NC475 Tek-CARE
Appliance Server

Installation and Operation Manual

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NC475 Tek-CARE Appliance Server Installation Manual

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Introduction

The NC475 Tek-CARE Appliance Server is a purpose-built server designed to add features and functionality to any Tek-CARE system that it is connected to. The Tek-CARE Appliance Server is used to provide a central reporting database for all connected Tek-CARE products, a connection point for the Tek-CARE Network, connections for Tek-CARE500 hardware, and more.

The NC475 Tek-CARE Appliance Server is designed with a small form factor and low power consumption in mind. The face of the NC475 includes four status LEDs, an LCD screen, and navigation buttons. The LCD screen will always display the highest priority calls and faults present on the nurse call system. A simple menu used for basic system configuration and troubleshooting options is available from the LCD screen as well.

All connections are located on the rear of the Tek-CARE Appliance Server. Though the NC475 is typically installed headless, a monitor, keyboard, and mouse may be connected if desired. This provides the Tek-CARE Appliance Server with most of the capabilities of a master station. In most facilities, the Tek-CARE Appliance Server will be installed out of sight in an equipment closet or server room, negating the need for any peripherals to be attached to the Tek-CARE Appliance Server.

The Tek-CARE Appliance Server must be dedicated to the Tek-CARE system. Do not attempt to install non-TekTone applications on the Tek-CARE Appliance Server. Do not connect non-TekTone hardware to the Tek-CARE Appliance Server unless specifically instructed to by TekTone Technical Support.

NC475 Tek-CARE Appliance Server

The NC475 Tek-CARE Appliance Server is a module on the Tek-CARE system and is available in two variants.

- The NC475 is a headless appliance server designed for use in situations where facility staff will not frequently interact with the it. The NC475 Tek-CARE Appliance Server includes notification and status LEDs, an LCD notification screen, and navigation buttons. The NC475 Tek-CARE Appliance Server is UL® 1069 listed as a master station, and the NC475DESK version of the Tek-CARE Appliance Server brings additional useful information to facility staff.
- The NC475DESK is a package consisting of the NC475 Tek-CARE Appliance Server, a touch-screen LCD monitor, and a wireless keyboard and mouse. The NC475DESK is an optimal solution for smaller facilities where multiple master stations may not be needed or cost effective. The NC475DESK allows access to the calls, fault screen, paging, and more from an attractive and intuitive display.

The NC475 Tek-CARE Appliance Server has three types of connections available, COM ports, facility network to allow mobile apps, tvs, email, etc., and the Tek-CARE Network. The COM ports are used to connect to serial devices, such as the NC510-series receiver for the Tek-CARE500 product family, the RF paging base, and more. The Tek-CARE Network is used to connect to other Tek-CARE modules.

NC475 Tek-CARE Appliance Server Hardware

The Tek-CARE Appliance Server includes a call notification screen, status LEDs, and navigation buttons. It also includes ports for all the necessary connections to the Tek-CARE system as shown below.

Figure 1 - NC475 Connections
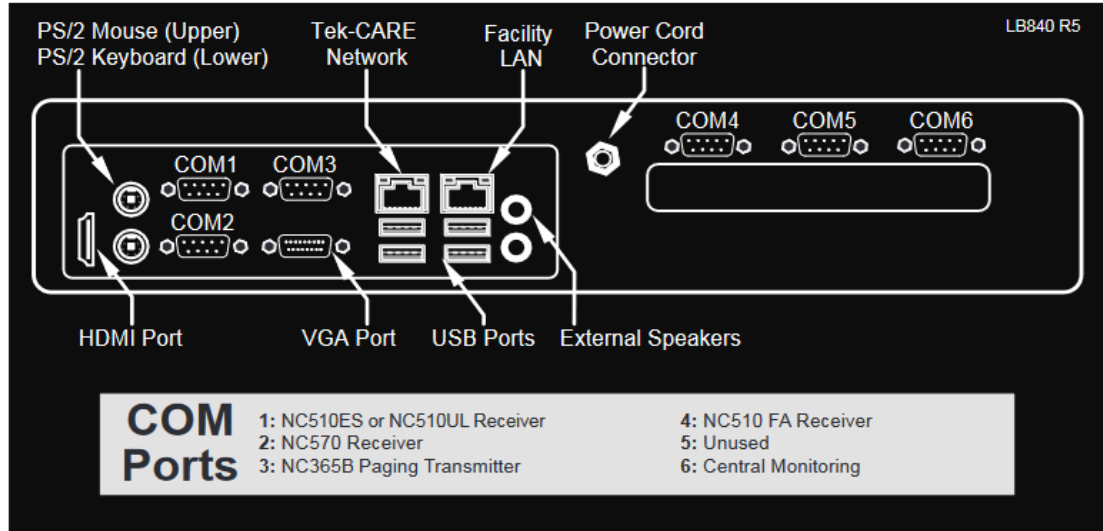
The NC475 Tek-CARE Appliance Server includes a connection diagram on the bottom of the unit. Refer to this label for COM port connections. The Tek-CARE Network port is used to connect the NC475 Tek-CARE Appliance Server to the Tek-CARE Network (An NC554-series powered Ethernet switch may be required depending on network topology or ConfigTool network access). The Facility LAN network port is used to connect the NC475 to the facility's Local Area Network. See **Networking the NC475 Tek-CARE Appliance Server on page 9** for more information on setting up these network ports.

Install a New NC475 Tek-CARE Appliance Server

This section will provide instructions for setting up a new NC475 Tek-CARE Appliance Server. Begin by choosing a location to install the Tek-CARE Appliance Server. Since the Tek-CARE Appliance Server is available both as a headless appliance server and with an attached monitor and user interface, choose a mounting option that suits the way facility staff will use the Tek-CARE Appliance Server.

NC475 Mounting Considerations

Ensure that adequate airflow is provided for the Tek-CARE Appliance Server. Do not allow the cooling vents to become blocked. The NC475 Tek-CARE Appliance Server is designed to be desk mounted or installed in a rack mount application. Rack mount ears and mounting screws are included.

The Tek-CARE Appliance Server may be powered by 110-220 VAC line power. There are no backup batteries included with the Tek-CARE Appliance Server, so a TekTone PK250B or equivalent uninterruptible power supply (UPS) must be used. The PK250B and NC475 must be connected to a generator-backed AC circuit suitable for life safety equipment.

Mount the NC475 Tek-CARE Appliance Server on a flat surface and connect the AC power adapter.

Next, connect any required serial devices to the appropriate ports as shown in .

NC475DESK Setup

If an NC475DESK is being installed, connect the display to the NC475 using the included HDMI cable. Connect the included USB cable between the monitor and any of the USB ports on the NC475. The USB connection is required to enable touchscreen functionality on the monitor. Finally, connect the included power cable to the monitor.

The NC475DESK is supplied with a wireless keyboard and mouse.

Insert the dongle for the keyboard and mouse, then add the batteries for both components. The keyboard and mouse will be automatically recognized and enabled when the NC475 boots up.

If desired, insert the USB flash drive into any available USB port on the rear of the NC475 which is used for reporting back up and restoring functions.

