Decision Support System (DSS)
Software Version 3.0
Patch ECX*3.0*177

Deployment, Installation, Back-Out, and Rollback Guide

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Department of Veterans Affairs

Office of Information and Technology (OI&T)

Revision History

Date	Version	Description	Author
12/03/2019	3.0	Updated document to reflect ECX*3*177 patch for FY20	TeamSMS/Leidos
4/23/2019	2.0	Updated document to reflect FY20 patch changes	TeamSMS/Leidos
10/3/2018	1.0	Initial Document Release	TeamSMS/Leidos

Artifact Rationale

This document describes the Deployment, Installation, Back-out, and Rollback Plan for new products going into the VA Enterprise. The plan includes information about system support, issue tracking, escalation processes, and roles and responsibilities involved in all those activities. Its purpose is to provide clients, stakeholders, and support personnel with a smooth transition to the new product or software, and should be structured appropriately, to reflect particulars of these procedures at a single or at multiple locations.

Per the Veteran-focused Integrated Process (VIP) Guide, the Deployment, Installation, Back-out, and Rollback Plan is required to be completed prior to Critical Decision Point #2 (CD #2), with the expectation that it will be updated throughout the lifecycle of the project for each build, as needed.

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1 Introduction

This document describes how to deploy and install the Decision Support System (DSS) ECX*3.0*177 patch, as well as how to back-out the product and rollback to a previous version or data set. This document is a companion to the project charter and management plan for this effort.

The entry for ECX*3.0*177 in the National Patch Module (NPM) on FORUM provides detailed instructions for the installation of this patch. A copy of these instructions is distributed to sites in the PackMan e-mail message along with the software. This current document details the criteria for determining if a back-out is necessary, the authority for making that decision, the order in which installed components will be backed out, the risks and criteria for a rollback, and authority for acceptance or rejection of the risks.

1.1 Purpose

The purpose of this plan is to provide a single, common document that describes how, when, where, and to whom the DSS Fiscal Year (FY20) Patch (ECX*3.0*177) will be deployed and installed, as well as how it is to be backed out and rolled back, if necessary. The plan also identifies resources, communications plan, and rollout schedule. Specific instructions for installation, back-out, and rollback are included in this document.

The intended audience includes Technical Services, National Veterans Health Information Systems and Technology Architecture (VistA) Support and Software Quality Assurance (SQA).

1.2 Dependencies

There are no new dependencies beyond those covered under separate topics within this document that are being introduced in this version of the DSS application.

1.3 Constraints

DSS FY20 has the following constraints:

- Data is available from other packages
- Austin Information Technology Center (AITC) is ready and available to accept extract documents

2 Roles and Responsibilities

Table 1 identifies, at a high-level, the parties responsible for supporting VistA Patches.

Table 1: Deployment, Installation, Back-out, and Rollback Roles and Responsibilities

Team	Phase	Tasks
TeamSMS/Leidos Office of Information and Technology (OI&T)	Initial Operating Capability (IOC) Planning	• Coordinate with Enterprise Service Line (ESL) group to recruit test sites • Coordinate with identified test sites for Memorandum of Understanding (MOU) concurrences
ESL Office of Information and Technology (OI&T) Personnel	Deployment: Pre-Installation Initial Site Set up	• Submit site change requests for patch installation • Review Patch Description for installation instructions and any required patches • Backup routines prior to patch installation
TeamSMS/Leidos OI&T	Deployment	• Determine and document the roles and responsibilities of those involved in the deployment
IOC Test Site Personnel	Deployment: Pre-Production Production	• Test for operational readiness
Portfolio Manager Department of Veterans Affairs (VA) Project Manager Health Product Support (HPS)	Deployment: Production	• Ensure authority to operate and that certificate authority security documentation is in place
Managerial Cost Accounting Office (MCAO)	Support	• Coordinate training
HPS	Back-out	• Confirm availability of back-out instructions and back-out strategy
TeamSMS/Leidos	Back-out	• Analyze issues related to system functionality impairment
Portfolio Manager MCAO Business Owner HPS	Back-out	• Authorize software back-out
ESL OI&T Personnel with TeamSMS/Leidos assistance	Back-out	• Perform back-out if needed

