Existing Product Intake Program (EPIP)

Patch NUR\*4.0\*44

Remediation Plan



Department of Veterans Affairs

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# Introduction

The Department of Veterans Affairs (VA) currently utilizes the Veterans Health Information Systems and Technology Architecture (VistA) suite of applications to provide clinical, financial, infrastructure, and management tools. The process of advancing “Class 3” field-developed VistA software to “Class 1” nationally-distributed status is referred to as the Existing Product Intake Program (EPIP). The VA’s goal is to supplement ongoing activities associated with evaluating and advancing field-developed software to a state that meets national standards and facilitates release for Veterans Health Administration (VHA)-wide use.

# Purpose

The purpose of this document is to fully describe the remediation plan to be used for the successful remediation of the intake product code to be deployed as patch NUR\*4.0\*44. This patch addresses the following NSRs:

* NSR20160204 *Identify Patients Opting Out of Directory on Ward Census Print*

This NSR has been implemented locally at the VA Medical Center in San Diego CA.

* NSR20160205 *Truncate SSN on Ward Census Print Option*

This NSR has been implemented locally at VA Medical Centers in West Palm Beach and Gainesville FL, Northport MI, and the VA New Jersey Health Care System.

This document addresses the schedule, code remediation, testing, documentation, and delivery of this remediation effort.

# Patch Description

NUR\*4.0\*44 provides the following enhancements to VistA:

* Enables the Ward staff to see which patients have opted out of the facility directory when using the *Ward Census, Print* (NURSPP-LOCWRD) option in VistA. This modification adds the indicator "! " in front of a patient's name in the Patient Census report when that patient has opted out of the facility directory.

Currently, this indicator is displayed on the Inpatient Roster; however, on the Patient Census report there is no indication that the patient has opted out of the facility directory, which presents a patient privacy issue.

* Modifies the *Ward Census, Print* option in VistA to truncate a patient’s Social Security Number (SSN) to display only the last four digits on the Patient Census report. This modification also changes the column header on the Patient Census report from "SSN" to "Last 4" to reflect the data displayed in the column.

Currently, the Patient Census report displays the patient’s full SSN, which presents a patient privacy issue.

## Needs and Requirements

The Needs and Requirements for the NSRs addressed in this remediation are:

NSR20160204 *Identify Patients Opting Out of Directory on Ward Census Print*

* NEED 668486: Patients That Opted Out Of The Facility Directory - As a user of various reports that contain patient names I need some way of knowing which patients have opted out of being listed in the facility directory so that I can protect the patient's information appropriately.
* REQUIREMENT 668488: Identify Patients Opting Out Of Facility Directory Listed On Ward Census Print - As ward staff, I need to be able to identify patients who have opted out of the facility directory when I view the Ward Census Print to protect the patient's information appropriately.

NSR20160205 *Truncate SSN on Ward Census Print Option*

* NEED 686794: Display Last 4 Of SSN On Ward Reports
* REQUIREMENT 686795: Display Last 4 of SSN - As a user of ward reports I need the Ward Census, Print option to display only the last 4 numbers of the patient’s SSN so that the patient’s personal identifying information and privacy is protected.

# Points of Contact

The VA Point of Contact (POC) for NSR20160204 *Identify Patients Opting Out of Directory on Ward Census Print*

The VA POC for NSR20160205 *Truncate SSN on Ward Census Print Option*

# Code Remediation

Leidos will review and analyze the intake product code for compliance with coding standards, pointers, shared tables, dependencies, and any interference with VistA systems.

## Standards and Conventions

Leidos will reference the website for applicable documents and will adhere to VA standards to complete the analysis of this intake product. The output of the VA XINDEX utility will be used to analyze the MUMPS source code and document the affected routines (see Appendix A).

The MUMPS coding standards website <http://71.174.62.16/Demo/AnnoStd> will also be used to ensure that the remediated code conforms to VA standards.

## Review and Analysis

Review and analysis of this intake product involves two parts: 1) verification that the source code changes specified in this document provide the desired effect, and 2) verification that the source code changes do not adversely affect any other VistA or CPRS functionality.