Finalizing Setup

Connect the NC475 Tek-CARE Appliance Server to the Tek-CARE Network. This will enable the NC475 to communicate with any networked Tek-CARE hardware. For more information on building the Tek-CARE Network, see the manuals included with your Tek-CARE system hardware.

Connect any serial devices that will be used on the system according to the serial connection label on the NC475.

Once all hardware has been connected, power the NC475 on by pressing the green check mark on the face of the NC475 which will boot the NC475 Tek-CARE Appliance Server. Once the NC475 has completed its boot process, proceed to .

Updating and Configuring the NC475

> **NOTE**: These instructions are for installing an NC475 with a new Tek-CARE system. If the NC475 Tek-CARE Appliance Server is being installed on an already operational Tek-CARE system, it is imperative that a backup of the system configuration be created before proceeding.

Once the NC475 Tek-CARE Appliance Server has been powered on, the first step in configuring it for use is to update the Tek-CARE system code on the NC475. The NC475 is updated from the LS450 ConfigTool that is installed on a technician's laptop. Download and install the most current version of the LS450 ConfigTool from **www.tektone.com/resources** before proceeding.

By default, the Tek-CARE Network subnet is 192.168.1.xxx. In order to communicate with the NC475 Tek-CARE Appliance Server, your laptop must also be configured to use a static IP address of 192.168.1.178. For instructions on setting a static IP on your laptop, see **https://support.microsoft.com/en-us/help/15089/windows-change-tcpip-settings**.

Once a static IP has been set on your laptop, connect an Ethernet patch cable from the laptop either directly to the Tek-CARE Network port on the rear of the NC475 Tek-CARE Appliance Server, or any open port on the Tek-CARE Network.

Launch the LS450 ConfigTool Software, and when the splashscreen appears, select the IP address of the system on the left side. On the right side of the splashscreen, choose **New Default Configuration with NC475**.

Once the ConfigTool opens, go to the **Utilities** menu and select **NC475/NC402TS Update Server.** A process window will appear and the ConfigTool will send the updated code to your NC475 Tek-CARE Appliance Server and networked NC402TS Master Stations.

Once the update is complete, the NC475 will reboot, and the process window must be manually closed.

> **NOTE:** Before proceeding, the rest of the Tek-CARE system must also be updated. Connect the laptop running the ConfigTool to the Tek-CARE Network if not already connected and choose the appropriate update option from the **Utilities** menu to update the Tek-CARE modules. Once all of the modules have been updated, close the LS450 ConfigTool and proceed with the NC475 installation.

Once all the components of the Tek-CARE system have been updated to the most current code version, proceed with system configuration according to the manuals included with your Tek-CARE system hardware, including building a configuration for the system, or using the LS450 ConfigTool to commit the backup configuration to the existing system.

Networking the NC475 Tek-CARE Appliance Server

The NC475 Tek-CARE Appliance Server is designed to operate as a module on the Tek-CARE Network. The notable exception to this is when the NC475 is used with a system that only includes Tek-CARE500 equipment. In this scenario, the NC475 is operating as the entire system. This is known as a Stand-Alone System and is typical for the TC500 system.

When the NC475 Tek-CARE Appliance Server is used as a part of the Tek-CARE Network, the NC475 becomes a module on the Tek-CARE Network.

The NC475 has two available Ethernet ports as shown in **Figure 1 on page 6**. When viewed from the rear, the left-hand Ethernet port is used for the Tek-CARE Network and the right-hand Ethernet port is used to connect the NC475 to the Facility LAN. The NC475 must be connected to the facility LAN if features such as email reporting, mobile apps, Windows apps, or Apple TV monitors are to be used.

All NC475 Tek-CARE Appliance Servers are shipped with the Facility LAN port disabled.

If the NC475 is to be connected to the facility LAN, follow the procedure below. Note that there are two ways to configure the NC475 facility LAN connection; DHCP or Static. In most instances, the DHCP option should be chosen. Only use the Static option when directed by facility IT staff.

> **IMPORTANT**: Always consult with the facility's IT staff before connecting the NC475 to the facility's LAN.

DHCP Facility LAN Setup

With the NC475 Tek-CARE Appliance Server powered on and connected to the facility's LAN, use the arrow keys on the front of the NC475 to scroll all the way to the right.

At the **Menu** screen, scroll down and select the **Maintenance** menu. A PIN prompt will appear, and unless a PIN was created by the customer, it is defaulted to 0000. Press the center green ✔"OK" button.

At the **Maintenance** Screen, scroll down and select **Setup Mode**. Press the center green ✔"OK" button. The NC475 will reboot and enter setup mode.

Once the NC475 boots into setup mode, scroll through the **Setup** menu using the up and down arrow keys.

Select the **Facility LAN Setup** entry, and press the center green ✔"OK" button. To set Facility LAN to DHCP, select the **DHCP** menu item and press the center green ✔"OK" button.

A confirmation message will appear, and the display will return to the **Facility LAN Setup** menu. Press the red **X** "Back" button to return to the **Setup** menu.

To apply the network change, the NC475 must be rebooted. Use the arrow keys to scroll through the **Setup** menu and select the **Exit** option. Press the center green ✔"OK" button. The NC475 will reboot and return to the home screen.

View the DHCP Address

The IP address of the NC475 Tek-CARE Appliance Server must be used to set up mobile apps, Apple TV monitors, Windows apps, and it is also required to access the reporting system from a web browser. Since DHCP automatically assigns an IP address, use the following steps to determine what IP address was assigned to the NC475.

Use the arrow keys on the front of the NC475 to scroll to the right. At the **Menu** screen, scroll down to Facility IP Setting and scroll down to view the IP address, netmask (if applicable) and gateway (if applicable).

Note the IP Address assigned to the NC475 Tek-CARE Appliance Server here:

_____._____._____._____

Once you have noted the IP address, press the red **X** "Back" button to return to the **Setup** menu. Use the arrow keys to scroll through the **Setup** menu and select the **Exit** option. Press the center green ✔"OK" button. The NC475 will reboot and return to the home screen.

Static IP Address Facility LAN Setup

With the NC475 Tek-CARE Appliance Server powered on and connected to the facility's LAN, use the arrow keys on the front of the NC475 to scroll all the way to the right.

At the **Menu** screen, scroll down and select the **Maintenance** menu. A PIN prompt will appear, and unless a PIN was created by the customer, it is defaulted to 0000. Press the center green ✔"OK" button.

At the **Maintenance** Screen, scroll down and select **Setup Mode**. Press the center green ✔"OK" button. The NC475 will reboot and enter setup mode.

Once the NC475 boots into setup mode, scroll through the **Setup** menu using the up and down arrow keys.

Select the **Facility LAN Setup** entry, and press the center green ✔"OK" button. To set Facility LAN to Static IP, select the **Static IP** menu item and press the green **Ok** button.

Use the arrow keys to enter the desired static IP address, and press the center green ✔"OK" button once the IP address has been entered.

The next screen will enable you to set the Netmask using the arrow keys. Set the appropriate netmask provided by the facility IT department and press thecenter green ✔"OK" button.

