHASES

- Back up the configuration.
- Check that DRBD synchronisation is working on the master PC (command: **cat /proc/drbd**).
- Check that the redundant partition is working on /dev/drbd0 on the master machine (command: **ifconfig** and **mount**).
- Upgrade the **master** MiVoice 5000 Server PC software.
- Switch over to the **slave** MiVoice 5000 Server PC.
- The **slave** PC software is automatically upgraded during the switchover.
- Return to the master PC.
- Checking the status of the MEDIA SERVER service
- Check the status of licences on the **master** MiVoice 5000 Server PC.
- Check the status of licences on the **slave**MiVoice 5000 Server PC.
- Upgrade the operating system security patches (if necessary).

Each phase is described in detail in the sections below.

4.2.2 PRELIMINARY CHECKS ON THE MASTER PC (SYNCHRONISATION AND REDUNDANT PARTITION)

Before upgrading the software on the master MiVoice 5000 Server PC, first perform the following checks:

Check that DRBD synchronisation is up to date: run the command cat /proc/drbd.

Check, the status of the virtual address via the commands **ifconfig** and **mount**. This must be active, and the redundant partition moved to device **/dev/drbd0**.

Note: For certain server types, especially HP servers, the server needs to be restarted so the partition /dev/drbd0 on /opt/a5000 is mounted and so cat /proc/drbd becomes Primary/Unknown.

4.2.3 UPGRADE THE MASTER PC SOFTWARE.

Refer to the document AMT/PTD/PBX/0155. – Upgrading by Repository.

4.2.4 SWITCH OVER TO THE SLAVE MIVOICE 5000 SERVER PC.

This operation consists in activating the virtual address on the slave MiVoice 5000 Server PC and deactivating the virtual address on the master MiVoice 5000 Server PC.

On the master MiVoice 5000 Server:

- Go to the directory /**cdutils/redhat/utils/bin/dupliv2**
- Enter the command: **hb_standby**

This operation is used to check that the slave MiVoice 5000 Server PC is also up to date, by checking the content of Menu **System > Info > Software ID**. This operation also restarts the PBX service on the slave MiVoice 5000 Server PC if a new service is available.

Note: It is not necessary to perform a software upgrade on the slave MiVoice 5000 Server PC. This update takes place automatically during switchover.

On the master MiVoice 5000 Server:

- Go to the directory /**cdutils/redhat/utils/bin/dupliv2**
- Enter the command: **hb_standby**

4.2.5 RETURNING TO THE MASTER PC

On the master MiVoice 5000 Server:

- Go to the directory /**cdutils/redhat/utils/bin/dupliv2**
- Enter the command: **hb_takeover**

Checking the status of the MEDIA SERVER service

Check via Web Admin (menu 2.3.1) that the MEDIA SERVER service has started correctly.

If necessary, restart the MEDIA SERVER service.

4.2.6 CHECK THE STATUS OF LICENCES ON THE MASTER PC.

See Section

Declaring licences.

4.2.7 CHECK THE STATUS OF LICENCES ON THE SLAVE PC.

See Section

Declaring licences.

4.2.8 UPGRADE THE OPERATING SYSTEM SECURITY PATCHES.

If new patches have been provided on the Extranet, upgrade the security patches on CentOS on the master and slave PCs.

See document AMT/PTD/NMA/0062.

The upgrade process has been completed.

Some switchover tests are highly recommended.

4.3 MODIFYING THE GENERAL REDUNDANCY PARAMETERS

If necessary, this procedure applies on an already operational redundant MiVoice 5000 Server platform; modify one or more redundancy configuration parameters.

This enables the following parameters to:

- Change the **Failback** mode configuration
- Change the switchover timeout in case of failure (Redundancy deadtime)
- Reconfigure redundancy if the IP address and/or name of both PCs changes
- Reconfigure redundancy if the name of the PCs changes
- Modify the virtual IP address and associated subnet mask.

CAUTION: The modifications must be made on both machines. The final execution of the redundancy parameters modification script on the active PC restarts the server (service interruption) possibly with a switchover to the other PC.