Team	Phase	Tasks
Portfolio Manager MCAO Business Owner HPS Site/Regional Personnel	Rollback	• Authorize software rollback
ESL OI&T Personnel	Rollback	• Rollback data to previous backup point, if necessary • Reapply changes to database manually, if necessary
Local Decision Support System (DSS) Site Manager (Tier 0) Local Managerial Cost Accounting (MCA) Veterans Integrated Service Network (VISN) Coordinator (Tier 0) OI&T National Service Desk (Tier 1) HPS (Tier 2) VistA Maintenance Management Systems (Tier 3)	Post Deployment Support	• Restore normal service operation as quickly as possible, and minimize any adverse impact on business operations • Ensure best possible level of service quality and availability

3 Deployment

Site deployment is divided into three distinct phases:

1. Pre-Installation/Initial Site Setup
2. Pre-Production/Test Environment Installation
3. Production Environment Installation

Section 4 details the required steps each IOC site must perform in order to successfully install ECX*3.0*177.

3.1 Timeline

Patch ECX*3.0*177 is scheduled to be installed and deployed in the IOC site production environments. During this time, the testers will perform production testing and the ESL OI&T personnel will verify the installation to ensure there are no errors.

3.2 Site Readiness Assessment

Per the Veteran-Focused Integration Process (VIP) guidelines, a Critical Decision (CD) 2 event will be conducted to review the patch and its readiness for release into the IOC production environment. Upon approval from DSS leadership, the patch will proceed to IOC production testing. Upon successful production testing, the patch is ready for National Release.

The Patch will be released by VA HPS, and the Patch Development Team will upload all relevant patch documentation to the VA Software Documentation Library (VDL).

The Patch Development Team will provide support to VA HPS.

Before installing DSS extract updates, verify with the local DSS Site Manager that extraction and transmission of FY19 data has been completed. Revisions to data dictionaries and routines made during this installation will make it impossible to perform any further FY19 data extracts.

3.2.1 Deployment Topology (Targeted Architecture)

ECX*3.0*177, a patch to the VistA DSS Extracts package, is installable on a fully patched Massachusetts General Hospital Utility Multi-Programming System (MUMPS) VistA system and operates on top of the VistA environment provided by the VistA infrastructure packages. The latter provides utilities which communicate with the underlying operating system and hardware, thereby providing DSS independence from variations in hardware and operating system.

3.2.2 Site Information (Locations, Deployment Recipients)

DSS FY20 Patch ECX*3.0*177 will be deployed enterprise-wide.

3.2.3 Site Preparation

No additional site preparation activities are required. The DSS FY20 patch will run under current site configuration.

3.3 Resources

This section describes the relevant hardware, software, facilities, and documentation for DSS FY20 Patch ECX*3.0*177 deployment.

3.3.1 Hardware

No new hardware or other resources are required.

3.3.2 Software

Table 2 describes the minimum version for VistA infrastructure software applications for installation and normal operation. The following package versions (or higher) must be installed prior to loading this patch:

Table 2: External Package Minimum Versions Required

Software Product Name	Acronym	Minimum Version Required
Admission Discharge Transfer	ADT	5.3
Bar Code Medication Administration	BCMA	3.0
DSS Extracts	DSS	3.0
Event Capture	EC	EC*2.0*145 (Only required if EC is in use)
FileMan	FM	22.2
Health Level Seven	HL7	1.6
Kernel	XU	8.0
Laboratory	LR	5.2
Lab: Blood Bank	LBB	5.2
MailMan	XM	8.0
Mental Health	MH	5.01
Order Entry/Results Reporting	OE/RR	3.0
Patient Care Encounter	PCE	1.0
Pharmacy: Data Management	PDM	1.0
Pharmacy: Inpatient Medications	PSJ	5.0
Pharmacy: National Drug File	NDF	4.0
Pharmacy: Outpatient Pharmacy	PSO	7.0
Prosthetics	PRO	3.0
Quality: Audiology and Speech Pathology Audit & Review	QUASAR	3.0
Radiology	RAD	5.0
Registration	DG	5.3
Scheduling	SD	5.3

Surgery	SR	3.0

3.3.3 Communications

Field offices will report any installation errors or problems to the HPS Application Coordinator. During the installation compliance window, the deployment status will be monitored and reviewed weekly via the VA's enterprise release calendar review.