Finally, a Gateway screen will appear. Use the arrow keys to set the Gateway according to instructions from the facility IT department. Once the Gateway has been set, press thecenter green ✔"OK" button.

> **IMPORTANT**: In order for push notifications to work successfully, the gateway must be properly configured.

Note the settings assigned to the NC475 Tek-CARE Appliance Server below. The IP address of the NC475 Tek-CARE Appliance Server must be used to set up mobile apps, Apple TV monitors, Windows apps, and it is also required to access the reporting system from a web browser.

IP Address: _____._____._____._____

Netmask: _____._____._____._____

Gateway: _____._____._____._____

After configuring the Static IP settings, the NC475 will return to the **Setup** menu. If desired, scroll to the **Current Settings** entry and press the center green ✔"OK" button. Use the arrow keys to scroll through the list and verify the settings are correct. If the **Current Settings** do not match the desired settings, re-enter the Static IP configuration menu and make the necessary changes.

To apply the network change, the NC475 must be rebooted. Use the arrow keys to scroll through the **Setup** menu and select the **Exit** option. Press the center green ✔"OK" button. The NC475 will reboot and return to the home screen.

Tek-CARE Subnet

The NC475 is connected to the rest of the Tek-CARE system using the Tek-CARE Network port on the rear of the NC475. For more information on building the Tek-CARE Network, see the manuals included with your Tek-CARE hardware.

Note that by default, the Tek-CARE Network is set to use the subnet 192.168.1.xxx. This is a common subnet, and may conflict with the IP address for the facility LAN NIC that was assigned in the preceding section.

If the IP address noted in the section above begins with 192.168.1.xxx, the Tek-CARE subnet must be changed to avoid addressing conflicts.

> **NOTE:** These instructions assume that all Tek-CARE modules, the NC475 Tek-CARE Appliance Server, and the LS450 ConfigTool have been updated to the latest version, and that a working configuration exists on the Tek-CARE system.

Open LS450 ConfigTool icon on the programming laptop connected to the Tek-CARE Network. In the splash screen, select the IP address of the network interface that is connected to the Tek-CARE Network. Click **Load Configuration From System**.

Select **Utilities>Change Subnet on Modules** to change the subnet for the hardware modules. Enter the new subnet in the dialog box, and then click **OK**. Record the new subnet on a label, and place it on the system.

> **NOTE**: You must know the subnet to connect to the Tek-CARE system. Without an NC475, it is impossible to determine the Tek-CARE subnet, and if the subnet is not known, the system must be defaulted and all programming will be lost. Therefore, if you change the subnet, keep a record of it. However, if the facility has a GEN2 module, use dip switch 3 on the 4 bank on the hardware module to redefault the subnet to 192.168.1.xxx.

Power down all Tek-CARE modules.

Enter **Setup mode** on the NC475. Use the arrow keys to scroll to the Tek-CARE subnet entry. Press the center green ✔"OK" button to enter subnet configuration. Set the Tek-CARE subnet using the arrow keys, and press the center green ✔"OK" button to accept the changes.

Exit setup mode. The NC475 will reboot to the main monitor.

Power up the rest of the facility's modules that are on the Tek-CARE platform.

Shut down the LS450 ConfigTool.

Change the static IP address of that laptop running the LS450 ConfigTool to the same subnet as the Tek-CARE system. Always use ".178" as the laptop's host number (last three digits of the static IP address).

Laptop IP address: 192.168._____.178.

The LS450 ConfigTool can now be restarted and used to perform additional programming, if desired.

Install Optional Components

Before adding option components to the NC475 Tek-CARE Appliance Server, make sure to complete the following:

Enable Maintenance Faults

The software-latched **Maintenance Fault** indicates that one or more other faults have occurred on the system. Use it to reduce paging and email traffic when there are multiple faults, and to diagnose intermittent faults. When the system has one or more faults, each assigned staff member will receive just one page and/or email for the maintenance fault.

1. Using the **Faults** page of the LS450 ConfigTool, check the **Enable Maintenance Fault** checkbox.
2. Using the **Assignments** page of the LS450 ConfigTool, add staff assignments to the Maintenance fault. (Staff assignments may also be created later using the **Assignments** register of the LS477 Event Monitor.)
3. Select **File>Save Configuration As** to save a copy of the new system configuration, and select **File>Commit Configuration To System** to apply the new system configuration. The Tek-CARE software will restart. (See the IL855 LS450 ConfigTool Manual for more information.)

Using the Maintenance Fault:

- When the system has one or more faults, each assigned staff member will receive just one page and/or email for the Maintenance fault.
- Even if the system has intermittent faults, the Maintenance fault will latch on and be visible on event monitors. Use the Tek-CARE Reporting System (see **Using the Tek-CARE Reporting System on page 27**) to determine which intermittent fault occurred.
- When all other faults are resolved, perform a redetect to reset the maintenance fault.

Add Radio Pocket Paging

Radio pocket paging provides an effective means of alerting staff members to events received by the NC475 Tek-CARE Appliance Server. The system automatically sends text messages to staff in response to patient calls. In addition, the NC475 Tek-CARE Appliance Server can send manual text messages to staff pagers. Follow this procedure to add radio pocket paging to the Tek-CARE system:

1. Connect the NC365B Tek-PAGING Paging Transmitter to the NC475 Tek-CARE Appliance Server's COM3 serial port, as shown in **- NC475 Connections on page 6**, using the null modem serial cable that is included with the paging transmitter.
2. Follow the instructions in the paging transmitter manual to locate and set up the paging transmitter. (See IL671 NC365B Manual.)
3. Start the LS450 ConfigTool on the programming laptop. Click on **Load Configuration From System**. Using the **Pagers** section of the LS450 ConfigTool, configure the paging transmitter using the following protocol settings. Then add pager CAP codes. Click **Apply** once finished.

NC365B	
Base Type	Scope
CAP Base	10000
Scope Baud	Fast

4. Using the **Assignments** page of the LS450 ConfigTool, add staff shifts, if desired, and then add staff, groups and staff assignments.

5. Select **File>Save Configuration As** to save a copy of the new system configuration, and select **File>Commit Configuration To System** to apply the new configuration. The software will restart. (See the IL855 LS450 ConfigTool Manual for more information.)

Adding the LS452 ADT Interface using the HL7 Standard Software

The LS452 ADT Interface is a software license that enables the NC475 Tek-CARE Appliance Server to receive patient information from a facility's Admissions, Discharge, Transfer (ADT) system via Health Level 7 (HL7) messages. The LS452 ADT Interface maintains a patient database for the Tek-CARE system using these messages from the ADT system.

The Tek-CARE patient database includes:

- Patient name.
- Doctor name (optional).
- The patients room and bed number.

When a call is placed, the NC475 Tek-CARE Appliance Server uses this patient database to display the patient's name with the room and bed number on the nurse master station.

Interoperability and HL7 Versions

The LS452 ADT Interface has been tested using HL7 version 2.3 messages. Although the software should be able to use other HL7 version 2.x messages, but this cannot be guaranteed.

