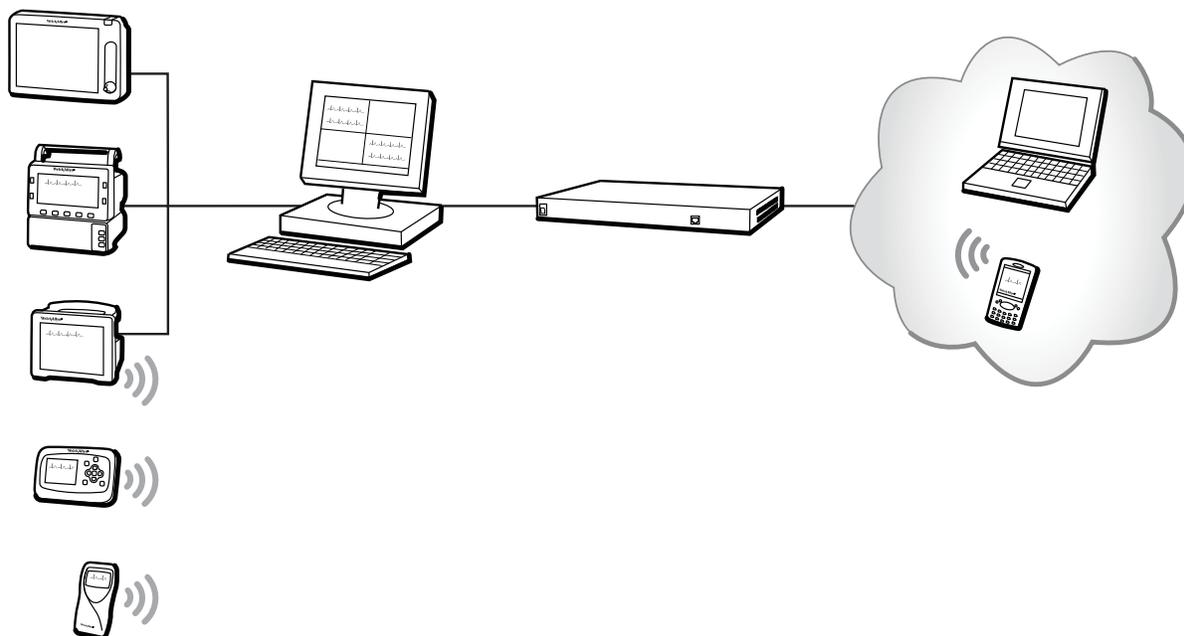# Welch Allyn Connectivity Server

Directions for use

Software version 2.6x

WelchAllyn®

Advancing Frontline Care™

Welch Allyn®

Contents

1 Introduction

Intended use

The Welch Allyn Connectivity Server (WACS) is an option to the Welch Allyn Acuity® Central Monitoring System. WACS consists of a server platform on which one or more of the following software options are installed:

- The Web Server option makes Adobe® Portable Document Format (PDF) printout files available from the Acuity System to certain Web browsers.

- The AcuityLink® option consists of Clinician Notifier software for non-proprietary mobile devices and administrative software for WACS. Mobile devices running the Clinician Notifier software deliver patient alarm information and realtime waveforms gathered from patient monitors connected to the Acuity® Central Monitoring System. The software enables administrators to track the status of clinician-patient assignments, and it enables clinicians to track, respond to and view Acuity System patient alarms, view realtime patient waveforms and view historical alarm details and waveforms.

- The HL7 Interface options support the following features using HL7 messaging protocol: export of vital signs data from the Acuity Central Monitoring System to hospital CIS/HIS systems, and import of ADT data from hospital clinical information systems/hospital information systems (CIS/HIS) to the Acuity System.

- The WACS Barcode Scanner option allows clinicians to enter patient IDs and room numbers into the Acuity System using barcode scanners on some mobile devices running Clinician Notifier software.

- The Third Party Data Stream Interface option supports sending patient alarms and equipment alerts in XML format to third party interfaces.

WACS is to be used by authorized health care professionals using standard institutional procedures and good clinical practice guidelines for patient monitoring. Staff training in the operation of WACS is essential for optimal use. Users should be skilled at the level of clinicians, clinical administrators and hospital administrators, with the knowledge and experience to acquire and interpret patients' vital signs. Each of these roles is assigned and associated with specific privileges and scopes. Access privileges are controlled through passwords.

Individuals using WACS should be familiar with its operation as described in this manual, and they should understand all warnings and cautions in the manual.

Conventions

Symbols

On the product

$\mathbf{CE}$ 0297	The CE Mark and Notified Body Registration Number signify that the product meets all essential requirements of European Medical Device Directive 93/42/EEC.
	On the product, means "Consult the accompanying documentation."

In this document

⚠	**WARNING** Indicates conditions or practices that could lead to illness, injury, or death.
⚠	**Caution** Indicates conditions or practices that could damage the equipment or other property.

General warnings, cautions and notes

Warnings

Related to system components and configuration

⚠ **WARNING**   Use only accessories approved by Welch Allyn. Visit www.welchallyn.com. The use of any other accessories can result in inaccurate patient data, can damage the equipment, and can void your product warranty.

WARNING   Always use accessories according to the standards of your facility and according to the manufacturer's directions.

WARNING   Install AcuityLink Clinician Notifier software according to the *AcuityLink Clinician Notifier Software Installation Instructions* provided on the AcuityLink Clinician Notifier software installation CD. Improper installation of Clinician Notifier software or installation of additional software on mobile devices can interfere with effective Clinician Notifier program performance, including alarm notification.

WARNING   HL7 configuration must be performed only by qualified personnel who are familiar with the HL7 Standard and with local implementation of the WACS HL7 Interface. Improper configuration of the HL7 Interface can cause unexpected and unintended cessation of patient vital-signs data transfer.

Related to patient diagnosis and close physical surveillance

WARNING   Welch Allyn Connectivity Server patient data is a subset of the patient data that is available at the Acuity Central Station. Do not solely use Welch Allyn Connectivity Server (WACS) data for patient diagnosis.

WARNING   Do not rely solely on mobile devices running the Clinician Notifier program to indicate patient alarms and patient monitor equipment alerts. Always continue to monitor patients at patient monitors and the Acuity Central Station, and respond to patient monitor equipment alerts. In these examples, mobile devices do not indicate patient alarms:

- A clinician is not assigned to the mobile device.
- The mobile device is turned off or the battery is depleted.
- The assigned clinician is exited from the Clinician Notifier program.
- The assigned clinician is logged out of the Clinician Notifier program.
- The mobile device is not communicating with the Welch Allyn Connectivity Server.
- The Welch Allyn Connectivity Server is not communicating with the Acuity Central Station.
- The patient monitor is not communicating with the Acuity System.
- The patient is disconnected from the patient monitor.
- Your facility's AcuityLink Clinician Notifier option includes only the barcoding feature.

Cautions

Caution   U. S. Federal law restricts this device to sale by or on the order of a physician.

Caution   Do not upgrade a WACS system that is functioning improperly. Upgrading a malfunctioning system could cause configuration files to become missing or corrupted.

Notes

Note   Do not save patient reports on any unsecured or public computer. If the computer is not secure, always clear the disk cache after each user access.

Note   Each Welch Allyn Connectivity Server page opens at full speed after it has been accessed once.

Related documents

Welch Allyn Connectivity Server (WACS):

Welch Allyn Connectivity Server (WACS) CD-ROM (English):

> *Welch Allyn Connectivity Server Directions for Use*
>
> *Welch Allyn Connectivity Server Programmer's Guide*
>
> *AcuityLink Clinician Notifier Directions for Use*

AcuityLink Clinician Notifier Directions for Use (English, printed)

Acuity and Mobile Acuity LT Central Monitoring System:

Directions for Use

Acuity and Mobile Acuity LT Central Monitoring Systems Directions for Use and In-Service Guide CD-ROM (multilanguage):

> *Acuity and Mobile Acuity LT Central Monitoring Systems Directions for Use*
>
> *Acuity Central Monitoring System In-Service Guide* (English)

*Acuity and Mobile Acuity LT Central Monitoring Systems Directions for Use (*English, printed)

Mobile Acuity LT Installation Guide (printed)

Mobile Acuity LT System Installation Guide ((En, Fr, Ger, Sp, It. Pol)

Quick Card

Acuity System Icons (English, printed)

Welch Allyn Monitors:

Micropaq Monitor Directions for Use CD-ROM (multilanguage)
Propaq LT Monitor Directions for Use CD-ROM (multilanguage)
Propaq CS Monitor Directions for Use CD-ROM (multilanguage)
Propaq Encore Monitor Directions for Use CD-ROM (multilanguage)
Welch Allyn 1500 Patient Monitor Directions for Use CD-ROM (multilanguage)

2   Overview

Welcome!

Welch Allyn patient monitors

Acuity Central Station

Welch Allyn Connectivity Server (WACS)

Within the network:
    Mobile devices running the Clinician Notifier program
    Hospital computer used by administrators
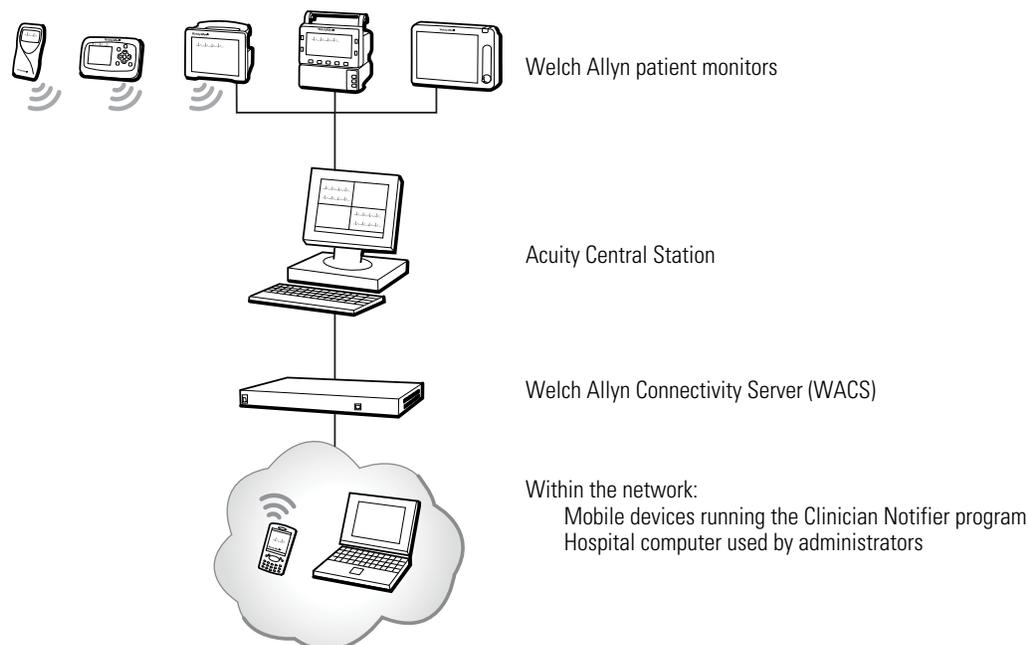
The Welch Allyn Connectivity Server (WACS) is an option to the Acuity Central Monitoring System (Acuity System). WACS supports a family of software applications for acute-care patient monitoring. We hope that you enjoy the expanded flexibility for patient monitoring that WACS provides.

The Welch Allyn Connectivity Server provides capability for these services.

- WACS Administrator module: Manage WACS configuration and WACS upgrades and manage clinician accounts and clinician privileges.

- WACS Web Server option: View and print historical printouts of Acuity System patients from a computer within your hospital information system network.

- WACS AcuityLink option: Receive and respond to secondary notification of Acuity System patient alarms via mobile devices running the Clinician Notifier program.

- WACS HL7 Interface and XML Interface options: Transfer patient admit/discharge/ transfer (ADT) information from your central or hospital information system network (CIS/HIS) to the Acuity System. Transfer numeric patient vital-signs data from the Acuity System to your CIS/HIS.

Workflow

Reach the Welch Allyn Connectivity Server via your facility's intranet.

Log in to WACS.

Home page

Click Web Server if you are a clinical user or a designated WACS administrator.

Click WACS Administrator if you are a designated WACS administrator.
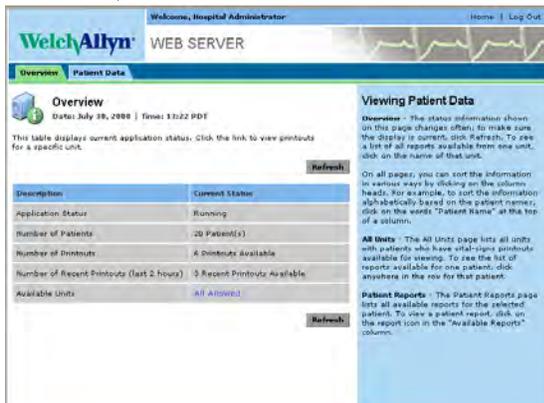
Web Server Overview page. Click the Patient Data tab to view Acuity System patients' historical printouts.

Administrator Overview page. Click the tabs to manage the WACS system.

Common page components

Many WACS pages contain these buttons, menus and elements.

A.

B.

C.

D.

E.

F.

G.

A. Home button	Navigate to the Home page.
B. Log Out	Log out of the Welch Allyn Connectivity Server program.
C. Tabs	Navigate to a module within the WACS system. Users designated as administrators have access to more tabs than do users designated as clinicians.
D. Filter by Unit, Select Unit and Unit pull-down menus	Select Acuity System units that you would like to view. Units shown are units that you have been authorized to view. An * designates "All Units."
E. Sorting mechanism	Click a column title to sort the list based on the column title. The title of the currently selected sort column is black. To reverse the sort order, click the title again.
F. Refresh	Click often to view the most current information.
G. Scroll bar	Drag the bar or click the arrow to scroll down the page.

3 Set up a WACS account and log in

This chapter presents information about WACS pages that are accessible to all designated WACS users.

Access the WACS program Log In page

You can access the Welch Allyn Connectivity Server program via certain internet browsers on any computer in your facility's intranet.

To access the WACS Log In page

1. In the address field of your facility's internet browser, type the URL address of your facility's Welch Allyn Connectivity Server. For example:

   If a security alert regarding certificates appears, you cannot continue the login process unless you respond. For details regarding this alert, please see the Troubleshooting chapter, *"Troubleshooting WACS Login"* on page 70.

2. Click **Go**, or press **Enter** on your keyboard.

   The WACS Log In page appears.

Set up your WACS account

After you submit a request for a new WACS account, a designated WACS administrator must activate the account before it becomes functional.

To protect your WACS account, please consider implementing these suggestions:

- Set your browser to clear private data on exit.

- Disable your browser's Save Password setting.

- Disable your browser's Save Form Fields setting.

- Do not write down your password or store it on a computer.

- Each time that you leave the computer, log out of the WACS program or lock the computer screen.

- Change your password every two to eight weeks.

To become a designated WACS user for multiple WACS systems, you must set up an account for each Welch Allyn Connectivity Server that you wish to use.

Open the New User Account page

To open the New User Account page

1. Access the WACS program Log In page.

   For instructions, see

2. Click **New Account**.

   The New User Account Request page appears.

Set up your WACS account

To set up your WACS account

1. Fill in the top seven fields with the appropriate information.

    User names must be 4-16 alphanumeric characters, with no blanks or special characters.