Testing will be performed to validate that the intended effect of these products is implemented, and that no other VistA or CPRS Graphical User Interface (GUI) functionality is adversely affected.

## Coding Changes

The coding changes required for NSR20160204 *Identify Patients Opting Out of Directory on Ward Census Print* are in the following MUMPS routines:

**Modified routines:** NURSCPLC

**New routines:** None

The coding changes required for NSR20160205 *Truncate SSN on Ward Census Print Option* are in the following MUMPS routines:

**Modified routines:** NURSCPLC

**New routines:** None

A detailed analysis of the coding changes is provided in Appendix B.

# Testing

Leidos will perform all testing-related activities to ensure that the remediated code meets the expectations of the VA business owner.

## Test Plan

Leidos will configure the test environment, provide code modifications and end-to-end testing, and deliver applicable testing documentation, following Veteran-focused Integration Process (VIP) guidelines.

The Leidos developer will modify the software pursuant to the VA standards defined in the *Standards and Conventions* section of this document, and will conduct full unit testing of the functionality and verify performance of all software code before it is released to Leidos SQA. SQA will then perform all applicable testing types as described in the *Testing Phases* section of this document. The developer and SQA will resolve problems and address issues as they arise during testing and will document issues using the Rational Team Concert (RTC) defect tracking tool.

## Test Environment

Within five working days of approval of this Remediation Plan, the developer will configure the development/test environment on an Austin Information Technology Center (AITC) server or other VA-approved development/test environment used for this intake product and install the remediated Kernel Installation and Distribution System (KIDS) build. The environment will be restored to its original baseline state by the VistA system administrator after development testing is completed, followed by installation of the remediated software.

Upon notification from the developer of test environment readiness, SQA will commence with planned testing activities. The SQA test execution and reporting documentation will reside in the Rational Quality Manager (RQM) “EPIP” Project. In order to perform testing of this VistA modification, the following tools will be leveraged: RQM, Reflections emulator, CPRS GUI v31 (1.0.30.75), and SnagIt.

## Test Readiness Review

Leidos will conduct a Test Readiness Review (TRR) at the conclusion of unit testing to verify the contents of the software to be tested, the test schedule, test environments, test participants, and associated logistics. Leidos will provide an agenda prior to the TRR and written minutes after completion of the TRR, in accordance with the Performance Work Statement (PWS).

## Testing Phases

Leidos will perform development and SQA testing activities in phases, and will provide all required testing documentation.

### Unit Testing

The developer will conduct unit testing of individual units of source code to determine if they are fit for use.

### Component Integration and Systems Testing (CI/ST)

Component integration and systems testing will be conducted by SQA to ensure that connectivity to the VistA application exists and is functioning normally. SQA will record Passed/Failed outcomes and capture displayed content to document the system testing effort.

### Functional Testing

Functional testing will be performed by SQA to test the code modifications. This testing will ensure that the software functionality is in alignment with the Government Furnished Information. SQA will record Passed/Failed outcomes and capture displayed content to document the functional testing effort.

### Regression Testing

Regression Testing will be performed by SQA to ensure that the remediated code does not introduce errors to existing functionality. The regression test framework will be kept up-to-date with manual test cases and test scripts defining the inputs and expected outcomes. SQA will record Passed/Failed outcomes and capture displayed content to document the regression testing effort.

### Section 508 Compliance Testing

508 Testing will be performed on VistA and CPRS code when new CPRS GUI changes are introduced by the developer. The VA-recommended Assistive Technology tool, JAWS, will be used to conduct the 508 testing. Test results and related documentation will be submitted to the VA Section 508 team in accordance with the VA 508 testing requirements. Defects found during testing will be assessed and remediated by the developer.

# Documentation Remediation

Leidos will review existing VA documentation for possible impact as a result of this remediation effort, and will make updates where applicable.

To determine the existing VA documentation that requires modification, Leidos will conduct a thorough review of the documents currently available from the VA Software Document Library (VDL) located at Keyword searches using terms relevant to this remediation effort will be used to identify documents that might be impacted; those documents were will then be reviewed in their entirety for any needed revisions.

