

Home Telehealth Reporting Enhancements (HTRE) Phase 3

Deployment, Installation, Back-Out, and Rollback Guide



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1 Introduction

This document describes the plan to deploy and install the Integrated Home Telehealth Application (IHTA) Version 15.0, as managed through the Home Telehealth Reporting Enhancements (HTRE) project.

1.1 Purpose

The purpose of this plan is to provide a single, common document that describes how, when, where, and to whom the IHTA will be deployed. The plan also identifies resources, communications plan, and rollout schedule. Specific instructions for installation, back-out, rollback, transition to sustainment, and user training are supplied separately in stand-alone documents, in online help, or in change management systems, depending on the requirements of the operations organization.

1.1.1 Key Definitions

Deployment Design: Phase of the solution life cycle in which architectural design and implementation specifications are developed and tested. The preparation of plans and specifications necessary to implement the solution are part of the Deployment Design phase. At the end of the Deployment Design phase, a solution is ready for implementation in the production environment.

Enterprise System Engineering (ESE) and Product Development (PD), as applicable, based on primary project ownership, are responsible for deployment design and complete release package specifications, including user and technical documentation, procurement, shipping, and training plans. Architectural design artifacts, release package specifics, and testing plans and results are vetted by the operations organization.

Implementation: Phase of the solution life cycle in which the newly designed or changed hardware, software, functionality, or process is installed into the production environment and activated. The specifications and plans created during Deployment Design steer the work that is performed during the Implementation phase.

The operations organization is responsible for installation and the installation schedule, selection and validation of shipping locations/schedule, site readiness to support installation, acceptance of equipment using asset inventory processes, coordinating and providing training (working with ESE and Product Development if applicable), communication, and vetting changes through the operations organization management.

Release: Release baseline is defined as the product build (software and hardware specifications) along with the body of documents that support testing, installation, operations, training, and support of the product. Projects will determine the release baseline early in the development cycle. Baseline components enter change control once the project is approved for deployment.

ESE: Responsible for release management and includes certifying production readiness. ESE must validate that the project owner has provided an adequate release package. ESE also validates the release baseline. As defined by the VA Office of Information & Technology (OI&T) Testing and Release checklist, the release package is the subset of documents that are provided to the operations organization, along with the product. The complete release package will be made available to the operations organization at or before deployment.

1.1.2 Statements of Understanding

The Deployment Plan is developed with the following assumptions:

- PD is responsible for the software-only installation and during installation; a PD Project Manager (PM) leads projects. Enterprise Operations (EO) representatives participate as consulting team members. PD is responsible for design. Field Operations (FO), National Data Center Program (NDCP), and Austin Information Technology Center (AIRC) are informed of design and testing issues.
- PD develops the Deployment and Installation Plan.

- New requirements that require Operations and Maintenance (O&M) resources must be funded. Deployment, installation, and ongoing maintenance costs (including capacity planning, recurring costs) must be identified and funded. All funding sources and issues should be resolved and documented prior to deployment and installation. PD should complete collaborative field-testing prior to deployment. Veteran-Focused Integration Process (VIP) Release Management will certify production readiness based upon the level of testing that has occurred prior to deployment. As part of the release baseline, this information would be identified in the Release Profile.
- The Office of Telehealth Services (OTS) (customer organization) will provide a training plan prior to deployment.

1.2 Dependencies

This section is not applicable for IHTA.

1.3 Constraints

This section is not applicable for IHTA.

1.3.1 Plan Overview

Deployment and installation of IHTA is planned as a concurrent rollout to all Veterans Integrated Service Networks (VISN) at the same time.

Deployment will be performed by the PD team members with representatives from peer organizations, as needed. Installation will be performed by PD team members, along with representatives from peer organizations.

2 Roles and Responsibilities

This section describes the teams who perform the steps described in this plan.

- Representatives from the teams listed in [Table 1](#) perform the deployment and installation activities.

Table 1: Deployment Roles and Responsibilities

ID	Team	Phase / Role	Tasks	Project Phase
1	VIP	Deployment	Fully communicate ratified deployment topology	Per the Veteran-Focused Integration Process (VIP)
2	Product Development	Deployment	Deployment planning and scheduling (including orchestration with vendors)	Per VIP
3	Product Development	Deployment	Develop Communications Plan and key messages well in advance	Per VIP
4	Product Development	Deployment	Develop O&M Plan	Per VIP
5	National Home Telehealth Training Center	Deployment	Develop appropriate training materials	Per VIP
6	EO	Deployment	Ensure release package contains full complement of artifacts and authorizations required for deployment	Per VIP
7	EO	Deployment	Test for operational readiness	Per VIP
8	EO	Deployment	Release certification	Per VIP
9	EO	Deployment	Validate release baseline	Per VIP
10	Product Development	Deployment	Execute deployment	Per VIP
11	Product Development	Installation	Plan and schedule installation	Per VIP
12	Regional PM/ Field Implementation Services (FIS)/ Office of Policy and Planning (OPP) PM	Installation	Collaborate on Field Operations communication plan that touches various field operations stakeholders and execute the communications plan	Per VIP
13	Regional PM/FIS/OPP PM	Installation	Ensure authority to operate and that certificate authority security documentation is in place	Per VIP

3 Deployment

The deployment is planned as a single national rollout. This type of rollout is best suited for a Web-based system like IHTA.

- This section provides the schedule and milestones for the deployment.

3.1 Timeline

The deployment is planned as a single national rollout. This type of rollout is best suited for a Web-based system like IHTA.