    Passwords must be 6-16 alphanumeric characters (at least three alphabetic and one numeric), with no blanks or special characters. Passwords are case-sensitive.

2. In the comments field, type a list, in this format:

    Unit: WACS role that you are requesting

    The following table illustrates available WACS roles and associated WACS privileges. For each unit, you can request one or more roles.

Table 1. WACS roles and associated WACS privileges

Administrator roles	Associated WACS privileges
Welch Allyn administrator	• Utilize the CIS ADT data transfer functions in the HL7 Manager pages. Note: This role is only available to Welch Allyn personnel. If you require ADT data transfer setup, please contact a Welch Allyn service representative. For contact information, see "Troubleshooting" on page 69.
Biomedical engineer	• Add and delete administrator accounts. • Add and remove administrator roles. • Activate and deactivate administrator accounts and edit administrator account information. • Process forgotten password requests from administrator and clinical users. • Utilize the HL7 Manager pages. • Utilize the Upgrade Manager pages. • Utilize the Reboot Manager pages.
Clinical administrator	• Add and delete clinical accounts. • Add and remove clinical roles. • Activate and deactivate and clinical accounts and edit clinical account information. • Approve forgotten password requests from clinical users.
Nurse manager	• Register mobile devices that use the Clinician Notifier program and associate clinicians with the devices. • View, lock, unlock and delete Acuity System patients' historical printout reports.
Clinical roles	**Associated privileges**
Monitor Tech	• View Acuity System patients' historical printout reports.
Nurse	• View Acuity System patients' historical printout reports • View and acknowledge clinical events using a mobile device running the Clinician Notifier program.

3. Click **Submit**.

    A WACS administrator must activate your account for it to become functional.
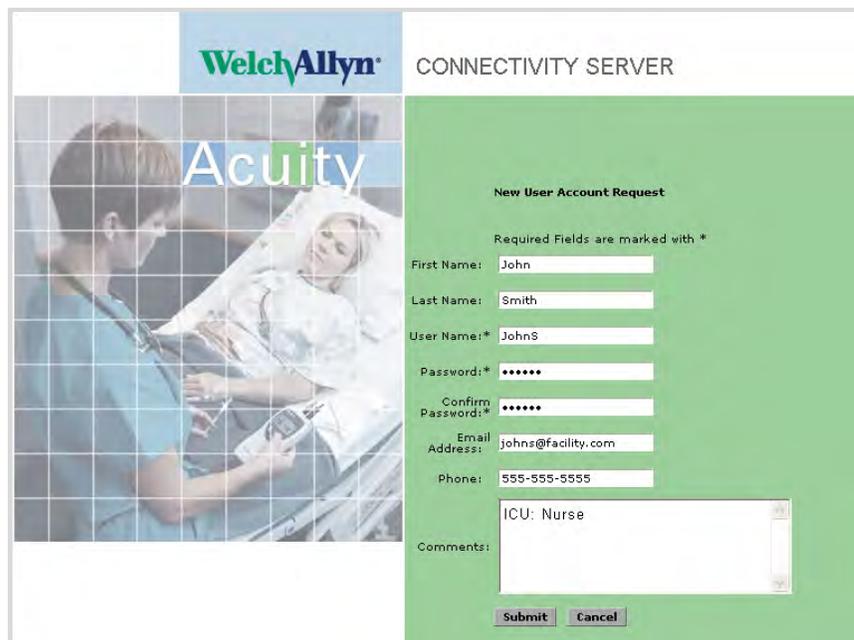
Log in to the WACS program

To Log in to the WACS program

1. Access the WACS program Log In page.

    For instructions, see "Access the WACS program Log In page" on page 9.

2. Enter your user name and password.

    If you have forgotten your password, take one of these steps:

    *   Submit a request for a new password (for instructions, see "If you forget your WACS password" on page 14).

    *   If the Your Account Deactivated page is present, see "Troubleshooting WACS Login" on page 70 for instructions.

3. Click **Submit**.

    You are logged in to the WACS program. The WACS Home page appears.

    If you see the Already Logged In page instead of the Home page, a WACS session was already open under your name and password. Click one of the following options

    *   Click **Force Logout** to force a logout of the other WACS session.

    *   Click **Login As Different User** to log in as a different user (for example, if you are an administrative user who has multiple name and password combinations).

Change your WACS password

If you are logged in to WACS, you can change your WACS password at any time.

To change your WACS password

1. Along the top of any WACS page, click **Home.**

    The WACS Home page appears.

2. Click **Change Password.**

    The Change Password page appears.

3. Type information in all three fields.

4. Click **Submit**.

    Your new password is active.

If you forget your WACS password

If you forget your password, you can submit a request for a new one.

To request a new WACS password

1. In the WACS Log In page, click **Forgot Password**.

    The Forgotten password page appears.

2. Type information in all four fields.

3. Click **Submit**.

    Your current password remains active until an administrator approves your request.

    To request timely authorization of your request, talk with a designated WACS biomedical engineer if you are a clinical user or a designated WACS clinical administrator if you are an administrative user.

4 View Acuity System printout reports (Web Server option)

If your facility's Welch Allyn Connectivity Server includes the Web Server option, these features are available:

- Viewing of Acuity System patients' historical printout reports, via your facility's internet browser.

- Printout report viewing is accessible to designated WACS nurses, nurse managers and monitor technicians.

- Printout report viewing is accessible only from the WACS unit in which the reports were printed.

Note Patient data transferring between the Welch Allyn Connectivity Server and your facility's CIS or HIS may be delayed when WACS is purging old files. The patient data transfers after WACS completes the purge.

View an overview of Acuity System patients and printouts

The Web Server Overview page summarizes the number of patients and available historical printout reports.

If the Web Server selection is not available, your WACS system does not include the Web Server option.

To view an overview of Acuity System patients and available Acuity System printout reports

1. Along the top of any WACS page, click **Home**.

2. Click **Web Server**.

   The Web Server Overview page appears.

For the latest information, click **Refresh** regularly.

Units for which you are authorized to view information.

3. View the summary of information.

View a list of Acuity System patients with available historical printout reports

Designated WACS nurses, nurse managers and monitor technicians can access the Patient List page.

The page lists, by unit, Acuity System patients who have historical printout reports available.

To view a list of Acuity System patients with available historical printout reports

1. Along the top of any WACS page, click **Home**. Click **Web Server**, and then click the **Patient Data** tab.

    The Patient List page appears.

This patient has been assigned an amended ID number within the Acuity System.

There are no stored Acuity System alarm printouts for this patient. Alarm printing can be turned on or off at the Acuity System for each patient.

2. Organize information on the page.

    •   To view reports from a unit, click the **Filter by Unit** pull-down menu and select the unit.

        Only units you are authorized to view are listed.

    •   To sort the list by the title, click a column title.

        To reverse sort, click the title again.

View a patient's historical printout reports

Designated WACS nurses, nurse managers and monitor technicians can access the Patient Reports page.

The page displays one Acuity System patient's available vital-signs printout reports.

Reports are available only when the Welch Allyn Connectivity Server and the Web Server application are running.

To view a patient's historical printout reports

1. Along the top of any WACS page, click **Home**. Click **Web Server,** and then click the **Patient Data** tab.

    The Patient List page appears.

2. Click anywhere in the row of the patient in whom you are interested.

    The Patient Reports page appears.

These icons are present only if you are a designated WACS nurse manager.

3. Click **Refresh.**

    Currently available reports are listed.

4. In the Available Reports column, click a report.

    The report appears. If "Printout Not Available" appears, the report has been deleted.

Note Do not save patient reports on an unsecured or public computer. If the computer is not secure, always clear the disk cache after each user access.

Save or delete a historical printout report on WACS

WACS saves Acuity System patients' printout reports for a period of time configured by your system administrator or until the WACS disk is nearly full.

Designated WACS nurse managers can mark a report to indicate the following requests:

- Save the report beyond the typical retention period.

- Permanently delete the report within 15 minutes of marking.

  Deleted reports cannot be recovered.

To save or permanently delete a printout report on WACS

1. Along the top of any WACS page, click **Home**. Click **Web Server**, and then click the **Patient Data** tab.

   The Patient List page appears.

2. Click anywhere in a patient's row.

   The Patient Reports page appears.

This printout report is scheduled to be deleted from WACS.

3. Save or delete a printout report on WACS.

   - To save a report: Click 🔒 in the report row.
     If you decide that you do not want to save the report, click 🔓 .

   - To mark a report for *permanent* deletion within 15 minutes: Click 🗑 in the report row.
     If you decide within a few minutes that you do not want to delete the report, click 🗑 .

5 Display WACS overview and manage WACS accounts

Designated WACS administrators can access the WACS pages discussed in this chapter.

Display an overview of WACS system software

Designated WACS administrators can access the Administrator Overview page.

The page lists software versions for your operating system, WACS and WACS options.

To display an overview of WACS system software

1. Along the top of any WACS page, click **Home**.

2. Click **WACS Administrator**.

   The WACS Administrator Overview page appears.

   If WACS Administrator is not available, you have not been assigned WACS administrator privileges.

3. View the list.

Display an overview of WACS users, their status and roles

Designated WACS biomedical engineers and clinical administrators can access the User Overview page.

The page lists WACS users, their account status and their assigned unit-role combinations. WACS roles are associated with predefined privileges within the WACS system. For more information about roles, see Table 1 on page 11.

To display an overview of WACS users, their status and roles

1. Along the top of any WACS page, click **Home**. Click **WACS Administrator**, and then click the **User Manager** tab.

   The User Overview page appears.

2. Click the **Select unit** pull-down menu, and then select the unit in which you are interested. ✳ represents "All units."

3. View users, their assigned roles and their account status.

Primary status designations and definitions	
Pending	The account has been requested or created, and it is pending activation by an administrator.
Active	The account is active, with designated unit/role combinations
Inactive	The account is inactive.
Further status designations and definitions	
Forgotten Password	A forgotten password request has been submitted.
Deactivated	An administrator has deactivated the account
Failed Login	Excessive failed login attempts have occurred for this account.

Add users to the WACS system

Users can be added to the WACS system in two ways:

- A user can set up and request an account via the New Account page, and an administrator can activate the account.

- An administrator can add and activate a user's account, and the user can request a different password later, if desired.

Certain WACS administrators can add accounts for specific types of WACS users.

- Designated WACS biomedical engineers can add administrative user accounts.

- Designated WACS clinical administrators can add clinical user accounts.

Each account requires these things to be functional:

- At least one assigned unit-role combination. User roles are associated with predefined system privileges. For more information about roles, see Table 1 on page 11.

- The account must be activated after it is added.

- A unique account name and password is not required, but it is recommended for enhanced user accountability.

To add users to the WACS system

1. Along the top of any WACS page, click **Home**. Click **WACS Administrator**, and then click the **User Manager** tab.

    The User Overview page appears.

2. Along the left side of the page, click **Add User**.

    The Add User page appears.

Clears all fields.

1. Type information in the empty fields.

    Starred fields are mandatory.

2. Specify at least one Unit/Role combination for the user:

    a. Click .

    b. Click pull-down menus to specify roles paired with units.

    c. Click to add more Unit/Role combinations.

3. Click **Save Changes**.

    The User Overview page appears.

    The account is not functional until it is activated. For instructions, see "Activate or reactivate one or more WACS accounts" on page 25.

Activate or reactivate one or more WACS accounts

After an account has been added to the WACS system, an administrator must activate the account to make it functional.

An administrator can reactivate an account after it has been deactivated.

Certain administrators can activate and reactivate specific types of accounts.

- Designated WACS biomedical engineers can activate and reactivate administrative user accounts.

- Designated WACS clinical administrators can activate and reactivate clinical user accounts.

To activate or reactivate a WACS account

1. Along the top of any WACS page, click **Home**. Click **WACS Administrator**, and then click the **User Manager** tab.

    The User Overview page appears.

2. Click the **Select unit** pull-down menu, and then select the unit in which you are interested. ✱ represents "All units."

3. Visually scan the Status column for users designated as Pending or Inactive.

4. Check boxes next to users whom you want to activate.

5. In the blue toolbar above the list, click [Activate User].

6. In the popup window, click **OK.**

    The changes are confirmed. WACS activates the account(s), and the new account status(es) appear.

    The passwords of reactivated users remain the same.

Edit a WACS user's account information

Certain WACS administrators can edit account information for specific types of WACS users.

•   Designated WACS biomedical engineers can edit administrative user accounts.

•   Designated WACS clinical administrators can edit clinical user accounts.

User name and user password changes must be requested by the user.

To open an Edit User page

1.   Along the top of any WACS page, click **Home**. Click **WACS Administrator**, and then click the **User Manager** tab. The User Overview page appears.

2.   Next to the user for whom you want to edit information, click [icon].

    The Edit User page appears.

Restores information to the state it was in when when the page was opened.

To edit a WACS user's account information

1.   Type over existing information in the fields that you want to change.

2.   Edit Unit/Role combinations.

    •   To change Unit/Role combinations, click the appropriate pull-down menus.

    •   To delete a Unit/Role combination, click [icon] in the appropriate Unit/Role row.

        A confirmation popup window appears. Click **OK**.

    •   To add more Unit/Role combinations than the page allows, click [Add Unit/Role] .

3.   Click **Save Changes**.

    The changes are confirmed.

Deactivate or delete one or more WACS accounts

Certain WACS administrators can deactivate or delete specific types of WACS accounts.

- Designated WACS biomedical engineers can deactivate or delete administrative user accounts.
- Designated WACS clinical administrators can deactivate or delete clinical user accounts.

If an account has been deactivated or deleted, the following must occur for the user to re-access the WACS system:

- Deactivated accounts must be reactivated by a WACS administrator.
- Deleted accounts cannot be restored. A WACS administrator must add a new account for the user.

To deactivate or delete a WACS account

1. Along the top of any WACS page, click **Home**. Click **WACS Administrator** and then the **User Manager** tab. The User Overview page appears.
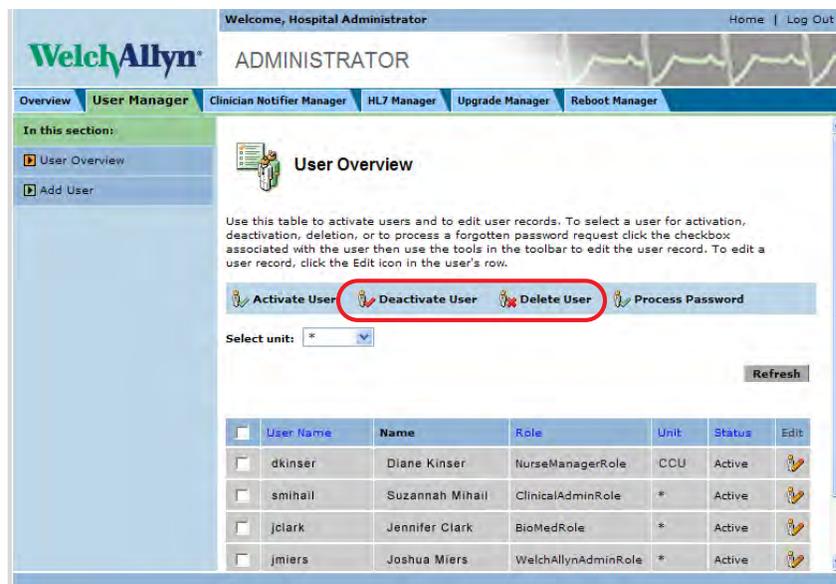
2. Click the **Select unit** pull-down menu, and then select the unit in which you are interested. ✳ represents "All units."