3.3.3.1 Deployment/Installation/Back-Out Checklist

Table 3 lists the activities for DSS FY20 deployment, installation, and back-out.

Table 3: Deployment/Installation/Back-Out Checklist

Activity	Day	Time	Individual who completes task
Deploy	12/18/19	Site dependent according to local policy	ESL OI&T Personnel
Install	12/18/19	Site dependent according to local policy	ESL OI&T Personnel
Back-Out	Only performed as needed	Only performed as needed	ESL OI&T with TeamSMS/Leidos assistance

4 Installation

ECX*3.0*177, a patch to the VistA DSS Extracts package, is installable on a fully-patched MUMPS VistA system and operates on top of the VistA environment provided by the VistA infrastructure packages. The latter provides utilities which communicate with the underlying operating system and hardware, thereby providing DSS Extracts independence from variations in hardware and operating system.

4.1 Pre-Installation and System Requirements

Before installing DSS extract updates, verify with the local DSS Site Manager that extraction and transmission of FY19 data has been completed. Revisions to data dictionaries and routines made during this installation will make it impossible to perform any further FY19 data extracts.

Any extract process that may have been tasked to run should be unscheduled before beginning the installation.

4.2 Platform Installation and Preparation

As best practice, sites must install the software in test/pre-prod accounts prior to installing in production accounts.

If installed during the normal workday, it is recommended that the Extract Manager's Options [ECXMGR] in the OPTION (#19) file and all of its descendants be disabled to prevent possible conflicts while running the Kernel Installation and Distribution System (KIDS) installation. Other VistA users will not be affected, and the installation time is estimated to be five minutes.

4.3 Download and Extract Files

ECX*3.0*177 is provided to IOC sites as a KIDS build via FORUM. Refer to the ECX*3.0*177 patch documentation in the NPM.

4.4 Database Creation

The patch is applied to an existing MUMPS VistA database. No other database creation is required.

4.5 Installation Scripts

Installation scripts are not needed to install the software. For detailed steps to install the software, refer to Section 4.8 in this document or the ECX*3.0*177 patch description in the NPM.

4.6 Cron Scripts

There are no Cron scripts associated with DSS or its installation.

4.7 Access Requirements and Skills Needed for the Installation

Account Access Requirements for Installation:

- Access: Programmer @ sign to ensure all programmer access at the sites
- Mailman access

Skill level requirements for installation:

- Knowledge of roll and scroll navigation and commands to support install
- Knowledge and ability to verify checksums
- Knowledge and ability to back up global
- Knowledge and ability to check error traps
- Knowledge and ability to troubleshoot installation issues

Instructions on how to perform these installation functions are included in this installation guide, as well as in the formal NPM Patch Description that is sent to site/regional personnel prior to the installation.

4.8 Installation Procedure

The subsections below describe the steps for installing ECX*3.0*177.

4.8.1 Load Transport Global

Choose the PackMan message containing the ECX*3.0*177 patch and invoke the INSTALL/CHECK MESSAGE PackMan option.

4.8.2 Server Installation

1. Use the INSTALL/CHECK MESSAGE option on the PackMan menu to unload the KIDS distribution included with this message.
2. From the KIDS Menu, select the Installation menu.
3. The following steps are optional, but are recommended. When prompted for INSTALL NAME, enter ECX*3.0*177:
   a) Backup a Transport Global - This option will create a backup message of any routines exported with the patch. It will NOT backup any other changes such as Data Dictionaries (DD) or templates.
   b) Compare Transport Global to Current System - This option allows you to view all changes that will be made when this patch is installed. It compares all components of this patch (routines, DD's, templates, etc.).
   c) Verify Checksums in Transport Global - This option allows you to ensure the integrity of the routines that are in the transport global.
   d) Print Transport Global - This option allows you to view the components of the KIDS build.
4. Use the Install Package(s) option, and select the package ECX*3.0*177.
5. If prompted 'Want KIDS to Rebuild Menu Trees Upon Completion of Install? NO//' Answer **YES**.
6. When prompted 'Want KIDS to INHIBIT LOGONs during the install? NO//' answer **NO**.
7. When prompted 'Want to DISABLE Scheduled Options, Menu Options, and Protocols? NO//' answer **YES**.
8. When prompted 'Enter options you wish to mark as 'Out Of Order':', enter the following options: Extract Manager's Options [ECXMGR]
9. When prompted 'Enter protocols you wish to mark as 'Out Of Order':', press <**Enter**>.
10. If prompted 'Delay Install (Minutes): (0-60): 0//', answer **0** (unless otherwise indicated).