- This section provides the schedule and milestones for the deployment.
- The deployment and installation is scheduled to run for approximately 1 day, as depicted in section [3.1.1, High-Level Schedule](#).

In most Deployment Plans, Enterprise Operations (EO) maintains the master schedule in Microsoft Project Server, Field Operations, and Development (FOD) maintains its schedule in Clarity and provides site scheduling to meet parameters and milestones enumerated above. Given the agile methodology being used to develop and deploy IHTA, along with the limited scope of this software (only deployment/installation), there is no need for a Master Deployment Schedule. The high-level schedule contained in section [3.1.1](#) will suffice.

3.1.1 High-Level Schedule

As noted below in the Deployment/Installation Schedule, the deployment targets the major milestones found in [Table 2](#):

Table 2: High Level Milestones

Milestones	Target Date
Software Quality Assurance Testing Completed	09/27/19
Section 508 Testing Completed	10/02/19
User Functionality Testing Completed	09/30/19
Software Baseline Defined	09/20/19
Deployment of IHTA to Primary Production Environment	10/12/19
Deployment of IHTA to Secondary Production Environment	10/12/19
Testing of IHTA in Primary Production Environment Completed	10/12/19
Testing of IHTA in Secondary Production Environment Completed	10/12/19
User Registration Completed (for new users)	N/A
User Training Completed (if applicable)	N/A

3.1.2 Schedule Activities

Given the small scope of this software-only deployment, and the Veteran-focused Integration Process (VIP) development/deployment methodology being employed to develop IHTA, no further detailed schedule activities are required.

3.2 Site Readiness Assessment

This section discusses the locations that will receive the IHTA deployment. Topology determinations are made by ESE and vetted by FO, NDCP, and EO during the design phase as appropriate. FO does field site coordination unless otherwise stipulated.

3.2.1 Deployment Topology (Targeted Architecture)

IHTA will be deployed using a primary/secondary data center topology. The Austin Information Technology Center (AITC) in Austin, TX, will be the primary production site, and the Philadelphia Information Technology HTRE Phase 3 Deployment, Installation, Back-Out, and Rollback Guide

Center (PITC) Philadelphia, PA, will be the secondary production site; however, at any given time, one site will act as the primary facility and the other site will act as the secondary facility. The function of the primary and secondary facilities will be shifted on a regularly scheduled basis to ensure that both facilities will function properly in either role when needed.

3.2.2 Site Information (Locations, Deployment Recipients)

As noted above, deployment is planned at the following sites:

- Austin Information Technology Center (AITC) (Austin, TX)
- Philadelphia Information Technology Center (PITC) (Philadelphia, PA)

3.2.3 Site Preparation

No changes will be required to accommodate IHTA at either (AITC) or (PITC). See [Table 3](#) listed below.

Table 3: Site Preparation

Site/Other	Problem/Change Needed	Features to Adapt/Modify to New Product	Actions/Steps	Owner
N/A	N/A	N/A	N/A	N/A

3.3 Resources

This section describes hardware, software, and facilities required for the IHTA deployment and installation.

3.3.1 Facility Specifics

No special facilities are required for IHTA installation/deployment. See [Table 4](#) listed below.

Table 4: Facility-Specific Features

Site	Space/Room	Features Needed	Other
N/A	N/A	N/A	N/A

3.3.2 Hardware

[Table 5](#) describes hardware specifications for the IHTA servers.

Table 5: Hardware Specifications

Required Hardware	Model	Version	Serial Numbers	Manufacturer	Quantity
AITC Server	Virtual Machine	N/A	Application/Web Server:	N/A	1
AITC Servers	Virtual Machine	N/A	SQL Server Database Server	N/A	1
PITC Server	Virtual Machine	N/A	Application/Web	N/A	1
PITC Server	Virtual Machine	N/A	SQL Server Database Server	N/A	1

Please see [Table 1, Deployment Roles and Responsibilities](#) in section [2, Roles and Responsibilities](#) for details about who is responsible for preparing the site to meet these hardware specifications.

3.3.3 Software

[Table 6](#) describes software specifications required at each site prior to deployment.

Table 6: Software Specifications

Required Software	Make	Version	Configuration	Manufacturer	Other
Microsoft SQL Server	N/A	2012	N/A	Microsoft	N/A
Oracle WebLogic Server	N/A	12.2.1.3.0	N/A	Oracle	N/A
Apache Web Server	N/A	2.4.6	N/A	Apache	N/A
Red Hat Enterprise Linux (RHEL)	N/A	7.5	N/A	Red Hat	N/A

Please see [Table 1, Deployment Roles and Responsibilities](#) in section [2, Roles and Responsibilities](#) for details about who is responsible for preparing the site to meet these software specifications.

3.3.4 Communications

Not applicable.

3.3.4.1 Deployment/Installation/Back-Out Checklist

See [Table 7](#) listed below.

Table 7: Deployment/Installation/Back-Out Checklist

Activity	Day	Time	Individual Who Completed Task
Deploy	10/12/19	9:00 AM EST – 1:00 PM EST	HTRE Phase 3 Product Development Team
Install	10/12/19	9:00 AM EST – 1:00 PM EST	HTRE Phase 3 Product Development Team
Back-Out	10/12/19	9:00 AM EST – 1:00 PM EST	HTRE Phase 3 Product Development Team

3.3.5 Documentation

Because PD will be responsible for the deployment, installation, and post-production support of IHTA, only limited formal documentation to support these activities will be produced. The following documents will be produced to support installation, deployment, and support of IHTA:

- HTRE_Phase3_IHTA_POM

NOTE: HTRE Phase 3, documentation is stored in the Rational Team Concert (RTC); CCHT_CM Project Area, and the Home Telehealth (HT) VA Software Documentation Library (VDL); <https://www.va.gov/vdl/application.asp?appid=154>.