3. Check boxes next to users whom you want to deactivate or delete.

4. Deactivate or delete the account(s):

   - To deactivate the account(s): Click .
     Deactivated accounts can be reactivated.

   - To delete the account(s): Click .
     Deleted accounts cannot be restored.

5. In the popup window, click **OK.**

   Your action is confirmed. The new account status(es) appear.

Authorize or deny a forgotten password request

Certain WACS administrators can authorize or deny forgotten password requests for specific types of users.

- Designated WACS biomedical engineers can authorize or deny forgotten password requests for administrative users.

- Designated WACS clinical administrators can authorize or deny forgotten password requests for clinical users.

To authorize or deny a password change request

1. Along the top of any WACS page, click **Home**. Click **WACS Administrator**, and then click the **User Manager** tab. The User Overview page appears.
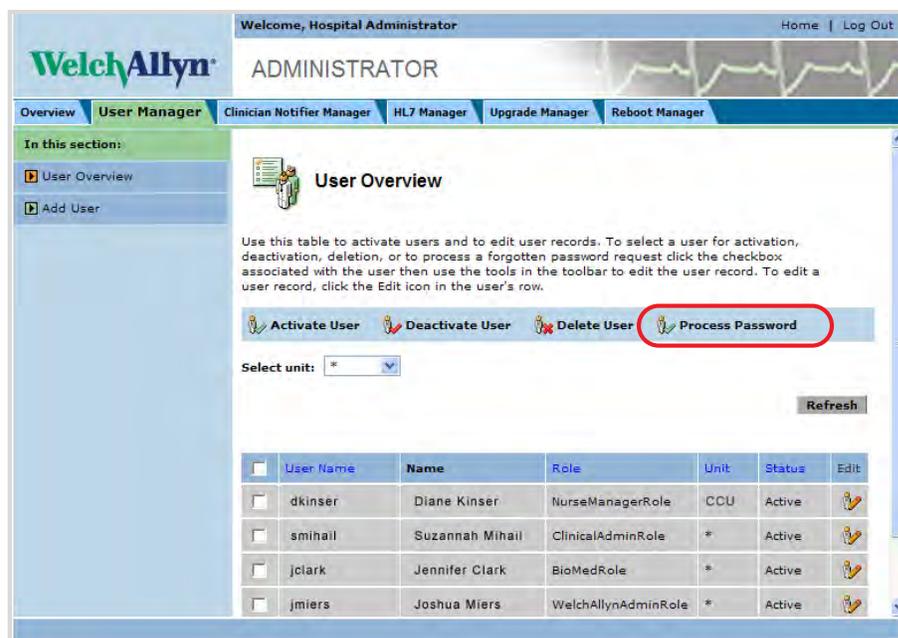
2. Click the **Select Unit** pull-down menu, and then select the unit in which you are interested. ✱ represents "All units."

3. Visually scan the Status column for Forgotten Password status.

4. Check the box next to the user for whom you are processing the request.

5. Click ![Process Password] .

6. In the popup window, make a selection:

   - Click **Accept** to authorize the request**.**

   - Click **Deny** to deny the request and retain the current password.

   - Click **Cancel** to take no action.

     The request remains pending.

6 Configure the WACS HL7 Interface option

If your facility's Welch Allyn Connectivity Server includes an HL7 (Health Level 7) Interface option, software developers at your facility have programmed and configured the HL7 interface between your facility's CIS or HIS and WACS.

An HL7 Interface option can include one or both of these distinct modules:

- Inbound HL7 ADT Data module: Admit/discharge/transfer information (ADT) from your CIS or HIS to WACS. WACS uses the Acuity System network to send ADT information to the Acuity Central Monitoring System for storage.

- Outbound HL7 Vital-sign Observations module: Numeric patient vital-signs data from WACS to your facility-controlled clinical or hospital information system (CIS or HIS).

Using the WACS HL7 Manager pages shown in this chapter, designated WACS biomedical engineers can further configure the Outbound HL7 Vital-sign Observation settings for your facility.

If you are interested in reconfiguring Inbound HL7 ADT Data settings, please see the *Welch Allyn Connectivity Server (WACS) Programmer's Guide* and contact a Welch Allyn Technical Service representative. For contact information, see "Troubleshooting" on page 69).

WARNING   HL7 configuration must be performed only by qualified personnel who are familiar with the HL7 Standard and with local implementation of the WACS HL7 Interface.

Improper configuration of the HL7 Interface can cause unexpected and unintended cessation of patient vital-signs data transfer.

Global settings for outbound numeric vital-signs data

Configure outbound numeric vital-signs data

In the HL7 Manager page, you can configure these things:

- Numeric data filters
- Numeric data filters for NIBP
- String PAD

To configure outbound numeric vital-signs data

1. Along the top of any WACS page, click **Home**. Click **WACS Administrator**, and then click the **HL7 Manager** tab.

   The HL7 Manager page appears.

A. Numeric Data Filter B. Numeric Data Filter for NIBP	Median: For an odd number of sample points, WACS returns the middle (median) data point. For an even number of sample points, WACS returns either the average (mean) or one of the two middle points. Closest: Returns the data closest to the reference point when the HL7 message is constructed.

2. In the New Value column, specify your changes.
   - Type in a field.
   - Click a pull-down menu and make a selection.
3. Click **Save Changes**.

   If you want to discard the changes, click **Reset**.
4. Reboot WACS. (For reboot instructions, see "Log out of the WACS program or reboot WACS" on page 67.)

   Your changes take effect

Message examples that illustrate Numeric Data Filter settings

Median Numeric Data Filter setting

This example shows a median heart rate value of 80 (in bold).

This value was gathered by WACS because the Numeric Data Filter setting was set to Median in the HL7 Manager page.

Message segment resulting from a Numeric Data Filter set to Median

OBX|1|ST|Heart Rate^Heart Rate^WAP||**80**|^BPM|||||||||20090128120300.000-0800

Closest Numeric Data Filter setting

This example shows a heart rate value of 124 (in bold).

This value was gathered by WACS because the Numeric Data Filter setting was set to Closest in the HL7 Manager page. When the HL7 message was constructed, the value was taken closest to the reference point.

Message segment resulting from a Numeric Data Filter set to Closest

OBX|1|ST|Heart Rate^Heart Rate^WAP||**124**|^BPM|||||||||20090128133200.000-0800

General HL7 settings

Open the HL7 - General Settings page

In the HL7 - General page, you can configure general settings, such as these:

- HL7 version

- Message interval times

- Message bundling

- Push or pull interface

To open the HL7 - General Settings page

1. Along the top of any WACS page, click **Home**. Click **WACS Administrator,** and then click the **HL7 Manager** tab.

   The HL7 Manager page appears.

2. Along the left side of the page, click **HL7 General**.

   The HL7 - General Settings page appears.

View the HL7 - General Settings page

A. Multiple observations per patient	If checked, WACS sends all of a patient's vital signs in a single HL7 message.
	If not checked, WACS sends each of a patient's vital signs in a separate HL7 message.
B. Observations for multiple patients per message	If checked, WACS sends all vital signs from all patients in a single HL7 message.
	If not checked, WACS sends each patient's vital signs in a separate HL7 message.
C. Enable HL7 push	If checked, WACS sends all vital signs at the specified intervals.
	If not checked, WACS sends vital signs only upon request by your facility's HIS/CIS. Deselecting this box alone does not change the HL7 outbound observation model from a push configuration to a pull or query-response configuration.
	A Welch Allyn representative is required to reconfigure the system with the other necessary elements to change this configuration. If you wish to change this configuration, please contact your Welch Allyn sales representative.
D. HL7 version	Specifies the HL7 version supported by your facility's HIS/CIS.
E. Message Delay (seconds):	Specifies the time interval that is assigned for the HL7 message push function. This default interval is assigned to each unit newly added to the WACS system.
	To set a unique interval for a unit, see "H. Message delay (seconds): Unit".
	If your facility utilizes a pull-type HL7 interface, set this interval to zero.

F. Number of seconds to be retrieved when a new patient is connected	Specifies the number of seconds of historical data that HL7 messages include.
	WACS sends historical data messages when the HL7 application first begins and when certain types of patient monitors are connected to the Acuity System. The Welch Allyn 1500 Patient Monitor, Propaq CS, Propaq Encore, and Propaq LT monitors support patient data storage.
G. Number of times the server tries to send an HL7 message to client before disconnecting	Specifies the number of times the WACS server attempts to resend a message.
	In this example, if WACS sends a message to the CIS and does not receive an acknowledgement, WACS continues to resend up to five additional messages (or less if it receives an acknowledgement sooner).
H. Message delay (seconds): Unit	Specifies a unit-specific time interval for the HL7 message push function. You can set a unique time interval for each unit.
	If present, unit-specific values override any value listed in E, and only defined units send data through the HL7 interface.

View and change values in the HL7 - General Settings page

To change values for an item

1. In the New Value column, specify your changes.

•   Checkboxes: Check or clear boxes to turn settings on or off.

•   Fields: Take these steps:

   a.   Hover your pointer over a field in the row.

        The range of acceptable values appears.

   b.   In the field, type a value within the acceptable range of values.

•   Pull-down menus: Click the pull-down menu and make a selection.

    If you want to discard the changes, click **Reset**.

2. Click **Save Changes**.

3. Reboot WACS. (For reboot instructions, see "Log out of the WACS program or reboot WACS" on page 67.)

    Your changes take effect

Message examples that illustrate general HL7 settings

Allow multiple observations for a patient in one HL7 message

In the following examples, a wireless patient monitor is out of range for a few minutes. When the device comes back into range, multiple observations are present.

Multiple observations setting off

If this setting is not checked, WACS sends each of a patient's vital signs in a separate HL7 message.

In this example, the message contains these components:

- A single PID segment (in bold)

- A single PV1 segment (in bold)

- Multiple observations

Message resulting from multiple observations setting off

```
<Wed Jan 28 15:08:36 2009>        HL7# HL7Log Initiator sending message:
MSH|^~\&|WAP^WAP||||20090128150835.3480800||ORU^R01|200901281508353482|P|2.4
PID|1|9582173|9582173||Van Goe^Edgar^A|||||||||||||9582173
PV1|1||TEST^102^GA001150^^^^^^PropaqCS 246
OBR|1|||VITALS^Vital Signs^WAP|||20090128145800.000-0800
OBX|1|ST|Heart Rate^Heart Rate^WAP||80|^BPM|||||||||20090128145800.000-0800
OBX|2|ST|Temperature^Temperature^WAP|1|98.6|^°F|||||||||20090128145800.000-0800
OBX|3|ST|Temperature^Temperature^WAP|2|97.5|^°F|||||||||20090128145800.000-0800
OBX|4|ST|SPO2^SPO2^WAP||97|^%|||||||||20090128145800.000-0800
OBX|5|ST|CO2 (In)^CO2 (In)^WAP||0.0|^%|||||||||20090128145800.000-0800
OBX|6|ST|CO2 (Ex)^CO2 (Ex)^WAP||5.0|^%|||||||||20090128145800.000-0800
OBX|7|ST|RR/BR^RR/BR^WAP||12|^Br/M|||||||||20090128145800.000-0800
OBX|8|ST|PVC^PVC^WAP||0|^PVC/Min|||||||||20090128145800.000-0800
OBR|2|||VITALS^Vital Signs^WAP|||20090128145900.000-0800
OBX|1|ST|Heart Rate^Heart Rate^WAP||80|^BPM|||||||||20090128145900.000-0800
OBX|2|ST|Temperature^Temperature^WAP|1|98.6|^°F|||||||||20090128145900.000-0800
OBX|3|ST|Temperature^Temperature^WAP|2|97.5|^°F|||||||||20090128145900.000-0800
OBX|4|ST|SPO2^SPO2^WAP||97|^%|||||||||20090128145900.000-0800
OBX|5|ST|CO2 (In)^CO2 (In)^WAP||0.0|^%|||||||||20090128145900.000-0800
OBX|6|ST|CO2 (Ex)^CO2 (Ex)^WAP||5.0|^%|||||||||20090128145900.000-0800
OBX|7|ST|RR/BR^RR/BR^WAP||12|^Br/M|||||||||20090128145900.000-0800
OBX|8|ST|PVC^PVC^WAP||0|^PVC/Min|||||||||20090128145900.000-0800
```

Multiple observations setting on

If this setting is checked, WACS sends all of a patient's vital signs in a single HL7 message.

In this example, the message contains these components:

• Multiple PID segments (in bold)

• Multiple PV1 segments (in bold)

• Associated observations

Message resulting from multiple observations setting on

<Wed Jan 28 15:23:27 2009>   HL7# HL7Log Initiator sending message:
MSH|^~\&|WAP^WAP||||20090128152327.4390800||ORU^R01|200901281523274403|P|2.4
PID|1|9582173|9582173||Van Goe^Edgar^A|||||||||||||9582173
PV1|1||TEST^102^GA001150^^^^^^PropaqCS 246
OBR|1|||VITALS^Vital Signs^WAP|||20090128151800.000-0800
OBX|1|ST|Heart Rate^Heart Rate^WAP||80|^BPM|||||||20090128151800.000-0800
OBX|2|ST|Temperature^Temperature^WAP|1|98.6|^°F|||||||20090128151800.000-0800
OBX|3|ST|Temperature^Temperature^WAP|2|97.5|^°F|||||||20090128151800.000-0800
OBX|4|ST|SPO2^SPO2^WAP||97|^%|||||||20090128151800.000-0800
OBX|5|ST|CO2 (In)^CO2 (In)^WAP||0.0|^%|||||||20090128151800.000-0800
OBX|6|ST|CO2 (Ex)^CO2 (Ex)^WAP||4.9|^%|||||||20090128151800.000-0800
OBX|7|ST|RR/BR^RR/BR^WAP||12|^Br/M|||||||20090128151800.000-0800
OBX|8|ST|PVC^PVC^WAP||0|^PVC/Min|||||||20090128151800.000-0800
PID|2|9582173|9582173||Van Goe^Edgar^A|||||||||||||9582173
PV1|2||TEST^102^GA001150^^^^^^PropaqCS 246
OBR|1|||VITALS^Vital Signs^WAP|||20090128151900.000-0800
OBX|1|ST|Heart Rate^Heart Rate^WAP||80|^BPM|||||||20090128151900.000-0800
OBX|2|ST|Temperature^Temperature^WAP|1|98.6|^°F|||||||20090128151900.000-0800
OBX|3|ST|Temperature^Temperature^WAP|2|97.5|^°F|||||||20090128151900.000-0800
OBX|4|ST|SPO2^SPO2^WAP||97|^%|||||||20090128151900.000-0800
OBX|5|ST|CO2 (In)^CO2 (In)^WAP||0.0|^%|||||||20090128151900.000-0800
OBX|6|ST|CO2 (Ex)^CO2 (Ex)^WAP||4.9|^%|||||||20090128151900.000-0800
OBX|7|ST|RR/BR^RR/BR^WAP||12|^Br/M|||||||20090128151900.000-0800
OBX|8|ST|PVC^PVC^WAP||0|^PVC/Min|||||||20090128151900.000-0800
<Wed Jan 28 15:23:27 2009>   HL7# HL7Log Initiator received message:
MSH|^~\&|||WAP^WAP||20090128152327.439-0800||ACK^R01|200901281523274403|P|2.4
MSA|AA|200901281523274403

Allow observations for multiple patients in one HL7 message

Multiple patient observations setting off

If this setting is not checked, WACS sends each patient's vital signs in a separate HL7 message.