Mirth Connect is an open source HL7 healthcare integration engine that can translate messages between the LS452 ADT Interface and ADT applications that do not support the HL7 standard for messages. Mirth Connect is available for Windows, Linux and Mac OS X. See www.mirthcorp.com for more information.

Connect to the Facility's Network

In order for a facility's ADT system to send messages to the LS452 ADT Interface, the NC475 Tek-CARE Appliance Server must be connected to the facility's network.

Use the LS450 ConfigTool to enable the LS452 ADT Interface and configure the port it listens on. (The default port number is 2575.)

Verify that Room Names Match

The facility's ADT system has assigned an 8- to 80-character name or number to each room. These room names are included in HL7 messages that the LS452 ADT Interface receives. The patient station name field is just 8 characters long, so the LS452 ADT Interface uses the first 8 characters of an HL7 message's room name to match the message to a patient station in the nurse call system.

Therefore, each patient station name in the LS450 ConfigTool must exactly match the first 8 characters of its corresponding room name in the ADT system. To update patient station names:

1. Obtain a list of the room names or numbers used by the facility's ADT system. Determine which station name corresponds to each room in the ADT system. (Default station names are determined by module number, port number and station dip switch address. See the appropriate installation manual for details.)

2. Run the LS450 ConfigTool. Select a network interface and select **Load Configuration From System**, and click **Ok**.

3. Click on the **Stations** page. In the Station Definitions—**Name** field of the details panel, enter the first 8 characters of the ADT system's room name. In the Sides field, enter the side or sides used by this station (A and/or B, 1 and/or 2, for example). Repeat for each station. Click **Apply**.

4. Select **File>Save Configuration As** to save a copy of the new system configuration.

5. Select **File>Commit Configuration To System** to update the patient station names on the nurse call system. The nurse call system will reboot.

Enable the LS452 ADT Interface

Use the LS450 ConfigTool to enable the LS452 ADT Interface below. For further instruction and details, refer to IL885 ConfigTool Manual.

1. Click on the **Patients** page. Add a new field called "Doctor" in the Patient Fields panel. In the HL7 Settings, check the **Bed Override** checkbox to force the bed field to match the nurse call system settings.

2. Add the LS452 ADT Interface as a foreign rule set on the **Foreign Rule Set** page. **Click Apply**.

3. On the **Foreign Rules** page, click **Add**. Under **Rule Set**, select the foreign rule set that was created in step 2. Select the rest of appropriate choices and click **Apply**.

4. Add the LS452 ADT Interface as a foreign device on the **Foreign Devices** page. Select the rest of appropriate choices and click **Apply**.

5. Go to the **Interfaces** page andchoose HL7 from the **Protocol** drop down. Select the rest of appropriate choices and click **Apply**.

6. Select **File>Save Configuration As** to save a copy of the current system configuration.

7. Select **File>Commit Configuration To System** to enable the ADT Interface on the Tek-CARE nurse call system. The nurse call system will reboot. (See the IL855 LS450 ConfigTool Manual for more information.)

HL7 Message Format

The LS452 ADT Interface listens on the assigned port for TCP connections from the ADT system. The protocol is Minimal Lower Layer Protocol (MLLP). Using MLLP, an HL7 message is sent in this format:

<start block>HL7 Message<end block><carriage return>

The MLLP commands are indicated by these codes:

Command	Code	
<start block>	0x0B	(ASCII vertical tab)
<end block>	0x1C	(ASCII file separator)
<carriage return>	0x0D	(ASCII carriage return)

If the LS452 ADT Interface understands the message, it responds by sending an HL7 acknowledgment message via the TCP connection (also using MLLP).

HL7 Message Fields

This table shows which HL7 message fields the LS452 ADT Interface uses to communicate with the facility's ADT system. The LS452 ignores all other fields. The table also shows the length of each field and which character set each field uses. (Note: Station names are 8 characters long. Therefore, the LS452 ADT Interface reads room names up to 80 characters long, as specified by HL7, and then transmits the first 8 characters to the Tek-CARE system.)

Field	Description	Character Set	Length
MSH:9-1	"ADT" or message ignored		
MSH:9-2	ADT Event Type		
MSH:10-1	Message Control ID		
PID:5-1	Patient First Name	Extended	1
PID:5-2	Patient Last Name	Extended	48
PV1:3-2	Room	Basic	8/80
PV1:3-3	Bed	Basic	1
PV1:7-2	Doctor First Name	Extended	1
PV1:7-3	Doctor Last Name	Extended	48

This next table shows which characters are available in each character set.

Character Set	Valid Characters
Basic	abcdefghijklmnopqrstuvwxyz ABCDEFGHIJKLMNOPQRSTUVWXYZ 0123456789 space
Extended	All of the characters in the Basic set plus: , . ! ? ' + - \ { } / * ( ) # : & @ [ ] % =

The LS452 ADT Interface sends the information in these HL7 message fields to the Tek-CARE nurse call system in a format that the nurse call system can use. Patient First Name and Patient Last Name are combined into a single field that includes the first initial of the first name, plus the last name.

Doctor First Name and Doctor Last Name are also combined into a single field that includes the first initial of the first name, plus the last name. The doctor's name displays on the master stations with the patient information, if a field called "Doctor" has been added to the Tek-CARE system. Use the **Patients** page of the LS450 ConfigTool to add the "Doctor" field. Refer to the IL855 ConfigTool Manual for more information.

ADT Event Types

The LS452 ADT Interface is tolerant of ADT event types. Just two functions result from the various ADT events: update and clear. The LS452 ADT Interface ignores all ADT events that are not listed in this table:

Event Type	Description	Function
A01	Admit a Patient	Update
A02	Transfer a Patient	Update
A03	Discharge a Patient	Clear
A04	Register a Patient	Update
A05	Pre-admit a Patient	Update
A06	Transfer an Outpatient to Inpatient	Update
A07	Transfer an Inpatient to Outpatient	Clear
A08	Update Patient Information	Update

Clear—**Clear** tells the Tek-CARE system to remove all information about the patient mentioned in the message. **Clear** also removes all information about any patient in the room/bed mentioned in the message. (These are the same individual, unless the LS452 ADT Interface did not receive an earlier message.) Room, bed and patient name are not case sensitive.

Update—If an **Update** message includes valid patient information and a valid room and bed number, the patient information is added to the Tek-CARE system, and the patient is assigned to that room/bed. Room, bed and patient name are not case sensitive. No information is kept for patients not assigned to a room and bed.

If an **Update** message does not include valid patient information and a valid room/bed, a **Clear** is performed instead.