4.8.3 KIDS Installation Example

```
NAME: ECX*3.0*177                        PACKAGE FILE LINK: DSS EXTRACTS
DATE LOADED: DEC 18, 2019@10:46:29        STARTING PACKAGE: ECX*3.0*177
INSTALL ORDER: 1                         REQUIRED TO CONTINUE: NO
SETNAME: 0ECX*3.0*177                    STATUS: Install Completed
DISABLE OPTION DELAY: 0                  INSTALLED BY: WASHINGTON, GEORGE
INSTALL START TIME: DEC 18, 2019@10:46:47
ROUTINE INSTALL TIME: DEC 18, 2019@10:46:47
INSTALL COMPLETE TIME: DEC 18, 2019@10:46:47
DISTRIBUTION DATE: DEC 18, 2019      FILE COMMENT: Copy of: ECX*3*177
TEST#: 1
PRE-INIT CHECK POINTS: XPD PREINSTALL COMPLETED
COMPLETED TIME: DEC 18, 2019@10:46:47
POST-INIT CHECK POINTS: XPD POSTINSTALL COMPLETED
COMPLETED TIME: DEC 18, 2019@10:46:47 MESSAGES:
Install Started for ECX*3.0*177: DEC 18, 2019@10:46:47
Build Distribution Date: Dec 18, 2019 Installing Routines: DEC 18,
      2019@10:46:47 Updating Routine file...
Updating KIDS files...
ECX*3.0*177 Installed.

Dec 18, 2019@10:46:47
Not a production UCI
NO Install Message sent
NAME: XPI1                                ANSWER: 0
PROMPT: Want KIDS to INHIBIT LOGONs during the install
EXTERNAL ANSWER: NO
NAME: XPZ1                                ANSWER: 0
PROMPT: Want to DISABLE Scheduled Options, Menu Options, and Protocols
EXTERNAL ANSWER: NO
ROUTINES: ECXATRT
ROUTINES: ECXPRO ROUTINES: ECXWRD
```

4.9 Installation Verification Procedure

The Application Coordinator is responsible for coordinating the activities for the national release of the product or patch, representing HPS as a member of the project team for the product or patch release. This includes working with the appropriate Sustainment Manager (SM) to ensure a smooth and successful transition of the product from development to sustainment.

Table 4 lists the release deployment Point of Contact (POC) information for DSS FY20.

Table 4: Release Deployment POC Information

Release Identification	Release Package POC Name	Release Package POC Email
ECX*3.0*177	Stacy Hardy HPS Application Coordinator	Stacy.Hardy@va.gov

The POC for each process will verify that all required inputs are available. Upon completion of each sub-task in the execution, the POC will verify that all required outputs have been generated and all the necessary exit criteria have been met.

The master process is not considered complete until all related sub-tasks for the perceived entry criteria have been completed. Verification and validation are performed to ensure that the processes executed meet the needs of the development effort and the execution of this process satisfies the certification requirements of the organization requesting the activity.

4.10 System Configuration

No system configuration changes are required.

4.11 Database Tuning

No reconfiguration of the VistA database, memory allocation, or other resources are necessary for DSS Patch ECX*3.0*177.

5 Back-Out Procedure

ESL OI&T personnel perform backups on routines prior to patch installation. If for any reason a need arises, ESL OI&T personnel will back out the patch and revert to the previous backup point to restore their respective environments. Any changes that need to be reapplied to the database will be manually applied. It may be necessary for the developer to be given access to the site to assist with these procedures.