The procedure for this is described below, using as example a modification of the **Failback** mode.

4.3.1 MODIFYING REDUNDANCY PARAMETERS ON THE MASTER PC

Before running the redundancy update script:

- Check that the **Networkmanager** service has actually stopped.
- Enter the command:

  # service NetworkManager status

The answer must be > **NetworkManager stopped**.

The redundancy parameters modification script may be started from the directory **répertoire /cdutils/redhat/utils/bin/dupliv2**.

- Go to the directory /**cdutils/redhat/utils/bin/dupliv2**.
- Run the redundancy modification script:

  # ./update_redondance.script

The software DRBD and Corosync are stopped then restarted at the end of the script, which triggers an automatic return to the master MiVoice 5000 Server PC if **Failback** mode is set to **ON**.

Each current configuration parameter is displayed gradually and can be modified by entering the new value for this parameter. The value remains unchanged if the operator presses "Enter".

In the example below, **Failback** mode is set to **ON**.

```
************************
* Update configuration *
```

```
************************
Master PC (1) or Slave PC (0)? [1] :
Master IP Address? [10.102.43.123] :
Master Hostname [master] :
Slave IP Address? [10.102.43.124] :
Slave Hostname? [slave] :
Virtual IP address? [10.102.43.125] :
Virtual IP netmask? [24] :
```

CAUTION: **Enter the prefix value of the mask. For example, the prefix 24 corresponds to mask 255.255.255.0 See the Section Mask/prefix conversion for the table of correspondence.**

```
Do you want a 2nd IP address?: Yes(1) or No(0) ? [0] :
Redundancy: LAN(0) or WAN(1)? [0] :
Master Ethernet board for redundancy? [eth0] :
Slave Ethernet board for redundancy? [eth0] :
Ethernet board for applications? [eth0] :
Do you want to ping an IP address: Yes(1) or No(0) ? [1] :
IP address to ping? [10.102.43.254] :
Master partition? [hda5] :
Slave partition? [hda5] :
Redundancy deadtime (in seconds) ? [10] :
Failback auto = ON/OFF? [OFF] :ON
Stop system log recorder:           [  OK  ]
Start system log recorder :       [  OK  ]
************************
* Stop PaceMaker       *
************************
Stopping High-Availability services: Done.
************************
* Starting DRBD        *
************************
Reloading DRBD configuration: .
************************
* Starting PaceMaker   *
************************
Starting High-Availability services: Done.
Please wait PaceMaker initialization ....
Configuring PaceMaker / pacemaker ...
-> Edit CRM config
-> Edit all resources
-> Edit all constraints
```

Note: Stopping the Corosync service may take several minutes. Slave server. This update takes place automatically during switchover.

4.3.2 MODIFYING REDUNDANCY SETTINGS ON THE SLAVE MIVOICE 5000 SERVER PC

Before running the redundancy update script:

- Check that the **NetworkManager** service has actually stopped.
- Enter the command:

  # service NetworkManager status

The answer must be > **NetworkManager stopped**.

The redundancy settings modification script may be started from the directory **/répertoire /cdutils/redhat/utils/bin/dupliv2**.

- Go to the directory **répertoire /cdutils/redhat/utils/bin/dupliv2**.
- Run the redundancy modification script:

  # ./update_redondance.script

The software **DRBD** and **Corosync** are stopped then restarted at the end of the script, which triggers an automatic return to the master MiVoice 5000 Server PC if **Failback** mode is set to **ON**.

Each current configuration parameter is displayed gradually and can be modified by entering the new value for this parameter. The value remains unchanged if the operator presses "**Enter**".