4 Installation

4.1 Pre-installation and System Requirements

Integrated Home Telehealth Application (IHTA) is a Web-based portal application sponsored by the Veterans Health Administration (VHA) Office of Telehealth Services (OTS). IHTA is designed to provide a flexible, maintainable, and resilient platform for Home Telehealth (HT) business functions. Each business function supported by IHTA is constructed as an application module of IHTA. Current IHTA modules include My Profile, Administration, Manage Quality Improvement Reports (QIR) and HT Reports. IHTA access will be granted upon successful authentication using Department of Veterans Affairs (VA) Enterprise Two Factor Authentication (2FA) Single Sign on (SSO). Access to each IHTA module is restricted by user roles and permissions granted during the user registration process. Details on each module are provided below:

- **My Profile:** Allows the user to view his/her system information and adjust personal application settings, including audio instructions, multiple windows, and application window width and height.
- **Administration:** Provides IHTA administrators with the ability to approve or reject registrations, assign roles to users, and create and edit roles. This module also allows administrators to manage and schedule batch jobs (i.e., Weekly Vendor Compliance Report E-mail, Purge Completed Reports).
- **Manage Quality Improvement Reports:** The Manage QIR functionality allows Home Telehealth staff to electronically submit, process, track, and print QIRs that document quality and patient safety issues related to HT devices. This functionality replaces the manual VA Reporting and Processing Medical Materiel Complaints/ Quality Improvement Report form (VA Form 0729).
- **HT Reports:** Allows users to search on aggregate HT data from the Health Data Repository (HDR) to produce management-level reports.

Intended users of IHTA include National, Veterans Integrated Service Network (VISN) and Facility Administrators, Care Coordinators, Patient Services Assistants (PSA), VA Subject Management Experts, National Home Telehealth Training Center (NHTTC) staff, Program Office Managers, Vendors, and OTS Contract Office staff. Each IHTA module includes on-line help with content tailored specifically for that module.

IHTA is supported by the existing HT database, a relational database that stores data on patients enrolled in the HT program, the HT devices located in their homes, and the healthcare-related information they report using these devices. The HT database is updated weekly with this data, which is transmitted incrementally from the home-based medical devices and collected on data servers prior to its transmittal to the HT database.

IHTA is deployed into production at the Austin Information Technology Center (AITC) and the Philadelphia Information Technology Center (PITC).

4.2 Platform Installation and Preparation

This release of IHTA is deployed to an existing platform. There is no system installation or configuration to be performed.

4.3 Download and Extract Files

Not applicable for this application.

4.4 Database Creation

IHTA Version 15.0 will function with the existing HT databases and will not require the creation of any additional database structure.

4.5 Installation Scripts

4.5.1 Install Package for Installing an IHTA Environment

The package is built and is represented as one file that is named **selfextract_IHT_ENV.bsx**, which is the only file needed to install an IHTA Environment.

- Prerequisites:
 - The package file needs to be moved to the target host.
 - The user running the script needs to have elevated privileges on the host.
- To start the installation, run the package as follows:
 - `chmod u+x selfextract_IHT_ENV.bsx;`
 - `sudo bash selfextract_IHT_ENV.bsx ALL;`

NOTE: The script should run to completion, but if not, you can refer to the log file name identified at the start of the script that is created in the /tmp directory to troubleshoot.

4.5.2 Purpose of the Self-Extract Script

The purpose of the self-extract script is to automate the required installation and/or configuration of the following items:

- IHTA WebLogic domain
- WebLogic Server
- Apache Web Server
- WebLogic Apache Plugin
- CA Web Agent Single Sign-On Internal (SSOi)
- Secure Sockets Layer (SSL) Certificates (public and private keys)
- WebLogic (WLST) scripts
- WebLogic Domain Properties files
- IHTA Properties files

A privileged user with sudo rights with at least the following minimum permissions/privileges must execute the script:

- User <install_user> may run the following commands on vaausappiht800:
 - (ALL) ALL

➤ (ALL) NOPASSWD: ALL

The self-extract script extracts the contents into a unique temporary directory under the /tmp directory. The script then calls/executes the main install script (build_iht.sh) for a seamless transition.

- The build_iht.sh script starts by checking prerequisites and installs the IHTA environment.
- During script execution, a log file is generated with time stamped details of all-important aspects of script execution.
 - Upon completion of the IHTA environment installation, the script removes the unique temporary install working directory in the /tmp directory, leaving the IHTA environment with all required components of the IHTA.
- When the script runs to completion, the IHTA domain/environment is complete except for the deployment of the latest application help files, and the application CCHT.war file.

4.5.3 Self-Extract Script Files and Directories Listing

Included in the self-extract script are the following files and directories that are listed in [Table 8](#).