This example shows two independent messages, each with its own acknowledgement.

Messages resulting from multiple patient observations setting off

```
<Thu Jan 29 09:22:01 2009>        HL7# HL7Log Initiator sending message:
MSH|^~\&|WAP^WAP||||20090129092200.893-0800||ORU^R01|200901290922008932|P|2.4
PID|1|9582173|9582173||Van Goe^Edgar^A|||||||||||||9582173
PV1|1||TEST^102^GA001150^^^^^^PropaqCS 246
OBR|1|||VITALS^Vital Signs^WAP|||20090129092000.000-0800
OBX|1|ST|Heart Rate^Heart Rate^WAP||80|^BPM|||||||20090129092000.000-0800
OBX|2|ST|Temperature^Temperature^WAP|1|98.6|^°F|||||||20090129092000.000-0800
OBX|3|ST|Temperature^Temperature^WAP|2|97.5|^°F|||||||20090129092000.000-0800
OBX|4|ST|SPO2^SPO2^WAP||97|^%|||||||20090129092000.000-0800
OBX|5|ST|CO2 (In)^CO2 (In)^WAP||0.0|^%|||||||20090129092000.000-0800
OBX|6|ST|CO2 (Ex)^CO2 (Ex)^WAP||4.9|^%|||||||20090129092000.000-0800
OBX|7|ST|RR/BR^RR/BR^WAP||12|^Br/M|||||||20090129092000.000-0800
OBX|8|ST|PVC^PVC^WAP||0|^PVC/Min|||||||20090129092000.000-0800


<Thu Jan 29 09:22:01 2009>        HL7# HL7Log Initiator received message:
MSH|^~\&|||WAP^WAP||20090129092200.893-0800||ACK^R01|200901290922008932|P|2.4
MSA|AA|200901290922008932


<Thu Jan 29 09:22:01 2009>        HL7# HL7Log Initiator sending message:
MSH|^~\&|WAP^WAP||||20090129092200.945-0800||ORU^R01|200901290922009453|P|2.4
PID|1|1567252|1567252||Bizmark^Michelle^D|||||||||||||1567252
PV1|1||TEST^103^GA005267^^^^^^PropaqCS 242
OBR|1|||VITALS^Vital Signs^WAP|||20090129092000.000-0800
OBX|1|ST|Heart Rate^Heart Rate^WAP||80|^BPM|||||||20090129092000.000-0800
OBX|2|ST|Temperature^Temperature^WAP|1|98.6|^°F|||||||20090129092000.000-0800
OBX|3|ST|Temperature^Temperature^WAP|2|97.5|^°F|||||||20090129092000.000-0800
OBX|4|ST|SPO2^SPO2^WAP||97|^%|||||||20090129092000.000-0800
OBX|5|ST|RR/BR^RR/BR^WAP||12|^Br/M|||||||20090129092000.000-0800
OBX|6|ST|PVC^PVC^WAP||0|^PVC/Min|||||||20090129092000.000-0800


<Thu Jan 29 09:22:02 2009>        HL7# HL7Log Initiator received message:
MSH|^~\&|||WAP^WAP||20090129092200.945-0800||ACK^R01|200901290922009453|P|2.4
MSA|AA|200901290922009453
```

Multiple patient observations setting on

If this setting is checked, WACS sends all vital signs from all patients in a single HL7 message.

In this example, one message includes these components:

• Data for patient Van Goe and patient Bizmark (in bold)

• One acknowledgement

Message resulting from multiple patient observations setting on

<Thu Jan 29 09:10:01 2009>   HL7# HL7Log Initiator sending message:
MSH|^~\&|WAP^WAP||||20090129091001.081-0800||ORU^R01|200901290910010813f8|P|2.4
PID|1|9582173|9582173||Van Goe^Edgar^A|||||||||||||9582173
PV1|1||TEST^102^GA001150^^^^^^PropaqCS 246
OBR|1|||VITALS^Vital Signs^WAP|||20090129090800.000-0800
OBX|1|ST|Heart Rate^Heart Rate^WAP||80|^BPM|||||||20090129090800.000-0800
OBX|2|ST|Temperature^Temperature^WAP|1|98.6|^°F|||||||20090129090800.000-0800
OBX|3|ST|Temperature^Temperature^WAP|2|97.5|^°F|||||||20090129090800.000-0800
OBX|4|ST|SPO2^SPO2^WAP||97|^%|||||||20090129090800.000-0800
OBX|5|ST|CO2 (In)^CO2 (In)^WAP||0.0|^%|||||||20090129090800.000-0800
OBX|6|ST|CO2 (Ex)^CO2 (Ex)^WAP||4.9|^%|||||||20090129090800.000-0800
OBX|7|ST|RR/BR^RR/BR^WAP||12|^Br/M|||||||20090129090800.000-0800
OBX|8|ST|PVC^PVC^WAP||0|^PVC/Min|||||||20090129090800.000-0800
PID|2|1567252|1567252||Bizmark^Michelle^D|||||||||||||1567252
PV1|2||TEST^103^GA005267^^^^^^PropaqCS 242
OBR|1|||VITALS^Vital Signs^WAP|||20090129090800.000-0800
OBX|1|ST|Heart Rate^Heart Rate^WAP||80|^BPM|||||||20090129090800.000-0800
OBX|2|ST|Temperature^Temperature^WAP|1|98.6|^°F|||||||20090129090800.000-0800
OBX|3|ST|Temperature^Temperature^WAP|2|97.5|^°F|||||||20090129090800.000-0800
OBX|4|ST|SPO2^SPO2^WAP||97|^%|||||||20090129090800.000-0800
OBX|5|ST|RR/BR^RR/BR^WAP||12|^Br/M|||||||20090129090800.000-0800
OBX|6|ST|PVC^PVC^WAP||0|^PVC/Min|||||||20090129090809.000-0800

<Thu Jan 29 09:10:02 2009>   HL7# HL7Log Initiator received message:
MSH|^~\&|||WAP^WAP||20090129091001.081-0800||ACK^R01|200901290910010813f8|P|2.4
MSA|AA|200901290910010813f8

HL7 Version

These examples illustrate a quick way to identify which HL7 version is configured in the HL7 - General Settings page.

HL7 Version setting 2.4

This example is tagged with version 2.4 (in bold).

Segment showing version 2.4 specification

\<Thu Jan 29 09:39:02 2009\>   HL7# HL7Log Initiator sending message:
MSH|^~\&|WAP^WAP||||20090129093901.451-0800||ORU^R01|2009012909390145223|P|**2.4**

HL7 Version setting 2.3

This example is tagged with version 2.3 (in bold).

Segment showing version 2.3 specification

\<Thu Jan 29 09:47:01 2009\>   HL7# HL7Log Initiator sending message:
MSH|^~\&|WAP^WAP||||20090129094700.99-0800||ORU^R01|200901290947009911|P|**2.3**

Number of seconds to be retrieved when a new patient is connected

When monitors that are capable of storing data connect or reconnect to the Acuity System, they upload stored data to the system. The HL7 module retrieves the data, crafts an HL7 message and sends the message to the CIS.

This setting specifies the number of seconds of historical data that HL7 messages include.

Number of seconds set to 7200

In this example, the patient monitor was disconnected from the Acuity System for approximately two minutes, and it retrieved one minute of trended data.

Message resulting from 7200 seconds setting

<Wed Jan 28 15:08:36 2009>   HL7# HL7Log Initiator sending message:
MSH|^~\&|WAP^WAP||||20090128150835.348-0800||ORU^R01|200901281508353482|P|2.4
PID|1|9582173|9582173||Van Goe^Edgar^A|||||||||||||9582173
PV1|1||TEST^102^GA001150^^^^^^PropaqCS 246
OBR|1|||VITALS^Vital Signs^WAP|||20090128145800.000-0800
OBX|1|ST|Heart Rate^Heart Rate^WAP||80|^BPM|||||||20090128145800.000-0800
OBX|2|ST|Temperature^Temperature^WAP|1|98.6|^°F|||||||20090128145800.000-0800
OBX|3|ST|Temperature^Temperature^WAP|2|97.5|^°F|||||||20090128145800.000-0800
OBX|4|ST|SPO2^SPO2^WAP||97|^%|||||||20090128145800.000-0800
OBX|5|ST|CO2 (In)^CO2 (In)^WAP||0.0|^%|||||||20090128145800.000-0800
OBX|6|ST|CO2 (Ex)^CO2 (Ex)^WAP||5.0|^%|||||||20090128145800.000-0800
OBX|7|ST|RR/BR^RR/BR^WAP||12|^Br/M|||||||20090128145800.000-0800
OBX|8|ST|PVC^PVC^WAP||0|^PVC/Min|||||||20090128145800.000-0800

Number of seconds set to 120

In this example, the patient monitor was disconnected from the Acuity System for approximately one hour, and it retrieved two minutes of data.

Messages resulting from 120 seconds setting

<Thu Jan 29 12:07:41 2009>   HL7# HL7Log Initiator sending message: MSH|^~
\&|WAP^WAP||||20090129120740.486-0800||ORU^R01|200901291207408140|P|2.4
PID|1|9582173|9582173||Van Goe^Edgar^A|||||||||||||9582173
PV1|1||TEST^102^GA001150^^^^^^PropaqCS 246
OBR|1|||VITALS^Vital Signs^WAP|||20090129115900.000-0800
OBX|1|ST|Heart Rate^Heart Rate^WAP||80|^BPM|||||||20090129115900.000-0800
OBX|2|ST|Temperature^Temperature^WAP|1|98.6|^°F|||||||20090129115900.000-0800
OBX|3|ST|Temperature^Temperature^WAP|2|97.5|^°F|||||||20090129115900.000-0800
OBX|4|ST|SPO2^SPO2^WAP||97|^%|||||||20090129115900.000-0800
OBX|5|ST|CO2 (In)^CO2 (In)^WAP||0.0|^%|||||||20090129115900.000-0800
OBX|6|ST|CO2 (Ex)^CO2 (Ex)^WAP||4.9|^%|||||||20090129115900.000-0800
OBX|7|ST|RR/BR^RR/BR^WAP||12|^Br/M|||||||20090129115900.000-0800
OBX|8|ST|PVC^PVC^WAP||0|^PVC/Min|||||||20090129115900.000-0800
OBR|2|||VITALS^Vital Signs^WAP|||20090129120000.000-0800
OBX|1|ST|Heart Rate^Heart Rate^WAP||80|^BPM|||||||20090129120000.000-0800
OBX|2|ST|Temperature^Temperature^WAP|1|98.6|^°F|||||||20090129120000.000-0800
OBX|3|ST|Temperature^Temperature^WAP|2|97.5|^°F|||||||20090129120000.000-0800
OBX|4|ST|SPO2^SPO2^WAP||97|^%|||||||20090129120000.000-0800
OBX|5|ST|CO2 (In)^CO2 (In)^WAP||0.0|^%|||||||20090129120000.000-0800
OBX|6|ST|CO2 (Ex)^CO2 (Ex)^WAP||4.9|^%|||||||20090129120000.000-0800
OBX|7|ST|RR/BR^RR/BR^WAP||12|^Br/M|||||||20090129120000.000-0800
OBX|8|ST|PVC^PVC^WAP||0|^PVC/Min|||||||20090129120000.000-0800

Message delay (seconds): Unit

This setting specifies a unit-specific time interval for the HL7 message push function.

Message Delay: Unit set to 420 seconds

In this example, there are 7 minutes (420 seconds) between data pushes (note bold time stamps).

Messages resulting from 420 seconds setting

\<Wed Jan 28 **13:34:01 2009**\> HL7# HL7Log Initiator sending message:
MSH|^~\&|WAP^WAP||||20090128133400.553-0800||ORU^R01|200901281334005545|P|2.4
PID|1|9582173|9582173||Van Goe^Edgar^A|||||||||||||9582173
PV1|1||TEST^102^GA001150^^^^^^PropaqCS 246
OBR|1|||VITALS^Vital Signs^WAP|||20090128133200.000-0800
OBX|1|ST|Heart Rate^Heart Rate^WAP||124|^BPM|||||||||20090128133200.000-0800
OBX|2|ST|Temperature^Temperature^WAP|1|102.3|^°F|||||||20090128133200.000-0800
OBX|3|ST|Temperature^Temperature^WAP|2|99.3|^°F|||||||20090128133200.000-0800
OBX|4|ST|SPO2^SPO2^WAP||88|^%|||||||||20090128133200.000-0800
OBX|5|ST|CO2 (In)^CO2 (In)^WAP||1.0|^%|||||||20090128133200.000-0800
OBX|6|ST|CO2 (Ex)^CO2 (Ex)^WAP||7.9|^%|||||||20090128133200.000-0800
OBX|7|ST|RR/BR^RR/BR^WAP||31|^Br/M|||||||20090128133200.000-0800
OBX|8|ST|PVC^PVC^WAP||0|^PVC/Min|||||||20090128133200.000-0800

\<Wed Jan 28 13:34:01 2009\> HL7# HL7Log Initiator received message:
MSH|^~\&|||WAP^WAP||20090128133400.553-0800||ACK^R01|200901281334005545|P|2.4
MSA|AA|200901281334005545

\<Wed Jan 28 **13:41:01 2009**\> HL7# HL7Log Initiator sending message:
MSH|^~\&|WAP^WAP||||20090128134100.547-0800||ORU^R01|200901281341005486|P|2.4
PID|1|9582173|9582173||Van Goe^Edgar^A|||||||||||||9582173
PV1|1||TEST^102^GA001150^^^^^^PropaqCS 246
OBR|1|||VITALS^Vital Signs^WAP|||20090128133900.000-0800
OBX|1|ST|Heart Rate^Heart Rate^WAP||124|^BPM|||||||||20090128133900.000-0800
OBX|2|ST|Temperature^Temperature^WAP|1|102.3|^°F|||||||20090128133900.000-0800
OBX|3|ST|Temperature^Temperature^WAP|2|99.3|^°F|||||||20090128133900.000-0800
OBX|4|ST|SPO2^SPO2^WAP||88|^%|||||||||20090128133900.000-0800
OBX|5|ST|CO2 (In)^CO2 (In)^WAP||1.0|^%|||||||20090128133900.000-0800
OBX|6|ST|CO2 (Ex)^CO2 (Ex)^WAP||7.9|^%|||||||20090128133900.000-0800
OBX|7|ST|RR/BR^RR/BR^WAP||31|^Br/M|||||||20090128133900.000-0800
OBX|8|ST|PVC^PVC^WAP||0|^PVC/Min|||||||20090128133900.000-0800

\<Wed Jan 28 13:41:01 2009\> HL7# HL7Log Initiator received message:
MSH|^~\&|||WAP^WAP||20090128134100.547-0800||ACK^R01|200901281341005486|P|2.4
MSA|AA|200901281341005486

Message Delay: Unit set to 60 seconds

In this example, there is one minute (60 seconds) between data pushes (note bold time stamps).