In the example below, **Failback** mode is set to **ON**.

```
************************
* Update configuration *
************************
Master PC (1) or Slave PC (0)? [0] :
Master IP Address? [10.102.43.123] :
Master Hostname [master] :
Slave IP Address? [10.102.43.124] :
Slave Hostname? [slave] :
Virtual IP address? [10.102.43.125] :
Virtual IP netmask? [24] :
```

CAUTION: **Enter the prefix value of the mask. For example, the prefix 24 corresponds to mask 255.255.255.0 See the Section Mask/prefix conversion for the table of correspondence.**

```
Do you want a 2nd IP address?: Yes(1) or No(0) ? [0] :
Redundancy: LAN(0) or WAN(1)? [0] :
Master Ethernet board for redundancy? [eth0] :
Slave Ethernet board for redundancy? [eth0] :
Ethernet board for applications? [eth0] :
Do you want to ping an IP address: Yes(1) or No(0) ? [1] :
IP address to ping? [10.102.43.254] :
Master partition? [hda5] :
Slave partition? [hda5] :
Redundancy deadtime (in seconds) ? [10] :
Failback auto = ON/OFF? [OFF] :ON
```

```
Stop system log recorder:           [  OK  ]
Start system log recorder :       [  OK  ]
************************
* Stop PaceMaker       *
************************
Stopping High-Availability services: Done.
************************
* Starting DRBD        *
************************
Reloading DRBD configuration: .
************************
* Starting PaceMaker   *
************************
Starting High-Availability services: Done.
Please wait PaceMaker initialization ....
Configuring PaceMaker / pacemaker ...
-> Edit CRM config
-> Edit all resources
-> Edit all constraints
```

4.3.3 CHECKING THE REDUNDANCY STATUS OF THE MASTER MIVOICE 5000 SERVER PC

The following checks must be made on the **master** PC:

- Check that **DRBD** synchronisation is up to date: run the command **cat /proc/drbd**.
- Check the status of the virtual address, using the **ifconfig** command. This latter must be activated.
- Check the mounting of the partition to be made redundant using the **mount** command, which must be implemented on the device **/dev/drbd0**.

4.3.4 REGENERATING THE INSTALLATION CODE AND LICENCE

This phase must be implemented for systems with a virtual (logical) dongle if the virtual IP address has been modified.

See Section

Declaring licences.

4.4 MODIFYING THE PHYSICAL IP ADDRESSES OR HOST NAME OF MIVOICE 5000 SERVER PCS

This procedure applies, if required, on an already working redundant MiVoice 5000 Server platform; modify the physical IP addresses or host name of the PCs to adapt them to the client network configuration.

Concerning the modification of the virtual IP address, proceed as described in Section 4.7 - Modifying the General redundancy settings.

Note: Concerning the modification of the virtual IP address, proceed as described in Section 4.3 Modifying the general redundancy parameters.

Modifying the IP settings of the Ethernet access consists in modifying the network interface configuration text files, by entering:

- The IP address
- The Subnet mask
- The Gateway IP address.

The PC hostname is modified in the OS settings.

Before making any modification, first stop the MiVoice 5000 Server resources (stop Corosync).

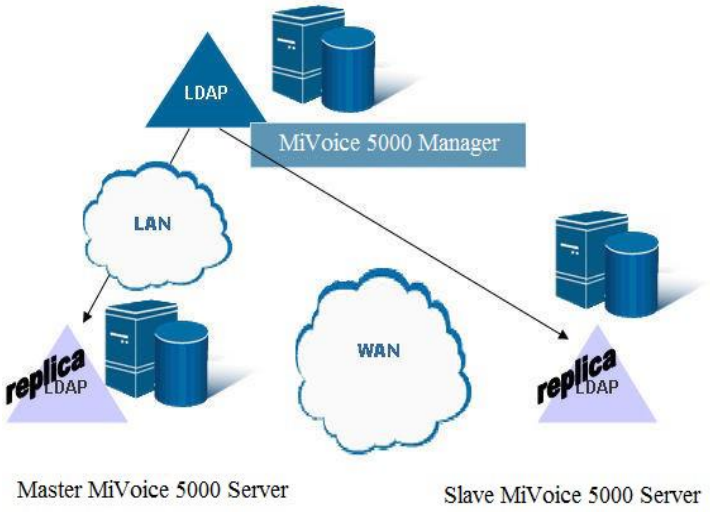
4.5 UPDATING THE LDAP CONFIGURATION

CAUTION: **The LDAP configuration can only be updated on a MiVoice 5000 PC or on a MiVoice 5000 PC for which full reinstallation of the PC and redundancy has been made.**