5.1 Back-Out Strategy

In the event that the ECX*3.0*177 patch needs to be backed out, the development team will assist the site with removing the VistA routines as needed.

5.2 Back-Out Considerations

Back-out considerations would include the following:

- Health of site systems
- Ability to recover to a stable environment
- Minimal disruption to a site
- Minimize issues within the VistA host

5.2.1 Load Testing

Load Testing is not applicable. The back-out process for patch ECX*3.0*177 would be executed at a normal, rather than raised job priority, and expected to have minimal effect on total system performance. To minimize potential impact on users, implementation of a back-out can be queued to run during hours of reduced user activity. Subsequent to the reversion, the performance demands on the system would be unchanged.

5.2.2 User Acceptance Testing

It is expected that the restoration of the pre-ECX*3.0*177 version of routines could be confirmed by OI&T Support quickly by using utility CHECK1^XTSUMBLD, which returns the checksum or routine comparison utilities from VA Kernel without any need of User Acceptance Testing (UAT).

5.3 Back-Out Criteria

A back-out of the software should only be performed in response to severe system impairment, and when no other option available.

TeamSMS/Leidos will analyze the issue and related system functionality impairment. Based on the severity of the condition, a determination will be made if a back-out of the software is required.

5.4 Back-Out Risks

Risks for a back-out include:

- Further corruption of system
- Inability to completely remove all software code from system

- Loss of system functionality while back-out is in progress
- Loss of data; some records may never be recovered

5.5 Authority for Back-Out

With input from the project team and/or field site personnel, authority for DSS software back-out would be a joint decision from the following people:

- Vitalia Devlin, Health Product Support, Portfolio Director
- Mike Leigh, Business Owner/ MCAO
- John Elliott, HPS Manager

5.6 Back-Out Procedure

ESL OI&T personnel perform backups on routines prior to patch installation. If for any reason a need arises, ESL OI&T personnel will back out the patch and revert to the previous backup point to restore their respective environments. Any changes that need to be reapplied to the database will be manually applied. It may be necessary for the developer to be given access to the site to assist with these procedures.

5.7 Back-Out Verification Procedure

It is expected that the restoration of the pre-ECX*3.0*177 version of routines could be confirmed by OI&T Support quickly by using utility CHECK1^XTSUMBLD, which returns the checksum or routine comparison utilities from VA Kernel. Manually check database changes to verify that files are in their previous state.

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6 Rollback Procedure

ESL OI&T personnel perform backups on routines prior to patch installation. If for any reason a need arises, ESL OI&T personnel will back out the patch and revert to the previous backup point to restore their respective environments. Any changes that need to be reapplied to the database will be manually applied. It may be necessary for the developer to be given access to the site to assist with these procedures.

6.1 Rollback Considerations

The rollback of software to a previous version would be required in the event of a severe loss of functionality and the inability to resolve the issue.

The strategy is to:

- Limit access and contain the issue
- Troubleshoot the issue thoroughly
- Discuss available options
- If no other options are available, make the joint decision to back-out/rollback the software version to a previous known good working version
- Execute back-out/rollback procedures
- Test thoroughly to ensure correct functionality of system and software
- Turn the system over to the customer

Prior to installing an updated KIDS package, the site/region should have saved a backup of the routines in a mail message, using the Backup a Transport Global [XPD BACKUP] menu option (this is done at the time of install).

Rollback will be done only with the concurrence and participation of TeamSMS/Leidos and appropriate VA site/regional personnel.

6.2 Rollback Criteria

The following remediation steps address situations in which the application has become non-functional during the normal course of operation.

When issues are reported to HPS, MCAO, or directly to TeamSMS/Leidos, TeamSMS/Leidos will identify the source of the issue and the component that is affected.

Issues that may cause an impairment of functionality include:

- Errors found in the VistA error trap. These errors can occur due to any number of potential issues at a site.
- Insufficient disk space for data storage. These types of issues generally require the allocation of additional disk space in order to return the application to full health.
- Insufficient disk space for the application components. These issues are related to log files filling up the available space. The remedy is to archive the log files and remove them from the server. A key monitoring activity for the application is ensuring that log files do not fill up the available space.