Messages resulting from 60 second setting

<Wed Jan 28 **14:02:02 2009**>   HL7# HL7Log Initiator sending message: MSH|^~
\&|WAP^WAP||||**2**0090128140201.64-0800||ORU^R01|200901281402016411|P|2.4
PID|1|9582173|9582173||Van Goe^Edgar^A|||||||||||||9582173
PV1|1||TEST^102^GA001150^^^^^^PropaqCS 246
OBR|1|||VITALS^Vital Signs^WAP|||20090128140000.000-0800
OBX|1|ST|Heart Rate^Heart Rate^WAP||80|^BPM|||||||20090128140000.000-0800
OBX|2|ST|Temperature^Temperature^WAP|1|98.6|^°F|||||||20090128140000.000-0800
OBX|3|ST|Temperature^Temperature^WAP|2|97.5|^°F|||||||20090128140000.000-0800
OBX|4|ST|SPO2^SPO2^WAP||97|^%|||||||20090128140000.000-0800
OBX|5|ST|CO2 (In)^CO2 (In)^WAP||0.0|^%|||||||20090128140000.000-0800
OBX|6|ST|CO2 (Ex)^CO2 (Ex)^WAP||5.0|^%|||||||20090128140000.000-0800
OBX|7|ST|RR/BR^RR/BR^WAP||12|^Br/M|||||||20090128140000.000-0800
OBX|8|ST|PVC^PVC^WAP||0|^PVC/Min|||||||20090128140000.000-0800

<Wed Jan 28 14:02:02 2009>   HL7# HL7Log Initiator received message: MSH|^
~\&|||WAP^WAP||20090128140201.64-0800||ACK^R01|200901281402016411|P|2.4
MSA|AA|200901281402016411

<Wed Jan 28 **14:03:02 2009**>   HL7# HL7Log Initiator sending message: MSH|^~
\&|WAP^WAP||||20090128140301.502-0800||ORU^R01|200901281403015032|P|2.4
PID|1|9582173|9582173||Van Goe^Edgar^A|||||||||||||9582173
PV1|1||TEST^102^GA001150^^^^^^PropaqCS 246
OBR|1|||VITALS^Vital Signs^WAP|||20090128140100.000-0800
OBX|1|ST|Heart Rate^Heart Rate^WAP||80|^BPM|||||||20090128140100.000-0800
OBX|2|ST|Temperature^Temperature^WAP|1|98.6|^°F|||||||20090128140100.000-0800
OBX|3|ST|Temperature^Temperature^WAP|2|97.5|^°F|||||||20090128140100.000-0800
OBX|4|ST|SPO2^SPO2^WAP||97|^%|||||||20090128140100.000-0800
OBX|5|ST|CO2 (In)^CO2 (In)^WAP||0.0|^%|||||||20090128140100.000-0800
OBX|6|ST|CO2 (Ex)^CO2 (Ex)^WAP||5.0|^%|||||||20090128140100.000-0800
OBX|7|ST|RR/BR^RR/BR^WAP||12|^Br/M|||||||20090128140100.000-0800
OBX|8|ST|PVC^PVC^WAP||0|^PVC/Min|||||||20090128140100.000-0800

<Wed Jan 28 14:03:02 2009>   HL7# HL7Log Initiator received message: MSH|^
~\&|||WAP^WAP||20090128140301.502-0800||ACK^R01|200901281403015032|P|2.4
MSA|AA|200901281403015032

Push on event settings

Specify which types of event data WACS sends to your CIS/HIS

In the HL7 - Push on Event page, you can specify whether WACS sends specific vital-sign events data to your facility's CIS/HIS.

Note   All configuration settings in the HL7 - Push on Event page apply to all Acuity System units and Acuity System patients.

To turn on or off HL7 push on event for specific vital signs

1. Along the top of any WACS page, click **Home**. Click **WACS Administrator.** Click the **HL7 Manager** tab.

    The HL7 Manager page appears.

2. Along the left side of the page, click **Push on Event**.

    The HL7 - Push on Event Settings page appears.

3. In the New Value column, check or clear boxes.

    If you want to discard the changes, click **Reset**.

4. Click **Save Changes**.

5. Reboot WACS. (For reboot instructions, see "Log out of the WACS program or reboot WACS" on page 67.)

    Your changes take effect

Message examples that illustrate Push on Event page settings

In these examples, the patient's lower alarm limit for heart rate is adjusted to 90 at the Acuity Central Station.

Heart rate Push on Event setting off

In this example, the Acuity system generated a heart rate alarm for a lower limit violation, but WACS did not send an HL7 message to the CIS because the WACS HR Push On Event setting was Off.

The first segment and second segment (12:37:01 and 12:38:01) are timed messages that were sent one minute apart.

Messages resulting from HR Push on Event setting off

<Thu Jan 29 12:36:02 2009>   HL7# HL7Log Initiator received message: MSH|^
~\&|||WAP^WAP||20090129123601.177-0800||ACK^R01|200901291236011886|P|2.4
MSA|AA|200901291236011886

<**Thu Jan 29 12:37:01 2009**>   HL7# HL7Log Initiator sending message: MSH|^~
\&|WAP^WAP||||20090129123700.986-0800||ORU^R01|200901291237009877|P|2.4
PID|1|9582173|9582173||Van Goe^Edgar^A|||||||||||||9582173
PV1|1||TEST^102^GA001150^^^^^^PropaqCS 246
OBR|1|||VITALS^Vital Signs^WAP|||20090129123500.000-0800
OBX|1|ST|Heart Rate^Heart Rate^WAP||80|^BPM|||||||20090129123500.000-0800
OBX|2|ST|Temperature^Temperature^WAP|1|98.6|^°F|||||||20090129123500.000-0800
OBX|3|ST|Temperature^Temperature^WAP|2|97.5|^°F|||||||20090129123500.000-0800
OBX|4|ST|SPO2^SPO2^WAP||97|^%|||||||20090129123500.000-0800
OBX|5|ST|CO2 (In)^CO2 (In)^WAP||0.0|^%|||||||20090129123500.000-0800
OBX|6|ST|CO2 (Ex)^CO2 (Ex)^WAP||4.9|^%|||||||20090129123500.000-0800
OBX|7|ST|RR/BR^RR/BR^WAP||12|^Br/M|||||||20090129123500.000-0800
OBX|8|ST|PVC^PVC^WAP||0|^PVC/Min|||||||20090129123500.000-0800

<Thu Jan 29 12:37:02 2009>   HL7# HL7Log Initiator received message: MSH|^
~\&|||WAP^WAP||20090129123700.986-0800||ACK^R01|200901291237009877|P|2.4
MSA|AA|200901291237009877

<Thu Jan 29 **12:38:01 2009**>   HL7# HL7Log Initiator sending message:
MSH|^~\&|WAP^WAP||||20090129123800.836-0800||ORU^R01|200901291238008378|P|2.4
PID|1|9582173|9582173||Van Goe^Edgar^A|||||||||||||9582173
PV1|1||TEST^102^GA001150^^^^^^PropaqCS 246
OBR|1|||VITALS^Vital Signs^WAP|||20090129123600.000-0800
OBX|1|ST|Heart Rate^Heart Rate^WAP||80|^BPM|||||||20090129123600.000-0800
OBX|2|ST|Temperature^Temperature^WAP|1|98.6|^°F|||||||20090129123600.000-0800
OBX|3|ST|Temperature^Temperature^WAP|2|97.5|^°F|||||||20090129123600.000-0800
OBX|4|ST|SPO2^SPO2^WAP||97|^%|||||||20090129123600.000-0800
OBX|5|ST|CO2 (In)^CO2 (In)^WAP||0.0|^%|||||||20090129123600.000-0800
OBX|6|ST|CO2 (Ex)^CO2 (Ex)^WAP||4.9|^%|||||||20090129123600.000-0800
OBX|7|ST|RR/BR^RR/BR^WAP||12|^Br/M|||||||20090129123600.000-0800
OBX|8|ST|PVC^PVC^WAP||0|^PVC/Min|||||||20090129123600.000-0800

<Thu Jan 29 12:38:01 2009>   HL7# HL7Log Initiator received message:
MSH|^~\&|||WAP^WAP||20090129123800.836-0800||ACK^R01|200901291238008378|P|2.4
MSA|AA|200901291238008378

Heart rate Push on Event setting on

In this example, the messages illustrate a push-on-event message:

- The timed 13:03:02 message and 13:04:02 message were sent exactly 60 seconds apart.
- The 13:03:17 message (between 13:03 and 13:04) is a heart rate event message.

Messages resulting from HR Push on Event setting on

```
<Thu Jan 29 13:03:02 2009>        HL7# HL7Log Initiator sending message:
MSH|^~\&|WAP^WAP||||20090129130301.403-0800||ORU^R01|2009012913030140412|P|2.4
PID|1|9582173|9582173||Van Goe^Edgar^A|||||||||||||9582173
PV1|1||TEST^102^GA001150^^^^^^^PropaqCS 246
OBR|1|||VITALS^Vital Signs^WAP|||20090129130100.000-0800
OBX|1|ST|Heart Rate^Heart Rate^WAP||80|^BPM|||||||20090129130100.000-0800
OBX|2|ST|Temperature^Temperature^WAP|1|98.6|^°F|||||||20090129130100.000-0800
OBX|3|ST|Temperature^Temperature^WAP|2|97.5|^°F|||||||20090129130100.000-0800
OBX|4|ST|SPO2^SPO2^WAP||97|^%|||||||20090129130100.000-0800
OBX|5|ST|CO2 (In)^CO2 (In)^WAP||0.0|^%|||||||20090129130100.000-0800
OBX|6|ST|CO2 (Ex)^CO2 (Ex)^WAP||4.9|^%|||||||20090129130100.000-0800
OBX|7|ST|RR/BR^RR/BR^WAP||12|^Br/M|||||||20090129130100.000-0800
OBX|8|ST|PVC^PVC^WAP||0|^PVC/Min|||||||20090129130100.000-0800

<Thu Jan 29 13:03:02 2009>        HL7# HL7Log Initiator received message:
MSH|^~\&|||WAP^WAP||20090129130301.403-0800||ACK^R01|2009012913030140412|P|2.4
MSA|AA|2009012913030140412

<Thu Jan 29 13:03:17 2009>        HL7# HL7Log Initiator sending message:
MSH|^~\&|WAP^WAP||||20090129130316.078-0800||ORU^R01|2009012913031607913|P|2.4
PID|1|9582173|9582173||Van Goe^Edgar^A|||||||||||||9582173
PV1|1||TEST^102^GA001150^^^^^^^PropaqCS 246
OBR|1|||VITALS^Vital Signs^WAP|||20090129130311.000-0800
OBX|1|ST|RR/BR^RR/BR^WAP||12|^BPM|||||||20090129130311.000-0800
OBX|2|ST|CO2 (In)^CO2 (In)^WAP||0.0|||||||||20090129130311.000-0800
OBX|3|ST|CO2 (Ex)^CO2 (Ex)^WAP||3.8|||||||||20090129130311.000-0800
OBX|4|ST|SPO2^SPO2^WAP||97|^%|||||||20090129130311.000-0800
OBX|5|ST|Propaq/TEMP/delta^Propaq/TEMP/delta^WAP||1.1|||||||||20090129130311.000-0800
OBX|6|ST|Temperature^Temperature^WAP|2|97.5|||||||||20090129130311.000-0800
OBX|7|ST|Temperature^Temperature^WAP|1|98.6|||||||||20090129130311.000-0800
OBX|8|ST|Heart Rate^Heart Rate^WAP||80|^BPM|||||||20090129130311.000-0800

<Thu Jan 29 13:03:17 2009>        HL7# HL7Log Initiator received message:
MSH|^~\&|||WAP^WAP||20090129130316.078-0800||ACK^R01|2009012913031607913|P|2.4
MSA|AA|2009012913031607913

<Thu Jan 29 13:04:02 2009>        HL7# HL7Log Initiator sending message:
MSH|^~\&|WAP^WAP||||20090129130401.253-0800||ORU^R01|2009012913040125414|P|2.4
PID|1|9582173|9582173||Van Goe^Edgar^A|||||||||||||9582173
PV1|1||TEST^102^GA001150^^^^^^^PropaqCS 246
OBR|1|||VITALS^Vital Signs^WAP|||20090129130200.000-0800
OBX|1|ST|Heart Rate^Heart Rate^WAP||80|^BPM|||||||20090129130200.000-0800
OBX|2|ST|Temperature^Temperature^WAP|1|98.6|^°F|||||||20090129130200.000-0800
OBX|3|ST|Temperature^Temperature^WAP|2|97.5|^°F|||||||20090129130200.000-0800
OBX|4|ST|SPO2^SPO2^WAP||97|^%|||||||20090129130200.000-0800
OBX|5|ST|CO2 (In)^CO2 (In)^WAP||0.0|^%|||||||20090129130200.000-0800
OBX|6|ST|CO2 (Ex)^CO2 (Ex)^WAP||4.9|^%|||||||20090129130200.000-0800
OBX|7|ST|RR/BR^RR/BR^WAP||12|^Br/M|||||||20090129130200.000-0800
OBX|8|ST|PVC^PVC^WAP||0|^PVC/Min|||||||20090129130200.000-0800
```

```
<Thu Jan 29 13:04:02 2009>        HL7# HL7Log Initiator received message:
MSH|^~\&|||WAP^WAP||20090129130401.253-0800||ACK^R01|2009012913040125414|P|2.4
MSA|AA|2009012913040125414
```

Observation identifiers

Specify observation identifier labels for specific vital signs

In the HL7 Manager - Observation Identifier page, you can specify identifier labels used for specific vital-sign readings.

To specify observation identifier labels for vital signs

1. Along the top of any WACS page, click **Home**. Click **WACS Administrator.** Click the **HL7 Manager** tab.

   The HL7 Manager page appears.

2. Along the left side of the page, click **Observation Identifier**.

   The HL7 Manager - Observation Identifier page appears.

3. In the New Value column, specify your changes.

   - Type in a field.
   - Click a pull-down menu and make a selection.

   If you want to discard the changes, click **Reset**.

4. Click **Save Changes**.

5. Reboot WACS. (For reboot instructions, see "Log out of the WACS program or reboot WACS" on page 67.)

   Your changes take effect

Message examples that illustrate observation identifier labels

Segment with a Heart Rate identifier

Segment showing Heart Rate label

OBX|1|ST|**Heart Rate^Heart Rate**^WAP||80|^BPM||||||||20090129130200.000-0800

Segment with an HR identifier

Segment showing HR label

OBX|1|ST|**HR^HR**^WAP||80|^BPM||||||||20090129133200.000-0800

HL7 - OBX settings

Specify whether OBX sub-IDs are present in OBX segments

In the HL7 - OBX page, you can specify whether HL7 messages include OBX sub-IDs in OBX segments.

To turn on or off the OBX sub-ID setting

1. Along the top of any WACS page, click **Home**. Click **WACS Administrator.** Click the **HL7 Manager** tab.

   The HL7 Manager page appears.

2. Along the left side of the page, click **OBX Segment**.

   The HL7 - OBX Settings page appears.

3. In the New Value column, check or clear the box in the Observation Sub-Id row.

   If you want to discard the changes, click **Reset**.