Sample ADT Events

Admit patient John Doe as "DOE J" into room 0101 bed A under the care of doctor

James Smith as "SMITH J":

MSH|^~\&|||||||ADT^A01|MSH00001|D|2.3

PID|||||DOE^JOHN PV1|||^0101^A||||^SMITH^JAMES

The acknowledgement will be:

MSH|^~\&|||||||ACK||P|2.3

MSA|AA|MSH00001

Discharge patient John Doe:

MSH|^~\&|||||||ADT^A03|MSH00002|D|2.3

PID|||||DOE^JOHN PV1|||^0101^A||||^SMITH^JAMES

The acknowledgement will be:

MSH|^~\&|||||||ACK||P|2.3

MSA|AA|MSH00002

Adding the LS901 Cloud Email License

The LS901 Email Service is a Tek-CARE cloud service that integrates with the NC475 Tek-CARE Appliance Server enabling various types of email output from the Tek-CARE System. Calls, Faults, Messages and Reports can be assigned to be sent to multiple email addresses.

Requirements

The facility must have internet connectivity that can be made available to the NC475 Tek-CARE server. An active LS901/LS902 license will be needed for each system. TekTone will provide a System ID and Cloud Access Token for the system when the license is purchased.

Setup

Connect the NC475 Tek-CARE Appliance Server to the facility's network, as shown in Figure 1 on page 1. Start the LS450 ConfigTool on the technician's programming laptop. Click Load Configuration From System. Use the LS450 ConfigTool to enable and configure the Email Output:

1. Select the System page.
2. Click Edit in the Settings panel and type in the System Name.
3. Enter the System ID which will be provided from TekTone.
4. Enter the Cloud Access Token which will also be provided from TekTone. Click Apply.
5. Select the Email page.
6. Click Edit in the Settings panel and select Tek-CARE Cloud for Mode.
7. The SMTP Settings section can be ignored.
8. Enable desired features in Email Features section. Click Apply.
9. Select File>Save Configuration As to save a copy of the new system configuration.
10. Select File>Commit Configuration To System to enable Email Output on the Tek-CARE system.

The software will restart. (See the IL855 LS450 ConfigTool Manual for more information.)

Add LS453 Email Output Software

The LS453 Email Output is a software module for the NC475 Tek-CARE Appliance Server that enables email addresses to be added. The software sends calls and other events via email to the assigned staff members. Events can also be sent to anything that has an email gateway—for example, sending an SMS message to a cellphone.

Requirements

The facility must have a standard non-authenticated SMTP server, configured to accept messages from the NC475 Tek-CARE Appliance Server. (The LS453 Email Output system does not support SMTP authentication.) The SMTP server may be on the facility's LAN, or through the facility's ISP. The LS453 Email Output system has been successfully tested using Sendmail, Postfix and Microsoft Exchange.

Configure and Enable the Email Output

Connect the NC475 Tek-CARE Appliance Server to the facility's network, as shown in **- NC475 Connections on page 6**. Start the LS450 ConfigTool on the technician's programming laptop. Click **Load Configuration From System**. Use the LS450 ConfigTool to enable and configure the LS453 Email Output:

1. Select the **Email** page.
2. Click **Edit** in the Settings panel and check the **Enabled** checkbox. Enter the facility's **SMTP Host** address, enter the **SMTP Port** number, and enter an email address in the **From Address** box.
3. If the facility wishes to have reports and missed reports sent to the email, check **Reports Enabled** and **Send Missed Reports**. Click **Apply**.
4. Select **File>Save Configuration As** to save a copy of the new system configuration.
5. Select **File>Commit Configuration To System** to enable Email Output on the Tek-CARE system. The software will restart. (See the IL855 LS450 ConfigTool Manual for more information.)

Adding the LS600 Tek-ALERT Integration Manager

The LS600 Tek-ALERT Integration Manager License imports events and messages from one or more monitored foreign systems and displays them together in one place. Tek-ALERT can monitor any system with a data port, such as a pager or printer output, that uses the TAP, COMP2, TCP/IP, UDP, or serial protocol. Examples include:

- Fire alarms,
- Security systems,
- Building automation systems,
- TekTone's Tek-CARE NC110, NC150, NC200, TC300II, and TC700 nurse call systems via one or more paging interface adapters (voltage interfaces).

Tek-ALERT Integration Manager provides ancillary annunciation to life safety systems, and must not be used as the only means of annunciation for any nurse call, emergency call, fire, security, or other life safety system.

The Tek-ALERT Integration consists of two components: The NC475 Tek-CARE Appliance Server with the LS600 Tek-ALERT Integration Manager License, and the CT601 Tek-ALERT Serial to IP Converter. Refer to IL922 LS600 Tek-ALERT Integration Manager Installation manual and IL855 ConfigTool manual for more information.

Using the NC475 Tek-CARE Appliance Server

Once the NC475 has been installed, networked, updated, and the rest of the Tek-CARE system is installed and operational, the NC475 can be used to interact with the Tek-CARE system.

> **NOTE:** The images shown below are screen captures from the NC475DESK. Most options discussed here are also available through the menu on the LCD screen of the NC475.

Main Call Display

The NC475 will boot to the main call display. By default, this display shows all active calls on the Tek-CARE system, and if desired, can be zoned using the LS450 ConfigTool or the annunciation options in the **Settings** screen.

> **IMPORTANT**: The figures below show the basic default display for the NC475DESK. However, the display and options may look different depending on the licensing and ConfigTool settings created for the facility.

Figure 2 - NC475DESK Main Call Display

The navigation buttons on the right side of the screen are used to access different system options.

Below are examples of the **Map** and **Icon** view. These options can be set up within the ConfigTool on the **Monitors** page.
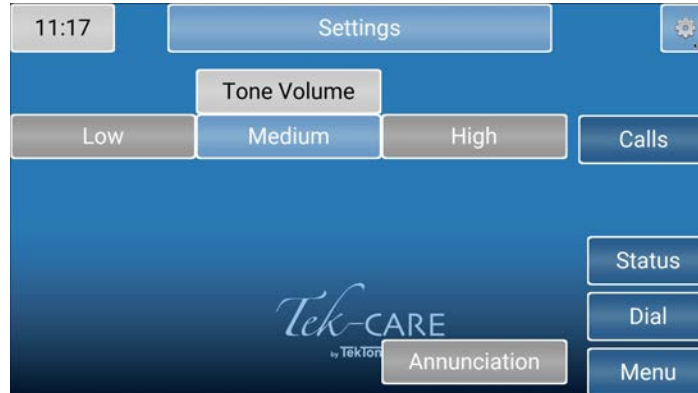
Figure 3 - Map and Icon View
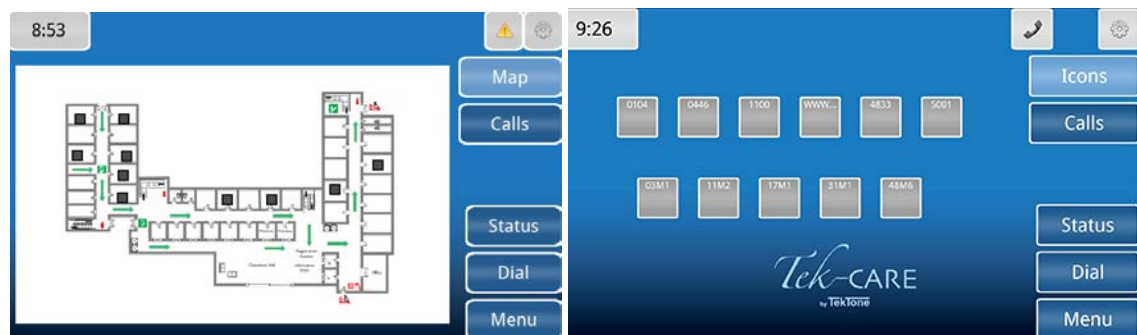
Settings Screen

Select the gear icon in the bottom right corner to access the annunciation settings. Note that these settings are not available from the NC475 LCD screen.