Table 8: Files and Directories Listed in Self-Extract Script

File/Directory Name	Comment
aliases.sh	Not required but used as tools in development and troubleshooting.
BASELINE_DOMAIN	IHTA specific WebLogic domain template, containing all files necessary for the IHTA environment.
build_IHT.sh	Main Script used for the install.
ca-wa-12.51-cr08-linux-x86-64.bin	Binary install file for CA Web Agent SSOi.
ca-wa-12.51-cr08-linux-x86-64.bin.rsp	Response file for the silent install of the CA Web Agent SSOi.
decompress	Used in the creation of the self-extract script, this is the wrapper script that calls the build_IHT.sh script to run the IHTA installation.
env.properties	WebLogic domain/environment properties file.
functions.sh	Bash function (including the f_LOG function) to log output into a log file.
httpd.service	This is the adjusted system file, used in the override.conf to keep OS patching from overwriting the standard httpd.service file.
nodemanager.properties	Properties for the WebLogic Node Manager.
NONPROD.certs.tgz	SSL certificates and keys for Apache Web Servers for the DEV and SQA based IHTA environments.
PROD.certs.tgz	SSL certificates and keys for Apache Web Servers for PROD/DR and PRE-PROD based IHTA environments.
properties.file	Environment specific properties for all IHTA environments selected by the HOSTNAME of the install host machine.
selfextract_build.sh	The script builds the /tmp/ selfextract_IHT_ENV.bsx from the contents of this directory.
set-apache-env.sh	Script used for Pathing CA Web Agent referenced in httpd.service file.

File/Directory Name	Comment
ssl.conf	Apache SSL Configuration file also used in WebLogic Proxy redirection and Static Web Help directives.
template_httpd.conf	Baseline httpd to replace the non-updated httpd.conf file, required since we found the Silent install of CA Web Agent does not update the httpd.conf file correctly.
WebAgent.conf	Used as a starting baseline for the CA Web Agent configuration.
WebLogic_home_bin	BIN directory with updated WebLogic Scripting Tool (WLST) scripts, plus IHTA specific WLST scripts.
WLSPlugin12.2.1.3.0-Apache2.2-Apache2.4-Linux_x86_64-12.2.1.3.0.zip	WebLogic/Apache Plugin files.

4.5.4 How to Create the Self-Extract Script

The selfextract_build.sh script builds the /tmp/selfextract_IHT_ENV.bsx that is the only file needed to install an IHTA environment.

It creates a single self-executable file which has two sections, a top section (decompress script) and bottom section (Tar Gzip - TGZ file of the entire payload directory - minus decompress script).

1. The top portion of this script extracts the bottom portion into a unique directory in /tmp to be used by the build_iht.sh script.
2. The bottom portion of the file contains the compressed tar file of the contents of the IHTA payload directory, which contains the files described above.

[Table 9](#) lists Major Sections of the Build_IHT script.

Table 9: Major Sections of the Build_IHT Script

Term	Meaning
Test Sudo (introduced by the TEST_SUDO banner Note: all sections are introduced by banners)	This Section of the script is introduced by the TEST_SUDO banner and its purpose is to determine if the user executing the script has the appropriate permissions to execute.
Check Filesystem In	This section verifies that /u01 is indeed the mount point for the u01 filesystem.
Check WebLogic Installation	This section verifies the correct installation of WebLogic.
Check Apache Installation	This section verifies the correct installation of the Apache Web Server.
Check Java Installation	This section verifies the correct installation of Java (Java 8 required).
Let's Start	This section is the actual start of the installation of the IHTA environment.
Variable Checks	This section checks that all necessary properties are available. Any properties that are not available will be questions presented to the user running the script.
Create Domain Directory	This section creates the IHTA environment's home directory or /u01/domains/ directory.

Term	Meaning
Setup Java Bin Directory	This section creates soft links to the appropriate Java directories and inserts the proper paths into the PATH environment variable.
Copy WebLogic Domain Properties File	This section copies the IHTA environment property file into /home/weblogic and copies the WLST scripts into the /home/weblogic/bin directory.
Copy IHTA WebLogic Template Directory	This section copies recursively the IHTA template environment/domain directory into the /u01/domains/<iht_env> directory.
Setup StartupWebLogic.sh WebLogic Admin Server Script	This section configures the startWeblogic.sh script with the appropriate IHTA domain properties.
Setup /home/weblogic/bin Scripts	This section copies in the WLST scripts (used to administer the IHTA domains) and modifies the scripts for the specific IHTA environment.
Setup WebLogic Domain config.xml File	This section sets up the WebLogic config.xml file for the specific IHTA environment.
Setup WebLogic JDBC.xml File for Database Connectivity	This section modifies the JDBC.xml file for the specific IHTA Environment.
Setup WebLogic JDBC.xml File Encrypted Credentials	This section modifies the JDBC.xml files with encrypted usernames and passwords.
Setup WebLogic Environment Specific File	This section sets up the IHTA environment specific Properties file.
Setup Environment Symbolic Links	This section sets up symbolic links that are used in some to the WLST scripts.
Setup WebLogic Environment Properties File	This section sets up the specific IHTA environment properties file used by WebLogic.
Start WebLogic Admin Server	This section starts the WebLogic Admin Server for the IHTA environment (NOTE: If the Admin Server has already started, it will shut down and restart it).
Enroll IHTA WebLogic Domain in Node Manager	With the Admin Server running – this section enrolls the IHTA domain/environment into the WebLogic Node Manager.
Start WebLogic Node Manager	This section starts the WebLogic Node Manager, configures, and re-starts the WebLogic Node Manager.
CA Webagent Installation SSOi	This section configures all properties needed for the IHTA environment to interact with the CA Web Agent.
CA Webagent Configuration SSOi	This section configures all properties needed for the IHTA environment to interact with the CA Web Agent.
Install and Configure WebLogic Apache Plugin	This section installs and configures the latest WebLogic Apache Plugin.
Apache Web Server Configuration	This section performs all configurations necessary for the Apache Web Server to be able to interface with the CA Web Agent, WebLogic Apache Plugin, IHTA and help files.