4. Click **Save Changes**.

5. Reboot WACS. (For reboot instructions, see "Log out of the WACS program or reboot WACS" on page 67.)

   Your changes take effect

Message examples that illustrate OBX segment sub-ID settings

Message resulting from OBX sub-ID setting on

PID|2|1567252|1567252||Bizmark^Michelle^D|||||||||||||1567252
PV1|2||TEST^103^GA005267^^^^^^PropaqCS 242
OBR|1|||VITALS^Vital Signs^WAP|||20090130095500.000-0800
OBX|1|ST|**NIBP^NIBP^WAP|DIA**|62|^mmHg||||||||20090130095530.000-0800
OBX|2|ST|**NIBP^NIBP^WAP|MEAN**|83|^mmHg||||||||20090130095530.000-0800
OBX|3|ST|**NIBP^NIBP^WAP|SYS**|122|^mmHg||||||||20090130095530.000-0800

Message resulting from OBX sub-ID setting off

PID|3|1567252|1567252||Bizmark^Michelle^D|||||||||||||1567252
PV1|3||TEST^103^GA005267^^^^^^PropaqCS 242
OBR|1|||VITALS^Vital Signs^WAP|||20090130094400.000-0800
OBX|1|ST|**NIBP_DIA^NIBP_DIA^WAP**||83|^mmHg||||||||20090130094430.000-0800
OBX|2|ST|**NIBP_MEAN^NIBP_MEAN^WAP**||103|^mmHg||||||||20090130094430.000-0800
OBX|3|ST|**NIBP_SYS^NIBP_SYS^WAP**||124|^mmHg||||||||20090130094430.000-0800

7 Manage the AcuityLink option

Designated WACS nurse managers can access the pages discussed in this chapter.

Overview of the AcuityLink option

The AcuityLink option consists of these software modules:

- AcuityLink software installed on the Welch Allyn Connectivity Server by Welch Allyn personnel

- The AcuityLink Clinician Notifier software program installed on mobile devices by hospital personnel

AcuityLink Clinician Notifier Manager pages on WACS

AcuityLink Clinician Notifier program on a mobile device

AcuityLink Clinician Notifier alarm delivery modes

The WACS Event Delivery Mode determines how mobile devices receive patient alarms.

The setting applies to all mobile devices that are running Clinician Notifier software within an Acuity System unit.

Broadcast mode

In broadcast mode, WACS sends notification to all mobile devices in a unit simultaneously when an alarm occurs for any patient.
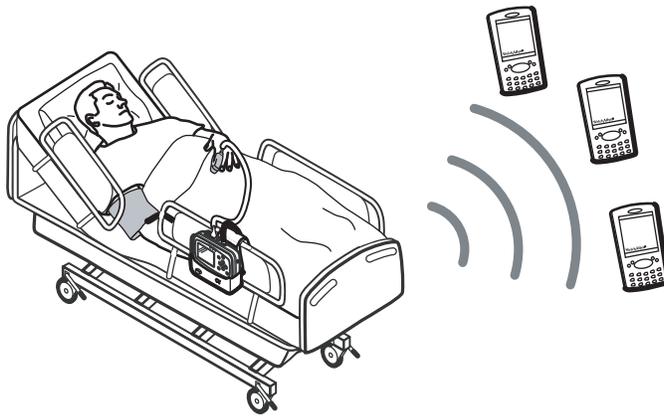
Escalation mode

In escalation mode, a patient alarm is delivered to clinicians' mobile devices in the order shown below. Timing can vary, depending on selections made in the WACS Clinician Notifier Configure Notification page.

1.
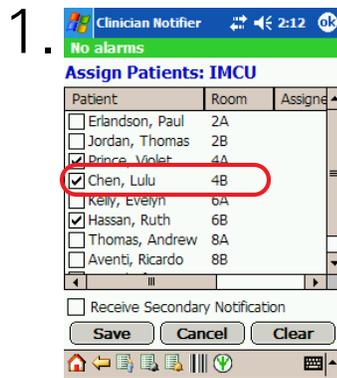
11:00:00

Primary notification

Violet Prince's patient monitor and the Acuity Central Station indicate that she is in an alarm state.

Seconds later, the alarm occurs on the mobile devices of primary responders— clinicians in the unit who have checked Violet Prince.

No one in the unit suspends her alarm tone.

2.
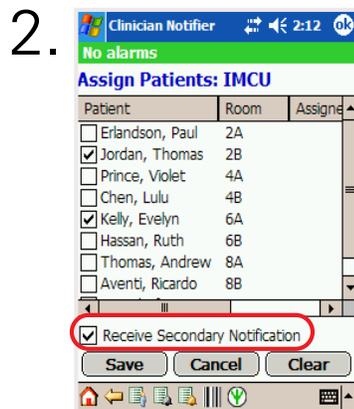
11:00:30

Secondary notification

Violet's alarm tone continues at the bedside monitor and at the Acuity Central Station, and it escalates to mobile devices of secondary responders— clinicians in the unit who have checked Receive Secondary Notification.

No one in the unit suspends her alarm tone.

3.

11:01:00

Broadcast notification

Violet's alarm tone continues at the patient monitor and at the Acuity Central Station, and it broadcasts to all active mobile devices in the unit.

Note   A patient's alarms immediately escalate if the patient is unassigned for primary or secondary notification.

Configure AcuityLink Clinician Notifier software

In the Configure Notification page, you can configure these software settings, unit by unit or for all units at once:

- Login controls and logout controls for the Clinician Notifier program
- Patient alarm notification on mobile devices running the Clinician Notifier program
- Delivery of specific patient alarm types to mobile devices running Clinician Notifier
- Alarm history retention by the Clinician Notifier program

Open the Configure Notification page and select a unit

To open the Configure Notification page and select a unit

1. Along the top of any WACS page, click **Home**. Click **WACS Administrator**, and then click the **Clinician Notifier Manager** tab.

   The AcuityLink Clinician Notifier Manager Overview page appears.

2. Along the left side of the page, click **Configure Notification.**

   The Configure Notification page appears.

3. Click the **Unit** pull-down menu, and then select the unit for which you are configuring Clinician Notifier.

   ✱ represents "All units."

Specify Login controls and Logout controls for the Clinician Notifier program

In the Login/Logout Controls section of the Configure Notification window, you can specify these configurations:

- Whether a clinician must specify a password when logging in to the Clinician Notifier program on a mobile device. A clinician must always specify a user name.

- After signal dropout between a mobile device and WACS, the number of minutes before the Clinician Notifier program logs out.

		Save Changes	Restore Defaults	Refresh

Description	Default Value	Current Value	New Value
Login/Logout Controls			
Require passwords: MUST EXIT/RESTART CLINICIAN NOTIFIER PROGRAM ON MOBILE DEVICES	☑	☐	☐
Number of minutes to wait after dropout before automatic logout:	3	3	3

To specify login control for the Clinician Notifier program

1. In the New Value column, take one of these steps:

   - To require passwords at login, check the box in the Require passwords row.

   - To allow login without passwords, clear the box in the Require passwords row.

2. If you have completed all configurations in the Configure Notification page, take these steps:

   a. Click **Save Changes**.

      Your changes are saved.

   b. Restart the Clinician Notifier program on all mobile devices.

      The changes are implemented.

To specify the number of minutes before the Clinician Notifier program logs out after signal dropout

1. Hover your pointer over a field in the row.

   The range of acceptable values appears.

2. In the New Value column, type a number within the acceptable range.

3. If you have completed all configurations in the Configure Notification page, click **Save Changes.**

   Your changes are saved.

Specify patient alarm notification to mobile devices running the Clinician Notifier program

In the Deliver Events to Respondents section of the Configure Notification window, you can specify these configurations:

- Audio or vibratory patient alarm notification on mobile devices (if devices have vibratory capability)

- Number of seconds of patient alarming at the Acuity Central Station before WACS sends initial alarm notification to mobile devices running Clinician Notifier software

- Alarm (event) delivery mode: Broadcast or Escalation. For details, see "AcuityLink Clinician Notifier alarm delivery modes" on page 54.

If Escalation Mode is selected:

- Secondary holdoff time: If no primary responders suspend a patient alarm, the number of seconds after initial alarm notification before WACS escalates notification to secondary responders.

  If no primary respondents are indicated or reachable, WACS escalates to secondary responders immediately.

- Broadcast holdoff time: The number of seconds after initial alarm notification before WACS broadcasts notification to all mobile devices. This must be set to a value equal to or greater than the secondary holdoff time.

  If no primary or secondary respondents are indicated or reachable, WACS broadcasts immediately.

Specify patient alarm notification to mobile devices running Clinician Notifier

Deliver Events to Respondents			
Use these mobile device signals for alarms: MUST EXIT/RESTART CLINICIAN NOTIFIER PROGRAM ON MOBILE DEVICES	Audio and		Audio and vibration ⌄
Number of seconds to hold off before sending alarm Initial Notification. Recommend setting to no more than 7 seconds if no monitor tech is on duty: MUST RESTART WACS COMPUTER	4	4	4
Select Event Delivery Mode: MUST EXIT/RESTART CLINICIAN NOTIFIER PROGRAM ON MOBILE DEVICES	Escalation		Escalation ⌄
Number of additional seconds after Initial Notification before sending Secondary Notification: MUST RESTART WACS COMPUTER	30		
Number of additional seconds after Initial Notification before broadcasting Final Notification. Must be at least the same as the Secondary Notification: MUST RESTART WACS COMPUTER	60		

1. In the New Value column for the item that you are configuring, take the appropriate step.

    •   Pull-down menus: Click the pull-down menu and make a selection.

    •   Fields: Take these steps:

    a. Hover your pointer over a field in the row.

        The range of acceptable values appears.

    b. In the field, type a value within the acceptable range of values.

2. If you have completed all configurations in the Configure Notification page, take these steps:

    a. Click **Save Changes**.

        Your changes are saved.

    b. Read the instructions in the row of the item(s) that you have configured, and then take one or both of the following steps, as specified:

    •   Restart the Clinician Notifier program on all mobile devices.

    •   Reboot the WACS computer. For instructions, see "Log out of the WACS program or reboot WACS" on page 67.

        The changes are implemented.

⚠ **WARNING**   If you turn on audio alarm only for Clinician Notifier event delivery, vibratory notification does not occur at the mobile device, even if the clinician uses the mobile device operating system to turn on vibration.

Specify delivery of specific types of patient alarms to mobile devices

In the Deliver These Alarm Types section of the Configure Notification window, you specify which patient alarm types are delivered to mobile devices running the Clinician Notifier program.

Items in this section are listed in order of priority. Lethal Arrhythmia events are always delivered.

Specify delivery of specific types of patient alarms to mobile devices

Deliver These Alarm Types			
Select the lowest priority alarm to deliver			
Lethal Arrhythmias (Always ON)	⊙	⊙	⊙
Apnea	○	○	○
High Arrhythmias	○	○	○
High ST	○	○	○
Medium Arrhythmias	○	○	○
Medium ST	○	○	○
HR/PR	○	○	○
P1	○	○	○
P2	○	○	○
CO2	○	○	○
Resp	○	○	○
SpO2	○	○	○
NIBP	○	○	○
Temp	○	○	○
Description	Default Value	Current Value	New Value
	Save Changes	Restore Defaults	Refresh

1. In the New Value column, click the circle next to the lowest priority item for which you want alarms delivered.

   Alarms will be delivered also for all items of higher priority.

2. If you have completed all configurations in the Configure Notification page, click **Save Changes**.

   Your changes are saved.

Specify alarm history retention by the Clinician Notifier program

In the Alarm History Screen (Patient) and Recent Alarms Screen sections of the Configure Notification window, you can specify these configurations:

Each patient's Alarm History screen:

- Number of alarm events to retain for each patient
- Number of hours to retain alarm events. The Full Disclosure period licensed for the associated Acuity System determines the highest number available.

A unit's Recent Alarms screen:

- Total number of recent alarm events to retain
- Number of minutes to retain recent alarm events

Alarm History Screen (Patient)			
Number of events to retain for each patient: MUST RESTART WACS COMPUTER	25		
Number of hours to retain events: MUST RESTART WACS COMPUTER	96		
Recent Alarm Screen			
Total number of recent alarms to retain: MUST RESTART WACS COMPUTER	25		
Number of minutes to retain recent alarms: MUST RESTART WACS COMPUTER	240		

To specify alarm history retention by the Clinician Notifier program

1. Hover your pointer over a field in the row that you are configuring.

   The range of acceptable values appears.

2. In the New Value column, type a number within the acceptable range.

3. If you have completed all configurations in the Configure Notification page, take these steps:

   a. Click **Save Changes**.

      Your changes are saved.

   b. Reboot the WACS computer. For instructions, see "Log out of the WACS program or reboot WACS" on page 67.

      The changes are implemented.

Register or change the status of mobile devices

In the Register Notification Devices page, you can do these things for each mobile device:

- Register devices in designated units. Each device can be registered with only one unit. No matter where a device is used, the patient list shows only patients in the registered unit.

- Change the status of a device, as follows:

  Disabled: for lost or stolen devices. The device does not reappear in the list if it is subsequently detected on the WACS network.

  Deleted: for device repair or replacement. The device reappears in the list as unregistered if it is subsequently detected on the WACS network.

  Unit change: to register the device with a different unit

To navigate to the Register Notification Devices page

1. Along the top of any WACS page, click **Home**. Click **WACS Administrator**, and then click the **Clinician Notifier Manager** tab.

   The Clinician Notifier Manager Overview page appears.

2. Along the left side of the page, click **Register Notification Devices**.

   The Register Notification Devices page appears.

To register mobile devices

1. Next to the device listing, in the Assigned ID column, type up to five characters for the device ID number.

2. In the Assigned Unit column, click the pull-down menu and select a unit.

3. Click **Save Changes**.

    Your changes are saved.

To change the status of mobile devices

1. Indicate the status change.

*   To disable a lost or stolen device:

    In the Assigned Unit column next to the device, click the pull-down menu and select **Disabled**.

    A clinician using the device is immediately logged out. If a clinician attempts to log in using the device, "This device is not registered, notify Biomedical Engineering" appears in the initial Clinician Notifier page.

*   To delete a device from the list (for repair or replacement, for example):

    a. Check the box next to the device listing.

    b. Click **Delete.**

    c. In the popup window, click **OK**.

        After deletion, if the device is detected on the network, it appears in the Notification Device Status page as unregistered.

*   To register a device with a different unit:

    Next to the device listing, in the Assigned Unit column, click the pull-down menu and select the new unit.

    If the device is in use, the user is logged off.

2. Click **Save Changes**.

    Your changes are saved.

View the status of mobile devices

In the Notification Device Status page, you can view the status of mobile devices, unit by unit or for all units at once.

Each device is assigned to only one unit.

Note If no mobile devices in a unit are reachable, appears on the Acuity Central Station map at the central station location.

To view the status of mobile devices

1. Along the top of any WACS page, click **Home**. Click **WACS Administrator**, and then click the **Clinician Notifier Manager** tab.

    The Clinician Notifier Manager Overview page appears.

2. Along the left side of the page, click **Notification Device Status**.

    The Notification Device Status page appears.

These two columns are only applicable if alarm notification for the unit is configured in escalation mode. For details, see page 54.

- The Primary Patients column shows the patients that the clinician has selected for first alarm notification.