Figure 4 - Settings Screen

Select the **Annunciation** button to configure zone and call type annunciation on the screen shown below. The NC475 and connected display will annunciate calls from all selected zones and all selected call types on these screens. Use the check boxes and the **All** or **None** buttons to select the desired zones and call types to annunciate.

Figure 5 - Zone and Call Filter Annunciation Options

Once you have chosen the desired zone and call filter annunciation options, hit the **Back** button to return to the **Settings** screen, or the **Calls** button to return to the home screen.

Status Screen

Select the **Status** button to access the **Status** screen. Note that this screen is not available from the NC475 LCD screen.

The **Status** screen shows a list of all active statuses on the Tek-CARE system. Use the options at the top to filter by status type, and select each individual status to view more information about the status.

Figure 6 - Status Screen

Dial Screen

Select the **Dial** button to access the **Dial** screen. Note that this screen is not available from the NC475 LCD screen.

Figure 7 - Dial and Station Screens

Dial a Station ID using the keyboard, and select the **Search** button to open the station page. Once on the station page, you can use the buttons to place statuses on the station, attend calls, edit annunciation options, and more.

Menu Screen

The **Menu** screen is used to view system information, sync reporting, and create backups. Select the **Menu** button on the display or navigate to the menu on the NC475 LCD. Insert the included USB backup drive into any USB port on the rear of the NC475 before proceeding.

Figure 8 - Menu Screen
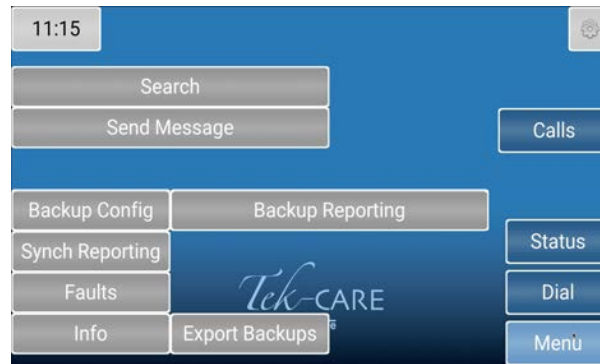
The **Search** button enables you to search for **Patients**, **Staff**, or **Equipment** that have been added into the system.

The **Backup Config** button creates a backup file of the current configuration. Choosing the **Backup Config** button or selecting the option on the NC475 LCD display plays two tones, one low beep to indicate the process has been started, and a higher beep to indicate the process has been successful.

The **Backup Reporting** button creates a backup file of the reporting database. Choosing the **Backup Reporting** button or selecting the option on the NC475 LCD display plays two tones, one low beep to indicate the process has been started, and a higher beep to indicate the process has been successful.

Once backups have been created, they must be exported to the USB backup drive. Select the **Export Backups** to write the files to the backup drive. Again, you will hear two tones to indicate the start and end of the process.

The **Info** button displays information about the Tek-CARE system including the Device ID (always 0 for the NC475 Display), Device Name, Platform Version, and MAC Address of the NC475.

The **Faults** button displays all current faults that are present on the Tek-CARE system. The **Repair** and **Redetect** options are also available from the **Faults** screen. **Repair** will restart an application on the NC475 if there is a fault or an issue with a feature. **Redetect** clears all faults on the system. This can leave portions of the system nonfunctional until the issue or fault is corrected.

Figure 9 - Faults Screen

Using the Tek-CARE Reporting System

The Tek-CARE Reporting System is part of the Tek-CARE software suite. The reporting system records nurse call and emergency call system events and faults. It is also used to create custom summary and detail reports on system activity.

To start the Tek-CARE Reporting System by accessing the reporting system remotely from a facility PC.

> **NOTE**: In order to access the reporting system remotely, both the NC475 Tek-CARE Appliance Server and the facility PC must be connected to the facility LAN.

Using any computer on the facility's local area network (LAN):

1. Run a web browser, such as Internet Explorer® or Google Chrome® on the networked PC.

2. Type the NC475 Tek-CARE Appliance Server's static IP address into the web browser's address bar.

3. If password protection is enabled, the Tek-CARE Reporting System password window will appear. Enter an access password and click **Login**.

4. The Tek-CARE Reporting System home screen will appear.

Creating Reports

About Datasets (Versions 7200 and Prior)

In order to keep report creation times short while the system collects more and more data, calls are stored in datasets that span one month. A second set of datasets are also maintained that includes calls from the middle of one month to the middle of the next. Reports cannot span datasets.

Create a History Report

History reports contain information about calls, alarms, and system faults. To create a history report, appropriate filters must be selected in the reporting system.

When the reporting system starts, the home screen of the reporting system appears that shows many options for filtering calls. By default, the filtering selections include all system events from all transmitters for the past seven days.

To create a custom report, follow the steps below.

1. Run a web browser, such as Internet Explorer® or Google Chrome® on the networked PC.

2. Type the NC475 Tek-CARE Server's static IP address into the web browser's address bar.

3. If password protection is enabled, the Tek-CARE Reporting System password window will appear. Enter an access password and click **Login**.

4. The Tek-CARE Reporting System home screen will appear.

5. Select a date range for the report by choosing one of the options from the **Filter** drop-down menu. The drop-down list includes such options as **Last Hour**, **Last 24 Hours**, **Last 7 Days**, **This Month**, and many more. You may also enter a custom date and time range manually.

Figure 10 - **Reporting Database Selection**
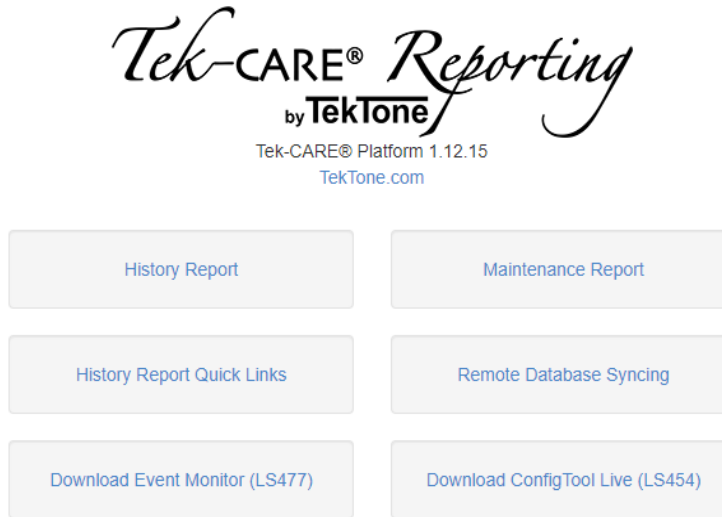
6. If desired, select a **Time Range** within the selected **Date Range**. For example, to see events that occurred during third shift of the past seven days, select **Last 7 Days** from the Filter drop-down menu, uncheck the **No Filter** box in the **Time Range** pane and type 21:00 in the **Start** box of the **Time Range** pane and 07:00 in the **End** box.