Depending on the severity of the error condition, a determination will be made on whether the issue is temporary and can be resolved within the runtime environment, or if a rollback to a previous version of the system is required.

6.3 Rollback Risks

Risks for a rollback include:

- Loss of system functionality while rollback is in progress
- Loss of data
- Loss of DSS functionality with rollback to previous version

6.4 Authority for Rollback

Authority for a DSS software rollback would be a joint decision from the following:

- DSS Leadership (including OI&T, MCAO, HPS and VHA)
- TeamSMS/Leidos (Release Team and Project Management)
- Site/Region personnel

6.5 Rollback Procedure

ESL OI&T personnel perform backups on routines prior to patch installation. If for any reason a need arises, ESL OI&T personnel will back out the patch and revert to the previous backup point to restore their respective environments. Any changes that need to be reapplied to the database will be manually applied. It may be necessary for the developer to be given access to the site to assist with these procedures.

6.6 Rollback Verification Procedure

It is expected that the restoration of the pre-ECX*3.0*177 version of routines could be confirmed by OI&T Support quickly by using utility CHECK1^XTSUMBLD, which returns the checksum or routine comparison utilities from VA Kernel. Manually check database changes to verify that files are in their previous state.

Appendix A Acronyms

Table 5 lists the acronyms utilized throughout the DSS FY20 Deployment, Installation, Back-Out and Rollback Guide.

Table 5: Acronym Table

Acronym	Description
ADT	Admission Discharge Transfer
BCMA	Bar Code Medication Administration
DD	Data Dictionary
DG	Registration
EC	Event Capture
CPT	Current Procedural Terminology
DD	Data Dictionary
DRG	Diagnosis Related Group
DSS	Decision Support System
EC	Event Capture
ECS	Event Capture System
ESL	Enterprise Service Line
FM	FileMan
FY	Fiscal Year
HL7	Health Level Seven
HPS	Health Product Support
IOC	Initial Operating Capability
KIDS IT	Kernel Installation and Distribution System Information Technology
LBB KIDS	Lab: Blood Bank Kernel Installation and Distribution System
LR LBB	Laboratory Lab: Blood Bank
MCA LR	Managerial Cost Accounting Laboratory
MCAO MCA	Managerial Cost Accounting Office Managerial Cost Accounting
MH MCAO	Mental Health Managerial Cost Accounting Office
MOU MH	Memorandum of Understanding Mental Health
MUMPS MOU	Massachusetts General Hospital Utility Multi-Programming System Memorandum of Understanding
NDF MUMPS	National Drug File Massachusetts General Hospital Utility Multi-Programming System
NPM NDF	National Patch Module National Drug File
OE/RR NPM	Order Entry/Results Reporting National Patch Module
OI&T	Office of Information and Technology
OI&T OE/RR	Office of Information and Technology Order Entry/Results Reporting

Acronym	Description
PCE OI&T	Patient Care Encounter Office of Information and Technology
PDM PCE	Pharmacy: Data Management Patient Care Encounter
POC PDM	Point of Contact Pharmacy: Data Management
PRO POC	Prosthetics Point of Contact
PSJ PRO	Pharmacy: Inpatient Medications Prosthetics
PSO PSJ	Pharmacy: Outpatient Pharmacy Pharmacy: Inpatient Medications
QUASAR PSO	Quality: Audiology and Speech Pathology Audit & Review Pharmacy: Outpatient Pharmacy
RAD QUASAR	Radiology Quality: Audiology and Speech Pathology Audit & Review
SD RAD	Scheduling Radiology
SM SD	Sustainment Manager Scheduling
SQA SM	Software Quality Assurance Sustainment Manager
SR SQA	Surgery Software Quality Assurance
UAT SR	User Acceptance Testing Surgery
VA UAT	Department of Veterans Affairs User Acceptance Testing
VHA VA	Veterans Health Administration Department of Veterans Affairs
VISN VHA	Veterans Integrated Service Network Veterans Health Administration
VistA VISN	Veterans Health Information Systems and Technology Architecture Veterans Integrated Service Network
XM VistA	MailMan Veterans Health Information Systems and Technology Architecture
XU XM	Kernel MailMan
XU	Kernel