# PIICiX Troubleshooting, Test & Inspection

## CMS2024 Module 18

**Revision: 20150809**

# Objectives

This module will cover the following objectives:

- Troubleshooting tables
- Back-up Servers
- Warm Standby Systems
- Virtualization Options
- RAID and Drive replacement
- Test & Inspection Procedures
- ESD

# Troubleshooting

- There can be more than one cause that contributes to a problem. The following tables from the Service and Installation Guide list possible symptoms, causes, and actions that can possibly resolve a particular problem

| Symptom | Possible Causes of Failure | Corrective Action |
|---|---|---|
| **Equipment Association Error in PIIC iX Sector or IPM** | | |
| *Assigned Central not available.* | Device is recognized and assigned, but PIIC iX is offline. | • Reconnect PIIC iX to monitoring. |
| *Central cannot identify bed.* | Device is not recognized. The label is blank or not in the system. | • Add equipment label (**page 6-11**). |
| *No Central - check equipment.* | Although device is plugged into Location Mapped port, device limits are exceeded. | • Remove devices to meet the limit for a bed:<br>(2) bedside monitors<br>(1) X2 monitor<br>(1) Telemetry Device |
| *Device locked to other bed.* | Device is plugged into Location Mapped port, but is locked to another bed. | • Unlock equipment (**page 6-11**). |

# Archives- Disaster Recovery
# Back-up Servers

- With PIIC iX System Configuration, copies of the Primary Database can be configured to be periodically sent to a network share location. These archives can later be restored to a replacement Primary Server.

A backup server could be created from any of the following:

- A SAN backup of virtual machines.
- A copy of a virtual machine, which must be kept up to date.
- A separate physical box.



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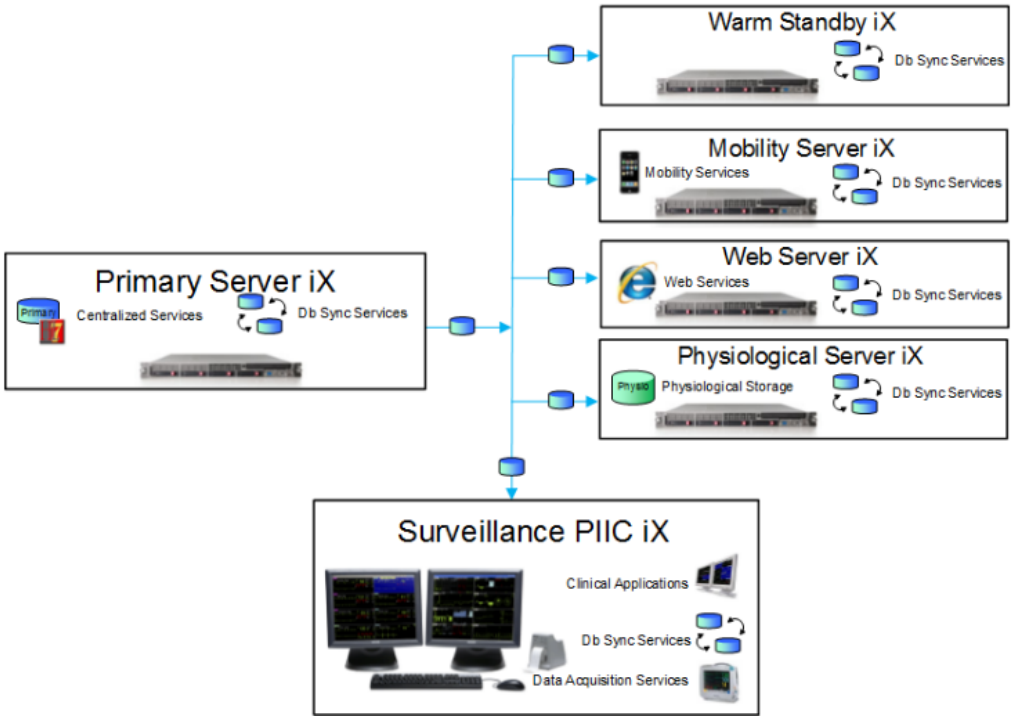
# Archives- Disaster Recovery
# Back-up Servers (Cont.)

## To recover from a disaster situation:

- 1. Confirm the affected Server is completely offline.
- 2. Using PIIC iX System Setup:
  - a. Change the Windows Host name and IP address of the backup server to that of the failed primary.
  - b. Upgrade the license to the one that was previously bound to the backup server. (See the sections **PIIC iX Licensing** and **Appendix D: Warm Standby Systems** for details.)
  - c. Restore the latest archive.
- 3. Restart the new Primary Server such that the settings take effect.
- 4. If necessary, reboot all of the other boxes in the topology so that they flush their DNS cache and communicate with the new Server.

# Warm Standby Systems
# (when VMware HA is not available)

- A warm standby is a host in the topology with a special license that ONLY runs the database synchronization services (until it has to replace another host)



# Warm Standby Systems

- If the Primary Server or any host fails, the warm standby can take over the role of the Primary Server or other host with a few manual steps. *(See the Deployment Guide)*
- It may be appropriate for larger systems to have both a warm Standby Client and warm Standby Server hardware
- Because Warm Standby Systems are part of the topology, and monitored and maintained alongside the other hosts, they are much more likely to be in a state to quickly take over the duties of a failed host. For example, these hosts:
  - Have an up-to-date database,
  - Have software patches applied identically to other hosts, and
  - Can be monitored in Quick Unit Status and Device Status

# Preparing a Warm Standby System

- If the Warm Standby is for the Primary Server, the Standby's hardware must be bound to the entitlement. Philips personnel will use the Licensing Agent to Authorize the Entitlement. Place the resulting *.PhilipsLIC file on the desktop of the Standby host. This file will not be used until the Primary Server is replaced.
- Standby system hardware must be identical (or better) to that of the host it would replace.
- Standby system software installation is the same as standard PIIC iX procedures.
- In the **Feature Assignment** page, apply the Standby Feature.
- At System Setup completion the system restarts and remains at the Windows login screen.
- Use Quick Unit Status to confirm that it is connected to the server.
- Apply patches, security updates, and maintenance as if it were any other host in the topology.