7. If desired, choose a **Response Time** filter. Check the box labeled **Only events with response times over...** and type a response time into the boxes in MM:SS format.

8. Reports can be further filtered by **Zone**, **Device**, **Location**, **Patient**, and **Event Type**. Simply select which filters to apply to the report.

    NOTE: For windows with more than one option, hold the **Ctrl** key and click on multiple entries to select more than one entry. To quickly select a range, click on the first entry you would like to select, then hold down the **Shift** key, and click the last entry you would like to select.

Figure 11 - Reporting System Home Screen

9. In the **Summary** pane, select the information to be included in the report summary. By default, **Overall** and **Full Summaries** are selected. These choices are sufficient for most reports. The other selections available break the report down further into very detailed and specific pieces.

10. The **Details** pane shows each individual call in the body of the report. By default, details are not shown. To show call details, check the **Show Details** box, then choose if the details should include information about the zone the call was placed from by checking the **Include Zones** box.

11. To group overlapping calls together, check the box labeled **Group** overlapping events, allowing a gap up to... Be sure to allow a small gap when grouping events (at least 5 seconds).

12. In the **Output Types** pane, choose HTML to open the report in the browser window or CSV to open the report as a Microsoft Excel® spreadsheet.

13. If desired, enter a description of the report in the **Report Description** pane.

14. Click **Create Report**.

Quick Links

To speed up report creation, the Tek-CARE Reporting Software provides several options for quick and easy creation of commonly requested reports. By clicking the **Quick Links** button on the reporting home screen, reports including all events from the Last Hour, Last 24 Hours, Last 7 Days, Last Week, This Week, and several more options are available.

Create a Low Battery Report

TekTone recommends creating a low battery report once every week for systems with wireless transmitters and other devices. A low battery report will generate a list of transmitters with low batteries. Replace any low batteries immediately.

To create a low battery report, click the **Maintenance Report** button which will show a list of available **Low Battery Transmitters** and **Line Power Down Transmitters**, both in-use and not in-use.

A web browser will open and display the low battery list. For information about replacing batteries in Tek-CARE wireless transmitters, see **Replace Tek-CARE Transmitter Batteries on page 57**.

Viewing and Interpreting Report Data

Tek-CARE reports are presented with all requested data visible in table format. The information contained in the tables may also be viewed in graph format for easier interpretation.

To view graphs of information in a particular section, click the **Show Graph** button below the table. To hide a graph, click the **Hide Graph** button below the graph. To quickly view all available graphs, click the **Show All Graphs** button at the top of the report page. To hide all graphs, click the **Hide All Graphs** button at the top of the report page.

Each section of the report may also be hidden by clicking the **Hide Section** button under the section title. The section then collapses, hiding the data from view. To reveal the hidden data, click the **Show Section** button under the section title.

To hide all sections, click the **Hide All Sections** button at the top of the report page. To view all sections, click the **Show All Sections** button at the top of the report page.

Backup Configuration and Reporting

1. Insert a USB memory flash drive into one of the USB slots on the NC475.

2. Select **Menu → Backup Config**.

3. Successful backup is indicated by two beeps.

4. Select **Menu → Backup Reporting** by listening for 2 beeps. The backup is completed after the second beep.

5. Select **Menu** and **→ Export**.

6. Successful export is indicated by one beep. Remove flash drive and access with computer to confirm that the data has been transferred to the flash drive. The data will be in theTekCARE folder.

7. Re-insert flash drive into USB slot of the NC475.

8. Select **Setup Menu**, then toggle to **Reset Config** and press the check mark button.

9. Exit the Setup Menu. When the NC475 reboots confirm the Configuration conflicts for the modules on the system.

10. Using the LS450 ConfigTool open the Backup Config from the flash drive.

11. Using the LS450 ConfigTool commit the configuration to the system.

12. The system will reboot after the commit and the configuration conflicts should clear.

13. Reinsert the flash drive into the NC475.

14. Select **Setup Menu → Clear Reporting**.

15. Exit Setup Menu.

16. After NC475 reboots go to Reporting page on internet browser and confirm the reporting database has been cleared.

17. Select **Setup Menu → Restore Reporting**.

18. Exit Setup Menu.

19. After NC475 reboots go to Reporting page and confirm reporting database has been restored.

20. Remove the flash drive and move the TekCARE folder into the folder labeled LCD.

21. Reinsert the flash drive into the NC475.

22. From this point forward confirm number of beeps from all other Devices (403, GUI, Event Monitor).

Using the Tek-CARE Reporting System

The Tek-CARE Reporting System is part of the Tek-CARE software suite. The reporting system records nurse call and emergency call system events and faults. It is also used to create custom summary and detail reports on system activity.

To start the Tek-CARE Reporting System by accessing the reporting system remotely from a facility PC.

> **NOTE**: In order to access the reporting system remotely, both the NC475 Tek-CARE Appliance Server and the facility PC must be connected to the facility LAN.

Using any computer on the facility's local area network (LAN):

1. Run a web browser, such as Internet Explorer® or Google Chrome® on the networked PC.

2. Type the NC475 Tek-CARE Appliance Server's static IP address into the web browser's address bar.

3. If password protection is enabled, the Tek-CARE Reporting System password window will appear. Enter an access password and click **Login**.

4. The Tek-CARE Reporting System home screen will appear.

LS454 ConfigTool Live

The LS454 ConfigTool Live is a simplified version of the LS450 ConfigTool that is used by facility staff to accomplish everyday tasks on the Tek-CARE system.
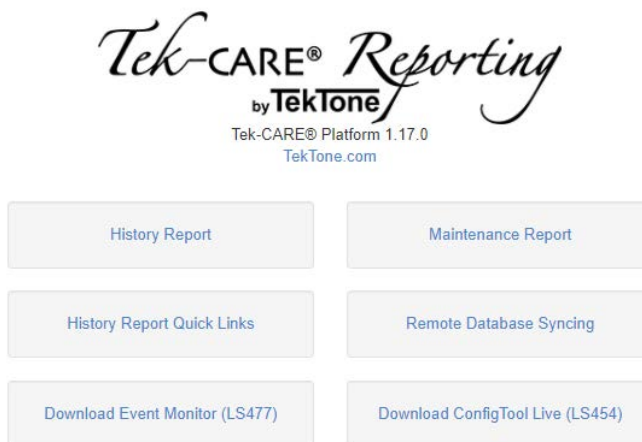
The LS454 ConfigTool Live is installed on a PC that is networked with the NC475 over the facility LAN. The LS454 ConfigTool Live can be installed on multiple networked machines if desired.

> **NOTE**: Programming the ConfigTool Live should only be done from one computer at a time. It is not recommended to run multiple instances of the software simultaneously.