NOTE: This package and scripts within are for specific versions of the following products listed below. As the products are upgraded, changes may be required.

- Red Hat Enterprise Linux (RHEL) 7.5
- Apache Web Server 2.4.6
- WebLogic Server 12.2.1.3.0

4.6 Cron Scripts

Not applicable for this application.

4.7 Access Requirements and Skills Needed for the Installation

A privileged user with sudo rights with at least the following minimum permissions/privileges must execute the script:

- User <install_user> may run the following commands on vaausappiht800:
 - (ALL) ALL
 - (ALL) NOPASSWD: ALL

The skill set of a WebLogic, Linux, Windows and SQL Server expert is needed to perform the installation.

4.8 Installation Procedure

4.8.1 Apache Web Server

The Apache Web Server is installed by Information Operations (IO) and is part of their baseline (Golden Image Install of Red Hat Linux). All remaining steps to configure Apache are performed by the installation package and scripts in section [4.5, Installation Scripts](#).

4.8.2 WebLogic Server Development

IHTA is designed and implemented as a Java Enterprise Edition Web Application; hence, IHTA is packaged as an Enterprise Web Application (WAR) file. The steps to deploy the ccht.war file onto the IHTA Domain on the Production Web Application Servers are in section [4.5, Installation Scripts](#).

4.8.3 Apache Web Server Deployment

IHTA contains static content, such as HTML files, for its on-line help files. The steps to deploy IHTA static content onto the Production Web Servers are in section [4.5, Installation Scripts](#).

4.9 Steps for Deploying IHTA and the Static Help Files

All files necessary for an IHTA deployment will be staged in the /tmp/ihta_latest directory on a (AITC-Linux-400) server and will be packaged in one file called NEW_IHTA_REL.tgz. The Project Development (PD) Team will coordinate with Information Operations (IO) Linux System and WebLogic Administrators to complete the staging, packaging, deployment and rollback if necessary. All files in the package will be owned by weblogic:weblogic so the IO WebLogic Administrator has the necessary privileges to perform the detailed steps. [Table 10](#) lists IHTA and Help files for deployment.

- Deploying the IHTA (CCHT.war) file:
 - Copy the CCHT.war and the CCHT.war.md5 files to the appropriate /u01/domains/<ihta_env>/appStage/ directory.

- Deploying the static IHTA help files:
 - Copy the IHTA static help files into the /var/www/html/MAINT> directory.

Table 10: IHTA and Help Files for Deployment

File Name	Purpose
ccht.war	Web base IHTA archive file
ccht.war.md5	Web base IHTA archive file
admin.zip	Administration Module help files
dmp.zip	DMP Module help files
external.zip	Launching external applications files
hdi.zip	Inventory Tracker Module archive files
ihta.zip	Top level application help files
main.zip	Main application help files
profile.zip	Profile Module help files
qir.zip	QIR Module help files
register.zip	Registration Module help files
reports.zip	Reports Module help files

4.9.1 IHTA Package Construction

NOTE: The below Linux commands end with a semicolon, and the Linux command support information notes are in parenthesis.

- `chown -R weblogic:weblogic /tmp/IHTA_latest/;`
- `chmod -R 755 /tmp/IHTA_latest/;`
- `tar -czvf NEW_IHTA_REL.tgz /tmp/IHTA_latest/;`
- `md5sum NEW_IHTA_REL.tgz > NEW_IHTA_REL.tgz.md5;`
- `chown weblogic:weblogic NEW_IHTA_REL.tgz*;`
- `rm -f /tmp/IHTA_latest/*;`
- `mv NEW_IHTA_REL.tgz* /tmp/IHTA_latest;`

4.9.2 Deploying IHTA to Production

NOTE: The below Linux commands end with a semicolon, and the Linux command support information notes are in parenthesis.

- WebLogic Administrator as weblogic user:
 - `scp vausappiht###:/tmp/IHTA_latest/NEW_IHTA_REL.tgz* /tmp/IHTA_latest/;` (from Linux_400 Pre-Production)
 - `cd /tmp/IHTA_latest;` (Logged into Linux_200 as weblogic)
 - `sudo md5sum -c NEW_IHTA_REL.tgz.md5;` (checks the package integrity)
 - `sudo tar -xzvf NEW_IHTA_REL.tgz;`
 - `mkdir ~domains/ihta_prod1035/appStage/15.0.0.#####;` (version number will be provided)
 - `cp ./ccht* ~domains/ihta_prod1035/appStage/15.0.0.#####;` (version number will be provided)

- `cd domains/ihta_prod1035/appStage/15.0.0.#####;` (version number will be provided)
- `md5sum -c NEW_IHTA_REL.tgz.md5;` (output should say OK - checks integrity of ccht.war file)
- `cd ~;` (change back to the weblogic home directory)
- `getstatus.sh ppd.properties;` (If the application JVM MS1 is running)
- `stopserver.sh prod.properties MS1;` (Shutdown JVM/IHTA Application)
- `undeploy.sh prod.properties;` (Un-deploy the previous version)
- `rm -rf /u01/domains/ihta_prod1035/servers/MS1;` (clean out old app cached files)
- `deploy.sh prod.properties /u01/domains/ihta_prod1035/appStage/15.0.0.#####/ccht.war;`
- `appstatus.sh prod.properties;` (output should say NEW)
- `startserver.sh prod.properties MS1;`
- `appstatus prod.properties;` (output should say ACTIVE)
- `getstatus prod.properties;` (output shows Admin and MS1 running)

4.9.3 Deploying IHTA Static Help Files to Production

NOTE: The below Linux commands end with a semicolon, and the Linux command support information notes are in parenthesis.