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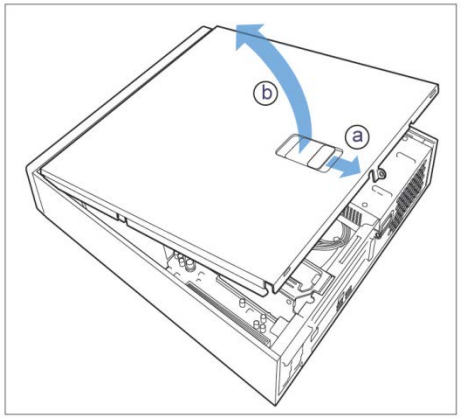
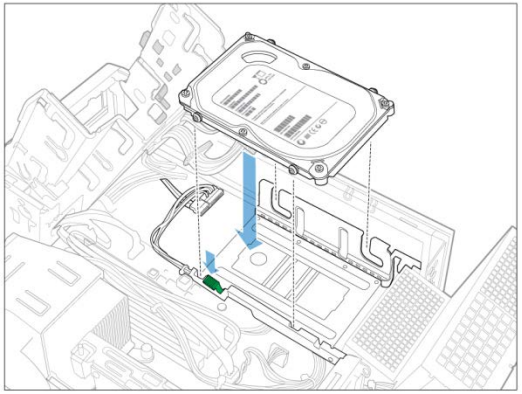
# Restoring Server iX RAID Configuration

- HP DL380e Gen 8 Servers are configured with RAID I Array
  - If the configuration is lost or accidently deleted it must be stored.
- During the Boot Sequence, watch for the message, push the appropriate key:
  - HP DL380e Gen84535 643 83431
    - Push <F8> to run the Option ROM Configuration for Arrays Utility
  - HP DL380e Gen84535 644 84811
    - Push <F5> to run the HP Smart Storage Administrator (ACU/HPSSA)
- Follow additional instructions from the Service & Installation guide > Maintaining and Repairing the System

# Replacing HP rp5800 Drive Failure

- After a drive has failed remove the original RAID-1 disks and physically install two identical hard disks.
  - To ensure error-free RAID performance on the HP rp5800, identical disk drives must be used.
- With the PC unplugged and using ESD-safe methods, remove the access panel. Follow instructions to remove drives.



# Test & Inspection

- Full information on Test & Inspection procedures can be found the Service and Installation Guides
- The test and inspection procedures must be followed by service providers when the Philips system is installed and after any service event.
- On all systems verify that the latest Operating System security patch is installed.
  - Consult the most recent security Field Change Order (FCO) for the correct Operating System Security Update.

# Test & Inspection Requirements

| Service Event<br>When you preform…. | Test Block Required<br>… Complete these test |
|---|---|
| Installation | Visual, Power On, Performance, Safety |
| Preventative Maintenance | Visual |
| Any component repair or replacement | Power On, Performance, Safety |
| Hardware Upgrade | Power On, Performance, Safety |
| Software Upgrade | Power On, Performance |
| All other service events | Visual, Performance |



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# Tests
# (For PIICiX)

- Visual:
  - Inspect shipping containers, contents or installed devices for visual damage.
  - Are speaker cables secure?
  - If there is a KVM (Keyboard, Video, Mouse) Switch, are keyboard and mouse cables secure?
- Power On:
  - Power on all devices
  - Are any errors reported during startup?
  - Do system startup audible speaker tones occur?
  - Do all configured PIICiX hosts display as “green” in the Quick Unit Status?

# Tests (Cont.)

- Performance:
  - Are all purchased options licensed, configured and operational?
  - Do devices respond to user input?
  - Are there any failures reported in System Validation?
  - Do appropriate waveforms and parameters appear in Patient Sectors licensed and configured for them?
  - If using Location Mapping, use the validation tool and confirm connectivity with deployed network infrastructure.
  - If using a Primary Server verify that all monitored beds continue to be displayed and monitored when each host goes into Local Mode.
  - Verify if equipment is not moving with the patient on transfer or discharge, that the equipment label is assigned and locked.

# Tests
# (Cont.)

- Additional tests are listed for Small Primary Servers, Enterprise Servers and Physiological Data Servers in the Service and Installation Guide.
- Tests for the clinical network are listed in the Test & Inspection chapter of the Network Documentation.
- Other Preventative maintenance includes (but not limited to):
  - Periodic physical cleaning of the devices and clearing of air intakes to prevent dust or dirt build up.
  - Replacement of UPS batteries when needed.
  - Cleaning of shared drives on the customer network for export features to prevent folders from being full or files overwritten.

# ESD
# Electrostatic Discharge Precautions

- Whenever performing service inside of the equipment take note of ESD requirements and be sure to use proper handling procedures to prevent damage to the sensitive electronic equipment.




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# Summary

- Troubleshooting tables can be found in the Service and Installation guide, use them in addition to the help menu to learn more about status messages and errors
- Back-up Servers can be used in systems that are interested in helping to prevent excessive downtime
- Warm Standby Systems options for those not using VMware
- Virtualization Options to create virtualized servers and more
- RAID-1  drive replacement requires two new drives
- Test & Inspection Procedures whenever service is performed
- ESD Precautions to always keep in mind.