- The Accepts Secondary Notification column indicates whether the clinician accepts alarm notification for alarms not suspended by primary responders.

Status	Description
Idle	The device is registered, and it is either turned off or no clinician is logged in.
Connected	The listed clinician is logged in to the device, and the device is communicating with WACS.
Dropout	The listed clinician is logged in to the device, but the device is not communicating with WACS.

3. Click the **Unit** pull-down menu and select the unit in which you are interested.

   Only units you are authorized to view are listed. ✳ represents "All units."

4. View the information.

View the status of Clinician Notifier patients

In the Patient Status page, you can view the status of actively monitored Acuity System patients who are also monitored by mobile devices running the Clinician Notifier program.

You can view the information unit by unit or for all units at once.

To view the status of Clinician Notifier patients

1. Along the top of any WACS page, click **Home**. Click **WACS Administrator**, and then click the **Clinician Notifier Manager** tab.

    The Clinician Notifier Manager Overview page appears.

2. Along the left side of the page, click **Patient Status**.

    The Patient Status page appears.

The Primary Nurse column is only applicable if the unit is configured to send alarms in escalation mode. For details, see page 54.

Pull-down menus in the column show a list of clinicians who have chosen to receive first alarm notification for the associated patient.

3. View and organize information on the page.

    • Click the **Unit** pull-down menu, and select the unit. in which you are interested Only units you are authorized to view are listed. ✳ represents "All units."

    • To sort the list by the title, click a column title.

        To reverse sort, click the title again.

8 Log out of the WACS program or reboot WACS

Log out of the WACS program

To log out of the WACS program

1. Depending upon your location in the WACS program workflow, click one of following options:

- From the WACS Home page, click **Log Out**.

- From any other WACS page, along the top of the page, click **Log Out**.

Reboot WACS

The WACS system must be rebooted after a server upgrade, for the upgrade to take effect. Designated WACS biomedical engineers can perform WACS reboots. Only one WACS reboot can be scheduled for one time.

To reboot WACS

1. Log in to the WACS program. For instructions, see "Log in to the WACS program" on page 12.

   The Home Page appears. If WACS Administrator is not available, you have not been assigned WACS administrator privileges.

2. Click **WACS Administrator**.

   The Overview page appears.

3. Click the **Reboot Manager** tab.

   The Reboot Manager page appears.
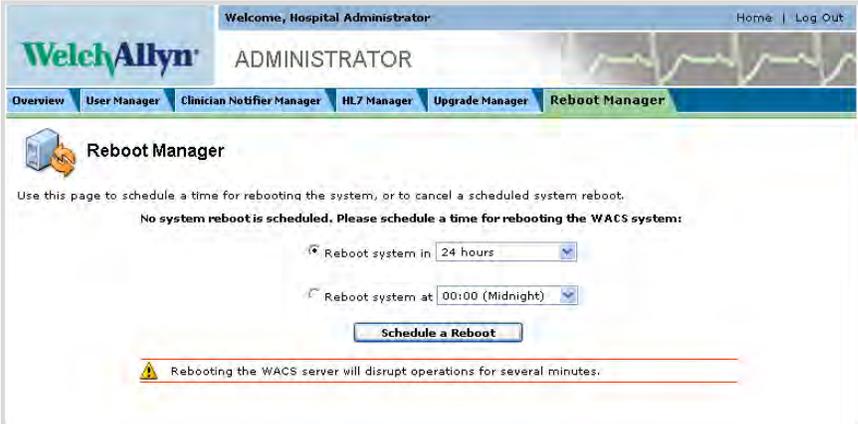
4. Click one of the choices, and then click the adjacent pull-down menu and select an interval or time.

5. Click **Schedule a Reboot**.

   The Reboot Schedule Confirmation page appears.

9 Troubleshooting

Contact information

If you encounter a problem that cannot be corrected by ordinary operating procedures described in this manual, please contact Welch Allyn Technical Services:

Phone (within the U.S.A.):	1-800-289-2501
Phone (worldwide):	+1 503-530-7500, ask for Technical Service
Fax:	+1 503-526-4970
email:	solutions@welchallyn.com
Internet:	http://www.welchallyn.com/support/default.htm

Contents

Troubleshooting WACS Login

Problem	Explanation
While trying to log in to the WACS pages, a Your Account Deactivated screen presented itself. Why was my account deactivated?	If you consecutively attempt to log in with the wrong password five times or more, WACS deactivates the account. Take these steps:
	1. Attempt to identify your password while suspending all interaction with the WACS program for a minimum of five minutes.
	2. Take one of these steps: • If you were able to identify your password, log in as usual. • If you were unable to identify your password, fill out a Forgotten Password request For instructions, see "If you forget your WACS password" on page 14.
	3. (Optional) To request timely authorization of your request, talk with a designated WACS biomedical engineer if you are a clinical user or a designated WACS clinical administrator if you are an administrative user.
When I attempt to access the Welch Allyn Connectivity Server program via an internet browser, I receive a security alert regarding certificates.	You cannot continue in the login process unless you accept, proceed or add an exception.
	To stop these alerts from occurring, your Biomedical Engineering department can contact a Welch Allyn Service representative to create a site-specific certificate that is traceable to a certificate authority recognized by your internet browser.

Troubleshooting the Web Server option

Problem	Explanation
I did not delete an Acuity patient printout from WACS, but I cannot find it in the WACS Patient Reports page.	Patient printout reports that have been marked for deletion in a Patient Reports page are deleted. Otherwise, reports are retained in WACS for a configurable amount of time, ranging from 1 day to 30 days.
	If WACS hard drive space is full, reports are deleted. Incomplete reports > 24 hours old are deleted first, followed by other reports in order of oldest first. Locked reports are deleted last.
I was expecting more patient reports to be available for patients in the Web Server option. Suddenly new reports are no longer available.	If the WACS CPU is disconnected from the Acuity System network, printouts that were bound for WACS viewing can be stalled at the Acuity System.
	Proceed through these steps, as necessary:
	1. Ensure that the WACS CPU is connected to the Acuity System network.
	If it is not, reconnect it.
	2. If the reports are still not available, check with your Biomedical Engineering department to ascertain whether any system changes have taken place.
	3. If necessary, contact Welch Allyn Technical Services.
When I click a patient report to view it, this message appears: "Internet Explorer® cannot download [report name] from [server]"	1. In Internet Explorer. locate the security option checkboxes.
	They are typically under Tools, Internet Options, Advanced, Security.
	2. Clear the **Do not save encrypted pages to disk** box.
	For further information, see http://support.microsoft.com/?kbid=812935.
I marked a patient report for saving or deletion, but the report status is different.	If two WACS users have the same Patient Reports page open, and they simultaneously mark the same patient report in different ways, the resulting report status reflects one or neither of the requests.

Troubleshooting the AcuityLink option

Mobile device registration

Problem	Explanation
In the Notification Device Status page, there is a device listed with a status of unregistered. I do not know of this device.	It is possible that the device was deleted from the Register Notification Device page, perhaps for repair or replacement. If someone turns it on and it is detected by WACS, it appears in the list as unregistered.
I registered a mobile device with a different unit, but the device still shows the old unit's patients.	If registration takes place while the device is in use, the device continues to function in the active unit until the next time a user logs in to the device.

Responsiveness and device battery life

Problem	Explanation	
The mobile device does not turn on.	It is possible that the battery or the internal backup battery of the mobile device is low or depleted, or that it has reached end of life. Replace the main battery and attempt to fully charge the device. If the problem continues, consult the mobile device manufacturer's directions for use.	
Battery life of some devices seems short	⚠	**Warning**: Connecting mobile devices to the Internet or running too many programs in the foreground or background while the Clinician Notifier program is running can greatly reduce the battery life and memory of the device, thereby compromising alarm delivery. *Always* recharge a mobile device when it is not in use and at first notification of low batteries. A device with low batteries might not indicate (or appropriately clear) all of a patient's alarms. Allowing batteries to fully discharge can result in depletion of the backup battery and loss of Clinician Notifier configurations.
There is a delayed response or no response when a clinician attempts to use a mobile device.	Perform a soft or warm reset, according to the mobile device manufacturer's instructions. If the problem continues after the mobile device has been reset, it is possible that the mobile device internal backup battery has reached end of life. Consult the mobile device manufacturer's directions for use.	

Problem	Explanation
Sometimes mobile device functions interfere with the Clinician Notifier program, and I'm not sure what makes the interference occur.	If a user accidentally taps a button that is programmed to a function, such as messaging, calendar, contacts or record, the function can interfere with the Clinician Notifier program.
	You can reprogram these buttons via the mobile device operating system. The usual pathway is similar to this: Start menu, Settings, Buttons icon, Program Buttons tab.
	Alternatively, move the keypad lock into the locked position. Consult your mobile device manufacturer's directions for use for further information.

Unfamiliar pages

Problem	Explanation
On a mobile device, a Checking for Update status page appears.	This usually occurs under the following circumstances: • The mobile device has roamed to another WLAN • The device radio has turned off • The WACS server is rebooting or not reachable
	For instructions, see "Noncommunication with the WACS server: Server IP address required" on page 75.
On a mobile device, a Status page with a Proceed button appears.	This usually occurs when the backup battery of the mobile device is or has been low or depleted.
	For instructions, see "Backup battery discharged: Relaunch of Clinician Notifier program required" on page 77.

Login and patient setup

Problem	Explanation
When clinicians log out and re-log in, their patients are no longer assigned.	If clinicians re-log in within two hours (in the same unit), their patients remain assigned to them.
	If they log in to a device in a different unit, they must assign patients to themselves, as usual.

Pages missing information

| Problem	Explanation
In the Patient List page, there are no patient icons, only blank spaces. I am certain that the patients are currently monitored within the Acuity System.	If all patient icons are blank, there could be an Acuity System network problem.
and are not visible along the top of the mobile device screen.	This occurs with certain mobile devices if the device is running a software program that utilizes a full screen when a Clinician Notifier alarm pops up. Avoid using programs that utilizes a full screen.
	To log out of the Clinician Notifier program and exit the application in this situation, perform a warm (or soft) reset according to the device manufacturer's instructions.

Problem	Explanation
Some Clinician Notifier buttons or information is missing from certain pages	If the mobile device is in landscape orientation mode, change the mode to portrait mode.

Patient alarm notification

Problem	Explanation
Alarm notification does not seem to be reliable.	**Warning**: Preserve Clinician Notifier program files and maintain mobile device settings that were configured during installation of AcuityLink Clinician Notifier software. Modifying, deleting or replacing any Clinician Notifier files or changing any of the following mobile device settings can result in sub-optimal Clinician Notifier performance, including inhibition of patient alarm delivery: alarm clock, backlight, external power, power off, screen alignment and orientation, time settings, volume, wake-up and wireless network connection.

Connecting mobile devices to the Internet or running too many programs in the foreground or background while the Clinician Notifier program is running can greatly reduce the battery life and memory of the device, thereby compromising alarm delivery.

Non-Clinician Notifier audio or vibratory notification, barcoding, passwords or popup windows can interfere with effective Clinician Notifier program performance, including alarm notification. |
| In response to an alarm, some devices emit sound, even though they are configured in the Configure Notification page to only vibrate. | If only vibrate is configured and a device does not have vibratory capability, the device defaults to 20% volume level. |

Noncommunication with the WACS server: Server IP address required

If you attempt to start the Clinician Notifier program on a mobile device, and the following page remains on the device, it is usually because the device is not communicating with the WACS server.
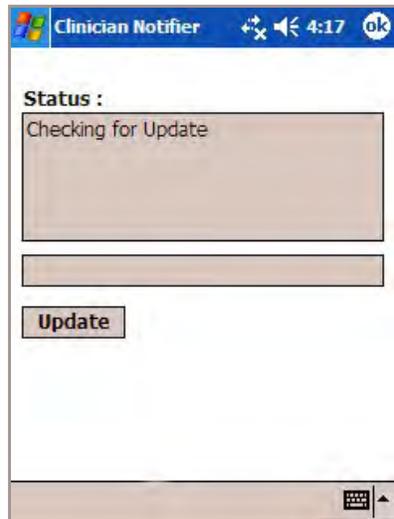
To determine the cause of the communication problem

1. Rule out these causes, in the order indicated.

   a. Move the mobile device into the WACS server area to rule out roaming.

   b. Confirm that the mobile device radio is turned on.

   c. Perform a soft reset of the device, according to the device manufacturer's instructions. Attempt to restart the Clinician Notifier program.

2. If the Update page remains, tap **Update**.

   The Server IP Address page appears.
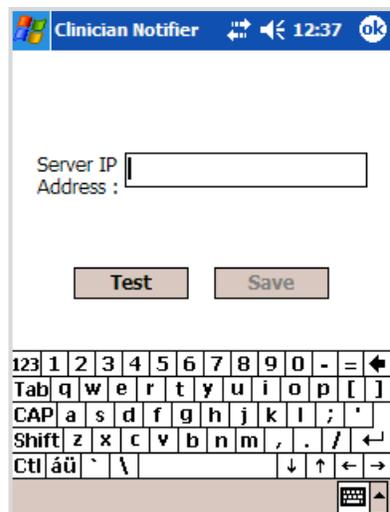
To establish the server IP address

1. In the Server IP Address page, take one of these steps:

    • If the listed IP address is the correct address for the hospital side of the WACS
      server, tap **Test**.

    • If the listed IP address is an incorrect address for the hospital side of the server,
      enter the correct address, and then tap **Test**.

    The Connected to the Web Service popup window appears.

Note   If a Cannot Connect to Server popup window occurs, suspend this re-launch
             attempt. Consult with your facility's IT department to ensure that the mobile
             device association and connection settings are correct.

             These settings are indicated in the *AcuityLink Clinician Notifier Installation
             Instructions* included on the AcuityLink Clinician Notifier Software Installation
             disc.

2. Tap ![ok] .

3. Tap **Save**.

    The AcuityLink Clinician Notifier splash page appears.

## Backup battery discharged: Relaunch of Clinician Notifier program required

If you attempt to start the Clinician Notifier program on a mobile device, and the following page remains on the device, it is usually because the mobile device backup battery is or has been low or depleted.
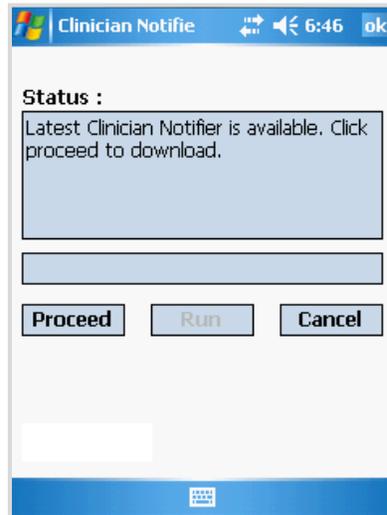
To prepare the mobile device

1. Fully charge the mobile device.

To download the Clinician Notifier program

1. In the Proceed Status page, tap **Proceed**.

    All necessary Clinician Notifier files download, and the Install Status page appears.
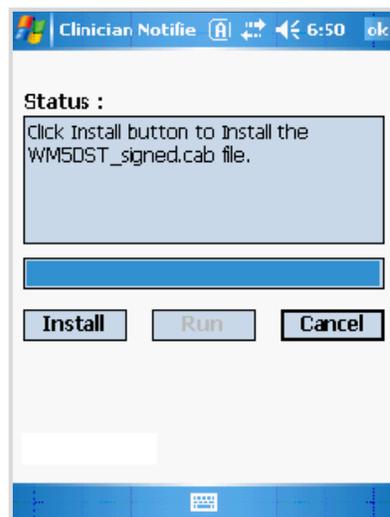
To install the Clinician Notifier program

1. In the Install Status page, tap **Install.**

2. If the device resets, take these steps:

   a. Restart the Clinician Notifier software.

   b. Tap in your facility's IP address for the hospital side of the WACS server, and then tap **Test**.

   c. Tap **OK**.

   d. Tap **Save**.

   e. Tap **Proceed**.