- WebLogic Administrator as weblogic user:
 - `cd /var/www/html/maint;`
 - `rm IHTA_help_*.tgz;` (remove old help files archive)
 - `tar -czvf IHTA_help_YYYYMM.tgz ./help/;` (archive the current static help files to IHTA_help_201804)
 - `rm -rf ./help/*;` (remove the old help files)
 - `cd help;`
 - `cp /tmp/IHTA_latest/*.zip .;` (move the new compressed help files in place)
 - `for x in *.zip; do unzip $x; done` (decompress static help files)
 - `for x in *.zip; do rm -f $x; done` (remove static help files)
- Linux Administrator with sudo privilege:
 - `systemctl restart httpd;` (IO Linux System Administrator restarts Apache Web Server)

The PD Team performs a Smoke Test of the IHTA WebLogic Environment and Application Setup.

If the Smoke Test in [Table 11](#) is successful, then the Deployment is complete. If the Smoke Test fails, a decision will be made at that time to either fix or rollback.

4.10 Installation Verification Procedure

Use the steps in [Table 11](#) to test the main functionality of IHTA to ensure the installation of IHTA is successful.

Table 11: Smoke Test IHTA for Functionality

Step #	Action	Expected Results
1	Open IHTA	SSO page appears
2	Click on the 'Sign In with VA PIV Card graphic'	Windows Security pop-up box appears requesting your PIV certificate and pin number

Step #	Action	Expected Results
3	Enter pin number and click 'Ok'	SSO log on succeeds. IHTA homepage appears
4	Verify Version # is the Version # included in the build e-mail received from the Configuration Manager	IHTA Version at bottom of page matches version included in e-mail
5	Login into application	IHTA home page is displayed
6	Once you are logged in as a National Admin	IHTA homepage is displayed <ul style="list-style-type: none"> National Admin has tabs for my profile, administration, and Manage QIRs
7	Click blue question mark on right side of application	IHTA Help page loads
8	Close Help page/tab that opened	IHTA homepage is displayed
9	Click blue help link in footer	IHTA Help page loads
10	Repeat Step 8	Repeat Step 8
11	Click My Preferences under My Profile tab	User Name, User ID, and Assigned Roles are shown <ul style="list-style-type: none"> The only role shown for this logged in user is National Administrator
12	Click Manage Registrations under Administration tab	List of Registration(s) are shown with a Pending status
13	Highlight an existing registration	Registration is selected <ul style="list-style-type: none"> Buttons for Approve, Deny, and Cancel appear
14	Click Approve	Approve Registration page loads with user information
15	Check Program Support Assistant	Program Support Assistant (PSA) box is checked
16	Click Reset	User info is reloaded and PSA role is not checked
17	Click Cancel	Confirmation appears "All of the unsaved data will be lost. Do you still want to cancel?" click Yes <ul style="list-style-type: none"> You are brought back to the Manage Registrations page
18	Repeat Step 13	Repeat Step 13

Step #	Action	Expected Results
19	Click Deny	<p>Message box appears, “are you sure you want to deny this registration.”</p> <ul style="list-style-type: none"> • OK and Cancel buttons appear • Click “OK” • Deny Registration page loads with user information • Verify there is a required Registration Denied Reason field
20	Click Cancel	<p>Confirmation appears “All of the unsaved data will be lost. Do you still want to cancel?” click Yes</p> <ul style="list-style-type: none"> • Manage Registrations page loads
21	Click Manage Users under Administration tab	Manage Users page loads with search field available to search by User ID, or user's full Last Name, or user's full Last Name and full or partial First Name.
22	Click Search	<p>Error Message displayed</p> <p>Error Message(s):</p> <ul style="list-style-type: none"> • User ID or Full Last Name is required
23	Input ihtaadmin for User ID	User input shows in field
24	Input ihtaadmin for Last Name	User input shows in field
25	Repeat Step 22	Error Messages displayed indicating user should only fill out one of the required fields not both
26	Erase input from Last Name	User input is deleted from field
27	With ihtaadmin in the User ID Field Only Click Search	Manage Users page loads with ihtaadmin information
28	Click Cancel	Manage Users screen with search fields is displayed
29	Click Mange Roles under Administration tab	Manage Roles loads with list of Roles and options for add and cancel
30	Click Add	New Role page loads with editable fields to make a new role
31	Click Cancel	<p>Confirmation appears “All of the unsaved data will be lost. Do you still want to cancel?” click Yes</p> <ul style="list-style-type: none"> • Manage Roles page is displayed
32	Click Manage Scheduled Jobs under Administration tab	Manage Scheduled Jobs page loads with list of jobs