To begin installation, open a web browser on the facility PC and navigate to the IP address noted during the Facility LAN setup phase of NC475 installation.

From the **Reporting** screen, click the option to **Download ConfigTool Live (LS454)**.

**Figure 12 - Reporting Screen**

Once the setup file downloads, run the installer on the facility PC.

After setup is complete, double-click the LS454 ConfigTool Live shortcut on the desktop to open the application.

Once the application has opened, a splashscreen will appear. Enter the IP address of the NC475 and click the **OK** button. The LS454 ConfigTool Live will open.
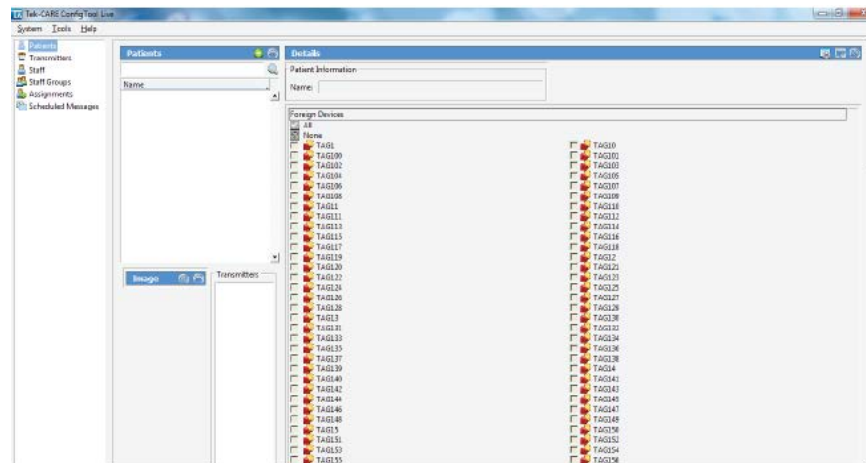
Figure 13 - ConfigTool Live Connection
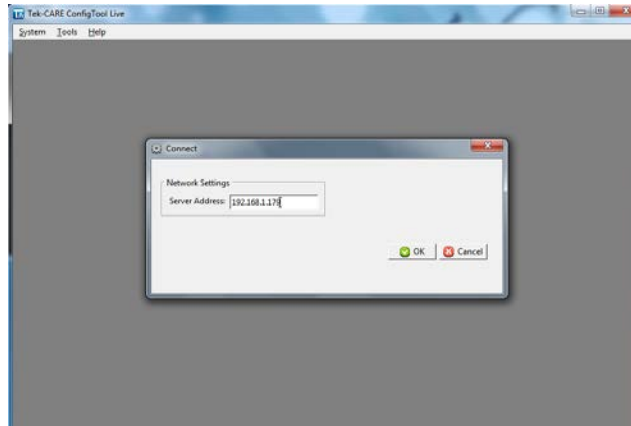
A technician who is familiar with the LS450 ConfigTool should provide hands-on training with facility staff who will be using the LS454 ConfigTool Live. The process for editing information in the LS454 ConfigTool Live is analogous to editing information in the LS450 ConfigTool.

Note that all changes made using the ConfigTool Live are immediately written to the system. No commit is necessary. The ConfigTool Live always imports the most recent system configuration for editing.

Figure 14 - ConfigTool Live Home Screen

The registers to be edited may be selected in the navigation pane on the left side of the screen.

The **System** menu includes connection options for the ConfigTool Live as well as the ability to set the system time. If the system has been password protected, use the **Access** option in the **System** menu to enter the password.

The **Tools** menu at the top of the window includes the ES and FA traffic windows for adding Tek-CARE500 wireless devices.

The **Help** menu includes license information and system version information.

> **NOTE**: Changes made using the ConfigTool Live are immediately written to the system. Remember to always choose **Load Configuration From System** when the LS450 ConfigTool is used. This ensures that the most current configuration with all changes is loaded into the LS450 ConfigTool for editing.

Setup Mode

Some of the options contained in the NC475 Setup Mode have been discussed in **Networking the NC475 Tek-CARE Appliance Server on page 9**. The following section discusses the remaining options in the **Setup** menu that do not pertain to networking the NC475.

Accessing Setup Mode

To enter setup mode on the NC475, use the arrow keys on the face of the unit to scroll all the way to the right. From the menu that appears, use the arrow keys to select the **Setup Mode** entry and enter the 4-digit pin. (This pin is created in the LS450 ConfigTool in the **LCD Maintenance Menu Pin** field on Monitors page for Monitor named **NC475GUI.**) It is highly recommended to create a unique pin with every install-ation. Press the center green ✔"OK" button to enter setup mode. The NC475 will reboot into setup mode.

The **Tek-CARE Subnet**, **Current Settings**, and **Facility LAN Setup** menu items are covered in **Net-working the NC475 Tek-CARE Appliance Server on page 9**. The remaining options are outlined below.

Reset Config

Selecting the **Reset Config** option and pressing the center green ✔"OK" button will delete the system con-figuration file from the NC475. This option does not delete the configuration from any other system mod-ules. There is no "undo" for resetting a configuration. Only choose this option if directed by TekTone Technical Support.

Clear Reporting

Selecting the **Clear Reporting** option and pressing the center green ✔"OK" button will delete the entirety of the reporting database that resides on the NC475. There is no "undo" for clearing the reporting database. Only choose this option if directed by TekTone Technical Support.
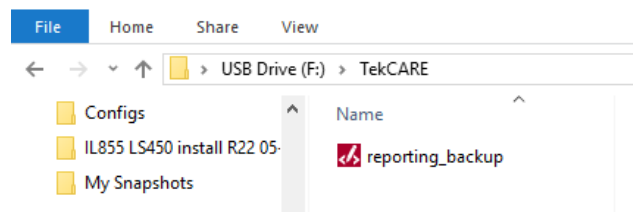
Restore Reporting

The NC475 can load a reporting database backup from the included USB backup drive. If the NC475 has previously been used to back up and export the reporting database as outlined in the previous section, the USB backup drive will already be properly configured.

If you are loading a reporting backup from an older NC474 Tek-BRIDGE, plug the USB backup drive into your laptop, and use Windows Explorer to create a folder on the drive titled TekCARE with that cap-italization.

Place the reporting database file in the TekCARE folder on the USB backup drive, and name the file report-ing_backup as shown below.

Figure 15 - USB Backup Drive Folder

Once the folder has been created and the reporting backup file saved in the TekCARE folder, insert the backup drive into the NC475.

Select the **Restore Reporting** option in the **Setup** menu and press thecenter green ✔"OK" button. If the database is restored successfully, a completion message will appear, and the NC475 will return to the **Setup** menu.

Clear License

Selecting the **Clear License** option and pressing the center green ✔"OK" button will delete the Tek-CARE system license from NC475. There is no "undo" for clearing the license. Without a system license, the NC475 will not be able to communicate with networked Tek-CARE hardware. Only choose this option if directed by TekTone Technical Support.

Factory Tests

Factory use only.

Exit

Selecting the **Exit** entry and pressing the center green ✔"OK" button will exit setup mode and return the NC475 to the main monitor.