3. Repeat Step 1 and Step 2 until all files are installed.

   A Run Status page appears.
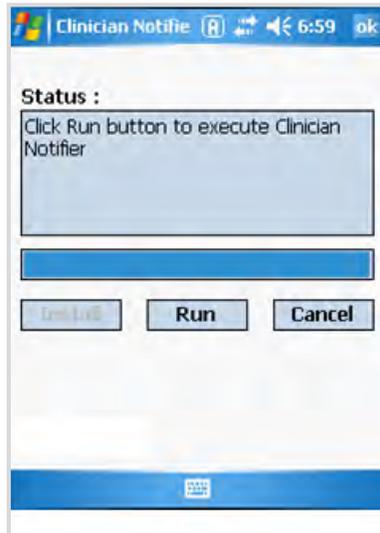
To re-launch the Clinician Notifier program

1. In the Run Status page, tap **Run**.

2. If the Clinician Notifier program does not launch, tap ![Windows icon], and then tap ![Clinician Notifier icon] **Clinician Notifier.**

   Various pages come and go, including a Checking for Updates page.

   Eventually, the AcuityLink Clinician Notifier splash page appears.

Troubleshooting WACS Icons on the Acuity System map

The following icons related to WACS can appear on the Acuity System map at the Acuity Central Station display.

Central Station component icon	Icon display priority	Icon location on Acuity Central Station map	Messages at top of Acuity Central Station display	Recommended action
Connectivity Server (WACS) OK	Beneath alerts and alarms	Optionally at Acuity Central Station area if your system includes a Welch Allyn Connectivity Server (WACS)	None	
Networked Acuity System Problem or Connectivity Server Unavailable	Low-level alert	Acuity System network area or Acuity Central Station area	Check Network	There is a problem with a networked Acuity System, or the Welch Allyn Connectivity Server (WACS) is unavailable. Contact qualified service personnel.
Some Connectivity Services Unavailable	Low-level alert	Acuity Central Station area	Call Service	Some services associated with the Welch Allyn Connectivity Server (WACS) are unavailable. Contact qualified service personnel.
No Devices Running Clinician Notifier are Reachable	Low-level alert	Acuity Central Station area	Notifier Fault	System includes a Welch Allyn Connectivity Server (WACS) with the AcuityLink option. Mobile devices that are running the Clinician Notifier program are not reachable. All devices are logged off, turned off or out of range, or the WACS server is unavailable. Contact a clinical administrator and qualified service personnel.

10 Specifications

General WACS

Table 2. WACS 2.6x compatibility

Acuity System Component	Software version compatible with WACS 2.6x
Acuity Central Monitoring System	8.2x
WACS Web Server option Operating systems/browser combinations supported by WACS	Windows XP (SP 1.2)/Microsoft Internet Explorer 6.x and 7.x, Firefox 2, Firefox 3
WACS AcuityLink Clinician Notifier option	1.4x

Table 3. WACS Hardware

Rackmount server
Video card: none
Display: none
Ethernet interfaces (IP addresses): multiple, one of which is connected to the hospital network
Wireless LAN 802.11b
Electromagnetic compliance: Refer to the *Acuity and Mobile Acuity LT Central Monitoring Systems Directions for Use*

Table 4. WACS auto-account deactivation and auto-logout

Auto-account deactivation	• After 5 excessive login attempts Reactivated after 5 minutes of idle time
Auto-logout	• Inactivity timeout exceeded for session. • User forces logout of duplicate session. Each user is permitted to have one simultaneous session on WACS and one on Clinician Notifier.

Web Server option

Table 5. WACS Web Server option: general specifications

Feature	Specification
Patient List default sort order	Date and time, oldest first
Period of printout report retention before permanent removal from WACS	Configurable: 1, 2, 3, 4, 7 14, 21 or 30 days Default: 14 days "Maximum number of files" setting overrides period retention.
Order of printout report deletion when WACS disk space is full	1. Reports marked for deletion by WACS administrator 2. Incomplete reports that are > 24 hours old 3. Unmarked and unlocked reports (oldest first) 4. Locked reports (oldest first)

Table 6. WACS Web Server option: available printout report types

Feature	Specification
Alarm	Snapshot print generated on alarm
Auto	Snapshot print generated automatically at a specific time or interval
CRGAlarm	OxyCRG print generated on alarm
Freeze	Snapshot generated from freezing the waveforms at the monitor
OxyCRG	OxyCRG print requested by a clinician
Review	Graphical or Tabular Review print requested by a clinician
Snapshot	Snapshot requested by a clinician
Summary	Multipage summary consisting of a Graphical and Tabular print and a waveform snippet for each Snapshot event marker
Trend	A Trend print requested by a clinician

AcuityLink option

Compatibility

Table 7. WACS AcuityLink option: compatibility

AcuityLink Clinician Notifier software option to WACS	Compatibility
Clinician Notifier software version 1.4x	Welch Allyn Connectivity Server software version 2.6x
	Acuity Central Monitoring System software version 8.2x

General capabilities and settings

Table 8. WACS AcuityLink option: general capabilities and settings

Feature	Specification
Number of minutes after dropout before automatic logout	Default: 3 min Configurable: 3-30 min
Password required to enter Clinician Notifier program on mobile device	Default: required Configurable: required or not required
Clinician Notifier software time synchronization	Synchronized to the WACS server via Network Time Protocol (NTP).
	Synchronized to Acuity System and the WACS server, within 2s

Alarm and alert indications

Table 9. WACS AcuityLink option: Clinician Notifier alarm and alert indications

Feature	Specification
Visual	• Alarm popup window Single alarm popup: a patient's highest priority alarm only Multiple alarm popup: multiple patients in alarm • Alarm status bar message Number of alarms (only one per patient is counted) Number of suspended alarms • Red LED light, if available on mobile device
Time format	24-hour
Auditory/vibratory notification	• Default: audio and vibration • Configurable at WACS: audio, vibration or both User cannot use mobile device OS audio control icon to override WACS setting to turn on or off vibration or audio for Clinician Notifier alarm delivery. If WACS specifies vibration only and devices do not have vibratory capability, device defaults to audio with 20% volume level. If WACS specifies audio, mobile devices always deliver at least 20% volume level, regardless of OS volume setting on device.

Table 9. WACS AcuityLink option: Clinician Notifier alarm and alert indications

Feature	Specification
Alarms delivered	Default: Lethal arrhythmia events (always delivered) Configurable: Delivery can include any Acuity System patient alarms, *except* arrhythmia types and ST events if set to low level at Acuity System in Arrhythmia Alarms Setup window.
Vibration duration	2 vibrations, followed by a 20 s pause

Different types of tones	• Lethal arrhythmia event (VTACH, ASYS, VFIB):
	   BEEP BEEP BEEP BEEP...
	   Four loud beeps followed by a brief pause
	
	• High-level arrhythmia and ST events (as specified at Acuity System), apnea events:
	   BEEP BEEP BEEP...
	   Three loud beeps followed by a brief pause
	
	• Vital-sign alarms, medium-level arrhythmia and ST events (as specified at Acuity):
	   BEEP beep...
	   A pair of beeps (one high beep and one lower beep) followed by a brief pause
	
	• Low battery alerts:
	   BEEP...
	   A single beep followed by a long pause
	
	• Network and Acuity Disconnect alerts: Chirp!
	   A single "chirp" followed by a 20 s pause

Minimum amount of time alarm must be asserted by Acuity Central Station before it is delivered to mobile devices (alarm delivery holdoff)	Default 4 s Configurable 0-15 s Note: System and network latencies can result in additional delay of up to 2 s before delivery.
Delivery modes	Default: Escalation Configurable: Broadcast or escalation

Escalation mode timing	Secondary holdoff time: holdoff after primary notification delivery before sending to secondary notification devices (if no primaries suspended):
	Default: 30 s
	          0 s if no primary respondents are indicated or reachable
	Configurable: 0-60 s
	
	Broadcast holdoff time: holdoff after primary notification before broadcasting to all devices:
	Configurable 0-120 s
	Default: 60s
	          Broadcast immediately if no primary or secondary respondents are indicated
	
	Note: System and network latencies can result in additional delay of up to 2 s before secondary notification and broadcast.

Tone/vibration delay and additional alarm popup delay if clinician taps in Clinician Notifier in response to an alarm	10 s after last tap. Visual notification is not delayed in these places: • Alarm status bar at top of page • Active Alarms page

Table 9. WACS AcuityLink option: Clinician Notifier alarm and alert indications

Feature	Specification
Locations where tone silenced and vibration stopped when Suspend button tapped at mobile devices running Clinician Notifier	At all respondent devices, the Acuity Central Station, hallway message panels and the patient monitor
Suspension period after tapping Suspend button	90 s
Patient alarms that interrupt a 90-second suspend period	Lethal arrhythmia alarms (VTACH, ASYS and VFIB) and apnea alarms
Behavior when Busy button is tapped	Only at the respondent device where Busy was tapped, tone and/or vibration are silenced and the alarm popup is closed.
	If all recipients of the alarm tap Busy, the alarm immediately goes to devices that accept secondary notification. If all of those recipients tap Busy, the alarm is immediately broadcast to all devices in the unit.
	If the patient is still in the alarm condition 90 seconds after a clinician taps Suspend, alarm notification returns to the original recipients.
Behavior when alarm is broadcast and all respondents tap Busy	Default: alarm is rebroadcast
Period of communication dropout before Network Disconnected alert appears	30 s

Assign Patients page

Table 10. WACS AcuityLink option: Clinician Notifier Assign Patients page

Feature	Specification
Length of time patients remain assigned after logout	2 h
Patients listed	• Connected patients with confirmed patient IDs • Disconnected patients, only if assigned to the device in escalation mode
Patients NOT listed	• Discharged patients (from Acuity System)
Patient sort order	Devices in broadcast mode list one group of patients.
	Devices in escalation mode list two groups of patients, as follows: • Checked patients (assigned to the device) • Nonchecked patients (not assigned to the device)
	Default sort order by room. Additional sort capability by patient name or patient ID number.

Patient List page

Table 11. WACS AcuityLink option: Clinician Notifier Patient List page

Feature	Specification
Patients listed	• Connected patients, with or without confirmed patient IDs • Disconnected patients for 0-96h (configurable), but no longer than Acuity System Full Disclosure license period. Default 96 h. • Patients preadmitted via the Acuity System who have not yet been monitored by the system
Patients NOT listed	• Discharged patients (from Acuity System)
Patient sort order	Devices in broadcast mode list one group of patients. Devices in escalation mode list two groups of patients, in this order: 1. Checked patients (assigned to the device) 2. Nonchecked patients (not assigned to the device) Default sort order by room. Additional sort capability by patient name or patient ID number. All sorts follow this order. 1. Alarming patients: lethal alarms 2. Alarming patients: non-lethal alarms 3. ID-confirmed patients 4. Nonconfirmed-ID patients 5. Disconnected patients

Active Alarms page

Table 12. WACS AcuityLink option: Clinician Notifier Active Alarms page

Feature	Specification
Active alarms listed in each mobile device	Alarms currently asserted by the Acuity System and delivered to the device, including suspended alarms and alarms for which the clinician has tapped Busy. Note: Some alarms are delivered to the mobile device, but no popup occurs, because another alarm is suspended for the patient. If the new alarm is not a lethal arrhythmia or apnea alarm, it does not interrupt the suspend period.
Number of active alarms shown per patient	One: the patient's highest priority alarm

Recent Alarms page

Table 13. WACS AcuityLink option: Clinician Notifier Recent Alarms page

Feature	Specification
Recent alarms shown	Active and inactive alarms, including arrhythmia events that have been deleted from Acuity System review windows and printouts
Situations when only a patient's first alarm is shown	• When a lower priority alarm occurs while another alarm is asserting or suspended • When a higher priority alarm occurs while another alarm is suspended, but the new alarm is neither a lethal arrhythmia nor apnea alarm.
Number of alarms per patient stored in the page	Default: 25 alarms Configurable 25-200 alarms
Recent alarms retention period	Default 4 hours Configurable: 5 minutes-12 hours

Alarm History page

Table 14. WACS AcuityLink option: Clinician Notifier Alarm History page

Feature	Specification
Alarms shown in Alarm History page	All of a patient's most recent Acuity System alarms, including arrhythmia events that have been deleted from Acuity System review windows and printouts. These types of alarms can be listed in the Alarm History page without ever having appeared on the mobile device as an alarm: • Alarm types not configured in the WACS Clinician Notifier Configure Notification page to be delivered to mobile devices • Low-level arrhythmia alarms (as set at Acuity System) are not delivered to mobile devices running Clinician Notifier. • Short-duration alarms (shorter than the alarm delivery holdoff variable in WACS Configure Notification page) are not delivered to mobile devices running Clinician Notifier • Higher priority alarms that occur when another alarm is suspended, but the new alarm does not interrupt the suspend period because it is neither a lethal arrhythmia nor an apnea alarm. • Lower priority alarms that occur while another alarm is asserting or suspended • Multiple listings for the same alarm if the alarm's popup is replaced by another alarm that later ceases. The original alarm is still active after the popup ceases.
Number of alarms per patient stored in the page	Default: 25 alarms Configurable 25-200 alarms
Length of time alarm histories are shown after disconnection from Acuity System	Default 96 hours Configurable: 1-96 hours, but no longer than the Acuity System Full Disclosure license period

Realtime page

Table 15. WACS AcuityLink option: Clinician Notifier Realtime page

Feature	Specification
Realtime waveforms available for display	ECG, SpO_2, respiration, CO_2, invasive pressure
Time before a realtime waveform appears in Clinician Notifier	2-3s
Amount of waveform data displayed	Up to 9s, depending upon mm/sec setting
Source lead shown upon opening the page	II
Default amplitude	1X
Default sweep speed	Respiration and CO_2: 6.25 mm/s ECG, invasive pressure (P1, P2) and SpO_2: 25 mm/s
Waveform shown upon opening the page	If showing a moment in time when the patient is (or was) alarming, the waveform is the waveform that caused the alarm. Otherwise, the waveform is ECG.

Details page

Table 16. WACS AcuityLink option: Clinician Notifier Details page

Feature	Specification
Amount of waveform data displayed	Up to 9s, depending upon mm/sec setting
Source lead shown upon opening the page	II
Default amplitude	1X
Waveform shown upon opening the page	If showing a moment in time when the patient is (or was) alarming, the waveform is the waveform that caused the alarm. Otherwise, the waveform is ECG.
Length of time alarm histories are shown on mobile devices after patient monitor is disconnected from Acuity System	Default 96 hours Configurable: 1-96 hours, but no longer than the Acuity System Full Disclosure license period

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