Step #	Action	Expected Results
33	Click "Resume All" or Click "Pause All" depending on what you find in an environment	Scheduled Job Status changes
34	Highlight PurgeCompleteReports	List of options appear on bottom of screen
35	Click Execute	Success Message appears alerting user job was executed successfully
36	Click Config	Config Scheduled Job popup is displayed <ul style="list-style-type: none"> Job Status is "Paused" when Scheduled Job Status is "Paused"
37	Click Cancel	List of scheduled jobs is displayed
38	Click Schedule	Reschedule Scheduled Job popup is displayed
39	Click Change	Editable job schedule is displayed
40	Click Cancel	Reschedule Scheduled Job popup is displayed
41	Click Cancel	List of scheduled jobs is displayed
42	Click History	Scheduled Job History popup is displayed with a list of entries of jobs that have been run
43	Click Cancel	List of scheduled jobs is displayed
44	Click Active tab	Active view loads with no data available in table
45	Click Refresh	Active view loads with same message
46	Click Cancel	IHTA homepage is displayed
47	Click Search All under Manage QIRs tab	QIR entries are displayed <ul style="list-style-type: none"> Select any QIR National Administrator has the edit button available when clicking on any QIR Unselect your selection
48	Click Excel	Full list of QIRs is opened in an Excel Spreadsheet
49	Close Excel	Search All QIRs page is displayed
50	Apply search filters to QIR	Depending on what search filters the user uses, when searching the results are affected
51	Logout of application and log back in as a QIR Originator	Homepage is displayed <ul style="list-style-type: none"> QIR Originator has tabs for My Profile and Manage QIRs with the options to Add a New QIR
52	Click New under Manage QIRs tab	New QIR page loads
53	Fill out all required fields for a Test QIR	All fields with red asterisk are filled out

Step #	Action	Expected Results
54	Attach a document	A document is attached to the QIR
55	Click Submit	QIR success message appears <ul style="list-style-type: none"> A blank QIR form is loaded
56	Click View My under Manage QIRs tab	QIR entries are displayed
57	Highlight Test QIR just created	Buttons for edit, pdf, refresh, and cancel appear at bottom
58	Click PDF	PDF version of current QIR loads in new tab
59	Exit PDF	Tab closes <ul style="list-style-type: none"> View My QIRs page is displayed
60	Click Edit	Test QIR information loads and is editable
61	Click Search All Under Manage QIRs tab	QIR entries are displayed
62	Highlight Test QIR just created by you	Buttons for edit, pdf, refresh, and cancel appear at bottom <ul style="list-style-type: none"> For QIRs not created by you buttons view, pdf, refresh and cancel appear
63	Select Census Activity report under HT reports	Census Activity GUI is displayed
64	Select National Totals, Week ending 7/22/17, all modalities, all vendors and show vendors and click generate report	A Census activity report is generated. <ul style="list-style-type: none"> The report includes a populated table with columns Modality Totals and National Totals.

4.11 System Configuration

WebLogic Server was updated to 12.2.1.3.0 from 10.3.7 to be TRM compliant.

4.12 Database Tuning

IHTA Version 15.0 deployment will not require any database configuration changes or database structure alterations to the existing HT databases.

5 Back-Out Procedure

This section outlines the back out procedures for IHTA.

5.1 Back-Out Strategy

Any database structure or data changes introduced during a release will be removed on a case-by-case basis. Back-out scripts are included as part of the database change package and will be applied as needed to correct any failed area during the release deployment.

5.2 Back-Out Considerations

5.2.1 Load Testing

Not applicable for this application.

5.2.2 User Acceptance Testing

Not applicable for this application, there are no functional changes.

5.3 Back-Out Criteria

The back-out criteria are errors in the log files, other application errors, and the application performance not meeting the project standards.

Based on the criteria available about a failure, the initial strategy will be to work with IT Operations and Services (ITOPS) staff that is assisting with the IHTA release deployment to correct the problem.

5.4 Back-Out Risks

Not applicable for this application.

5.5 Authority for Back-Out

Product Development (PD) would issue the authority to back-out.

5.6 Back-Out Procedure

Refer to section [6, Rollback Procedure](#) for the back-out procedure.

The back-out procedure will be coordinated between HTRE product development staff members and ITOPS technical staff assigned to deploy the IHTA release. Appropriate actions will be taken as needed to first correct the issue and failing that, reconfigure the release to work around any minor failures. The last option will be to revert back to the prior IHTA release and revisit IHTA release deployment at a future date.

5.7 Back-Out Verification Procedure

Refer to section [4.10, Installation Verification Procedure](#) for the back-out verification procedure.

6 Rollback Procedure

6.1 Rollback Considerations

Since the database structure or data requirements of the HT database will not be altered to support IHTA Version 15.0, HT database rollback will only be considered if data is introduced during IHTA smoke testing following IHTA deployment to production. Database recovery and rollback will only occur if manual data correction by PD cannot be employed as an alternative.

6.2 Rollback Criteria

The following criteria will be used to evaluate the need for database recovery:

- Data is logically introduced during testing of the IHTA Version 15.0 application.
- Users have not been allowed access to IHTA following upgrade.
- External data feeds to HT database have not been restarted.
- The amount of time that has passed since IHTA allowed user access.

Since IHTA Version 15.0 does not introduce HT database structural or data changes, PD will consider manual data correction over HT database recovery.

6.3 Rollback Risks

The greatest rollback risk can be loss of data. The amount of data loss will depend on when it is determined that a rollback is potentially needed in relation to the amount of time that has passed since the IHTA was made available to the users following deployment of IHTA Version 15.0.

6.4 Authority for Rollback

The PD team will be contacted to issue authority for database rollback.

6.5 Rollback Procedure

Home Telehealth product development team members will coordinate with AITC DBA staff to perform database recovery. The form of database recovery followed will depend on the type of database failure that requires a recovery effort to be initiated.

Recovery of the database to a prior point in time will require restoring the database from a full backup and applying the transaction logs necessary to bring the database state to the decided upon point in time. All due consideration should be given to the impact that this form of database recovery will have as data will be lost. Performing a database rollback recovery should only be considered after all other possible approaches to data correction have been found to have a greater impact than a point-in-time recovery. The following subsections describe the process for rolling back a database to a desired point in time.