4.5.1 ARCHITECTURE OF LDAP DIRECTORY DATABASES IN A REDUNDANT WAN CONFIGURATION

The WAN redundancy of MiVoice 5000 Server PCs, with its directory configuration, requires the availability of a MiVoice 5000 Manager (redundant or not on the LAN). In this case, the LDAP directory of MiVoice 5000 Manager is the reference master directory database on which the modifications are made. Two replicas are configured in MiVoice 5000 Manager, one on each MiVoice 5000 Server PC. These replicas are LDAP directory databases, accessible in read-only mode and stored under /opt/dirldap.

The architecture is as follows:



4.5.2 UPDATING THE LDAP CONFIGURATION ON THE MASTER MIVOICE 5000 SERVER PC

- Go to the directory **répertoire /cdutils/redhat/utils/bin/dupliv2**,
- Run the redundancy modification script:

  ./ldap_standalone.script

4.5.3 SWITCH OVER TO THE SLAVE MIVOICE 5000 SERVER PC.

On the master MiVoice 5000 Server PC:

Go to the directory

/répertoire /cdutils/redhat/utils/bin/dupliv2

Enter the command:

./hb_standby

4.5.4 UPDATING THE LDAP CONFIGURATION ON THE SLAVE MIVOICE 5000 SERVER PC

- Go to the directory **répertoire /cdutils/redhat/utils/bin/dupliv2**,
- Run the redundancy modification script:

  ./ldap_standalone.script

4.5.5 SWITCHING OVER TO THE MASTER MIVOICE 5000 SERVER PC

On the master MiVoice 5000 Server PC:

Go to the directory, type the command:

/cdutils/redhat/utils/bin/dupliv2

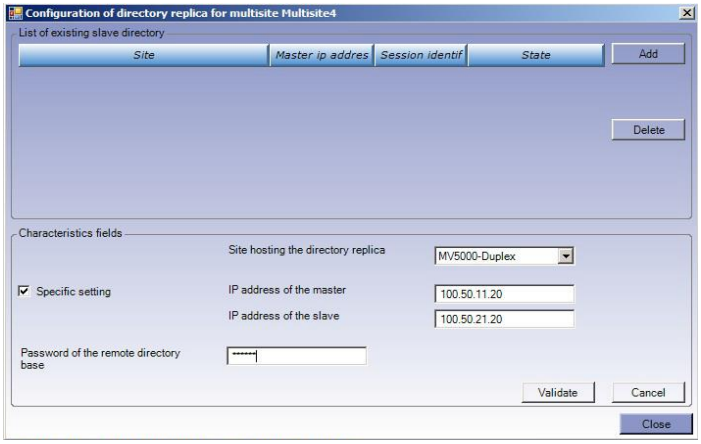
Enter the command:

hb_takeover

4.5.6 CREATING REPLICAS IN MIVOICE 5000 MANAGER

In Menu **Administration>Network topology**:

- Select the multi-site concerned then click **Setting**.
- Click **Directory** then **Replicate**.
- Click **Add** to create a replica with a specific configuration used to have the master and slave MiVoice 5000 Server PCs as simultaneous destinations.



CAUTION: After deleting a replica, to add a new replica, in the following commands:

service ldap stop

service ldap initdb

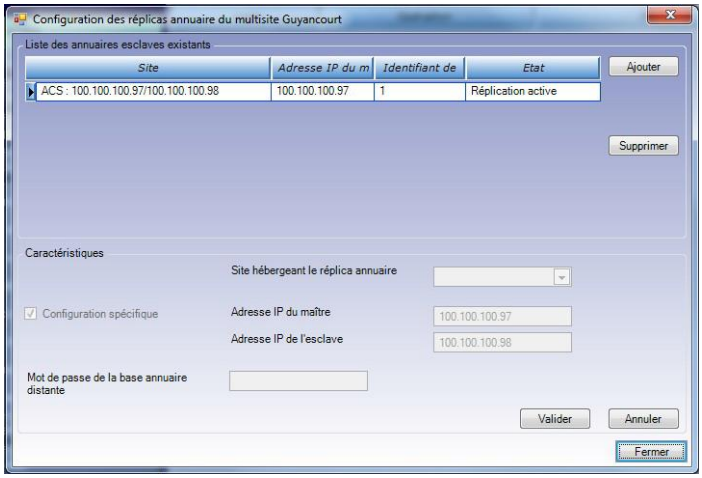
service ldap start

It is then possible to add and configure a new replica with MiVoice 5000 Manager.

4.5.7 CHECKING THAT THE REPLICAS ARE WORKING IN MIVOICE 5000 MANAGER

In Menu **Administration>Network topology**:

- Select the multi-site concerned then click **Setting**.
- Click **Directory** then **Replicate**.
- Check the status of replication which must be active.
- In the Site field check that the IP addresses used by the replica correspond to the redundant MiVoice 5000 Server PCs.



The LDAP configuration update procedure has been completed.

5 REINSTALLATION OF A REDUNDENT SYSTEM

5.1 REINSTALLING THE SLAVE SERVER

MV5000 backup (from WebAdmin)

Disconnect the SLAVE server from the network

Mitel CentOS 7.x installation

Installation of MV5000 redundancy

- **./install_redondance.script**
- In master mode
- No ping

MV5000 Server installation

Redundancy start

- **./start_redondance.script**

Redundancy update

- **./update_redondance.script**
- **Return to slave mode**
- Activate ping if necessary

Stop redundancy

- **pcs cluster stop --force**

DRBD reset

- **drbdadm create-md r0**
- **drbdadm invalidate r0**

Reconnect the network

Start redundancy

pcs cluster start

Check DRBD synchronization with **cat / proc / drbd**

Check that the duplication is operational with crm_mon

Finalization

- Once synchronization is complete, switch to the slave server
- Generate the new installation code and enter the license
- Return to the master

5.2 REINSTALLING THE MASTER SERVER

MV5000 backup (from WebAdmin or Manager)

Disconnect the MASTER server from the network

Mitel CentOS 7.x installation

Installation of MV5000 redundancy

- **/install_redondance.script**
- No ping
- MV5000 Server installation

Redundancy start

- **/start_redondance.script**

Redundancy update (optional)

- **./update_redondance.script**
- To activate the ping if necessary

Stop redundancy

- **pcs cluster stop --force**

DRBD reset

- **drbdadm create-md r0**
- **drbdadm invalidate r0**

- Reconnect the network

Start redundancy

- **pcs cluster start**

Check DRBD synchronization with **cat/proc/drbd**

Check that the duplication is operational with **crm_mon**

Finalization

Once synchronization is complete, switch to the master server:

On the slave machine, switch to master:

/cdutils/redhat/utils/bin/dupliv2/files/hb_standby

Generate the new installation code and enter the license.

6 APPENDICES

6.1 MASK/ADDRESS PREFIX CONVERSION

Netmask Address Prefix Length

255.255.255.255 /32
255.255.255.254 /31
255.255.255.252 /30
255.255.255.248 /29
255.255.255.240 /28
255.255.255.224 /27
255.255.255.192 /26
255.255.255.128 /25
255.255.255.0 /24 (Class C)
255.255.254.0 /23
255.255.252.0 /22
255.255.248.0 /21
255.255.240.0 /20
255.255.224.0 /19
255.255.192.0 /18
255.255.128.0 /17
255.255.0.0 /16 (Class B)
255.254.0.0 /15
255.252.0.0 /14
255.248.0.0 /13
255.240.0.0 /12
255.224.0.0 /11
255.192.0.0 /10
255.128.0.0 /9
255.0.0.0 /8 (Class A)
254.0.0.0 /7
252.0.0.0 /6
248.0.0.0 /5
240.0.0.0 /4
224.0.0.0 /3
192.0.0.0 /2
128.0.0.0 /1
0.0.0.0 /0 (The Internet)