6.5.1 Steps for IHTA Deployment Rollback

The details for rolling back IHTA to a previous version in production are listed below.

NOTE: The below Linux commands end with a semicolon, and the Linux command support information notes are in parenthesis.

- WebLogic Administrator as weblogic user:
 - `getstatus.sh ppd.properties;` (If the application JVM MS1 is running)

- stopserver.sh prod.properties MS1; (Shutdown JVM/IHTA Application)
- undeploy.sh prod.properties; (Undeploy version 15.0.0.##### due to failure)
- rm -rf /u01/domains/ihta_prod1035/servers/MS1; (clean out old app cached files)
- deploy.sh prod.properties /u01/domains/ihta_prod1035/appStage/14.5.0.00401/ccht.war; (where <14.5.0.00401> is the Previous Version of the IHTA Application)
- appstatus.sh prod.properties; (output should say NEW)
- startserver.sh prod.properties MS1; (Start the JVM/IHTA Application)
- appstatus prod.properties; (output should say ACTIVE)
- getstatus prod.properties; (output shows Admin and MS1 running)

6.5.2 Steps for IHTA Static Help Files Rollback

NOTE: The below Linux commands end with a semicolon, and the Linux command support information notes are in parenthesis.

- WebLogic Administrator as weblogic user continued:
 - cd /var/www/html/maint;
 - rm -rf ./help/*; (remove the New Version help files)
 - tar -xzf IHTA_help_YYYYMM.tgz ./help/; (restore the previous version static help)
- Linux Administrator with sudo privilege:
 - systemctl restart httpd; (IO Linux System Administrator restarts Apache Web Server)

6.5.3 Steps for IHTA Startup

The details of starting IHTA in production are listed below.

NOTE: The below Linux commands end with a semicolon, and the Linux command support information notes are in parenthesis.

- WebLogic Administrator as weblogic user:
 - cd; (make sure user in weblogic home directory)
 - ps -ef | grep java; (should be no java processes running)
 - domains/ihta_prod1035/startWeblogic.sh; (Start the WebLogic Admin Server)
 - appstatus.sh prod.properties; (output should show NEW meaning application is deployed but not running)
 - startserver.sh prod.properties MS1; (Start the JVM/IHTA Application)
 - appstatus prod.properties; (output should say ACTIVE)
 - getstatus prod.properties; (output shows Admin and MS1 running).
- Linux Administrator with sudo privilege:
 - systemctl restart httpd; (IO Linux System Administrator restarts Apache Web Server)

6.5.4 Steps for IHTA Shutdown

The details to shut down IHTA in production are listed below.

NOTE: The below Linux commands end with a semicolon, and the Linux command support information notes are in parenthesis.

- WebLogic Administrator as weblogic user:
 - `cd;` (make sure user is in the weblogic home directory)
 - `getstatus.sh prod.properties;` (output shows Admin and MS1 running)
 - `appstatus.sh prod.properties;` (output should say ACTIVE)
 - `stopserver.sh prod.properties MS1;` (Shutdown JVM/IHTA Application)
 - `appstatus prod.properties;` (output should say NEW)
 - `getstatus prod.properties;` (output shows only Admin server is running)
 - `killall java;` (Kill the remaining Nodemanager and Admin Server Java Processes)
 - `ps -ef | grep java;` (confirm no Java processes running)
- Linux Administrator with sudo privilege:
 - `systemctl stop httpd;` (IO Linux System Administrator restarts Apache Web Server)

6.5.5 Backup Selection

Select the full database backup that is prior to and closest to the point in time that the database will be recovered to. If the backup is on external medium, transfer it to a folder on the primary database server so that it is directly available to the database software. Select all transaction log backups that were taken twenty-four hours prior to the database backup you have selected, and all transaction log backups taken up to, include the point in time that you have targeted, to recover the database. If the transaction log backups are on external medium, transfer all to a folder on the primary database server so that they are directly available to the database software.

6.5.6 Database Recovery Preparation

1. Make sure all application use of the database is shutdown. Place the database in the restricted access mode and clear all current user connections.
2. Shutdown database replication to the secondary server, since the same data issue that is influencing the primary also affects the secondary database. The replication database will need to be rebuilt once the recovery is completed.
3. Though it is the database that needs to be corrected, it also represents the starting point if the recovery effort fails for any reason. Take a full backup of the database. Save the backup in a file just in case it is needed to rebuild and restart the recovery.

6.5.7 Database Point in time Restore

1. Coordinate with the database administrator (DBA) on duty at the data center hosting the primary Home Telehealth database to perform the database restore.
2. Provide the data center DBA with the point in time that the database will be recovered.
3. Support the data center DBA as they collect DB backup and transaction log files and perform database recovery procedures.

6.5.8 Database Recovery Follow-up

1. Once recovery is completed, provide the data center DBA scripts to:
 - a. Validate the database functionality.
 - b. Identify the last Health Level 7 (HL7) messages processed to the database.
 - c. Determine the last data built to the database from the IHTA.
2. Have the data center DBA:
 - a. Create a full database backup and a backup of the transaction log.
 - b. Copy the backups to the secondary database server.
 - c. Perform the steps above to recover the database on the secondary database server.
 - d. Restart database replication.
3. Follow-up with CNS sustainment team members to collect and run any lost HL7 survey or census messages. Notify users of any lost IHTA data.

6.6 Rollback Verification Procedure

PD will review timestamps within the database in comparison to audit message logs located elsewhere within the database server to validate that the database has been recovered to the correct point in time prior to the data failure point.