The following sections outline the VDL documents to be revised for this remediation.

## User Guides

No User Guides require revision as a result of this modification.

## Installation Guides

The *National Patch Module Patch Description* document for this remediation will provide the procedure for installing KIDS packages migrated from the test environment to the VA   
Pre-Production environments. Therefore, no Installation Guides will be updated.

## Technical Manuals

No Technical Manuals require revision as a result of this modification.

## Operations Manuals

No Operations Manuals require revision as a result of this modification.

# Project Reporting

Leidos will provide interim progress updates during daily Scrum calls and weekly management calls with VA representatives.

# Project Schedule

Leidos will follow the Scrum Agile methodology for software development. It is anticipated that this patch will require five 2-week sprints.

# Deployment

Leidos will create a KIDS package containing the software changes necessary to fulfill the requirements for this remediation effort. A KIDS package, along with all related documentation, will be delivered to the Contracting Office Representative (COR) for acceptance. If accepted, the KIDS package can then be released for national VA consumption; otherwise, Leidos will correct any defects found and repeat the necessary remediation activities.

# Sustainment Requirements

Leidos will provide maintenance support for 60 days to the VA to support the final Class 1 product after it is nationally released.

# Maintenance and Knowledge Transfer

To facilitate continuous process improvement, Leidos will deliver *Sprint Review and Retrospective* slides and a *Lessons Learned* *Report* to VA upon completion of the final sprint.

XINDEX Listing for MUMPS Code Changes

The XINDEX tool is the standard tool used by the VA to analyze MUMPS source code. Following is a listing of the results of the XINDEX analysis of the affected routines.

V. A. C R O S S R E F E R E N C E R 7.3

[2008 VA Standards & Conventions]

UCI: VISTA CPU: ROU Dec 16, 2016@09:46:59

Routines: 1 Faux Routines: 0

NURSCPLC

--- CROSS REFERENCING ---

Press return to continue:

Compiled list of Errors and Warnings Dec 16, 2016@09:46:59 page 1

No errors or warnings to report

--- CROSS-REFERENCING ALL ROUTINES ---

Press return to continue:

\*\*\*\*\* Cross Reference of all Routines \*\*\*\*\* Dec 16, 2016@09:46:59 page 2

Local Variables Routines ( >> not killed explicitly)

( \* Changed ! Killed ~ Newed)

>> DFN NURSCPLC\*

>> DIC(0 NURSCPLC\*

DT NURSCPLC

IO NURSCPLC

IOF NURSCPLC

IOSL NURSCPLC

IOST NURSCPLC

>> N1 NURSCPLC\*

>> NBED NURSCPLC\*

>> NCOPY NURSCPLC

>> NL1 NURSCPLC\*

>> NPWARD NURSCPLC\*

>> NSEC NURSCPLC\*

>> NURCAT NURSCPLC\*

>> NURFAC NURSCPLC

>> NURFAC(1 NURSCPLC

>> NURFAC(2 NURSCPLC\*

>> NURHOSP NURSCPLC

>> NURI NURSCPLC\*

>> NURIEN NURSCPLC\*

>> NURMDSW NURSCPLC\*

>> NUROUT NURSCPLC\*

>> NURPAGE NURSCPLC\*

>> NURPLCSR NURSCPLC\*

NURPLSCR NURSCPLC\*!

>> NURPLSW NURSCPLC\*

>> NURPROG NURSCPLC

>> NURPROG(1 NURSCPLC

>> NURPROG(4 NURSCPLC\*

>> NURQUEUE NURSCPLC\*

>> NURQUIT NURSCPLC\*

>> NURSCLAS NURSCPLC

>> NURSCLAS("CL"

NURSCPLC\*

>> NURSHD NURSCPLC\*

>> NURSNLOC NURSCPLC

>> NURSNLOC( NURSCPLC

>> NURSORT NURSCPLC\*

>> NURSW1 NURSCPLC\*

>> NURSWARD NURSCPLC\*

>> NURSX NURSCPLC

>> NURSZAP NURSCPLC\*

>> NURX NURSCPLC\*

>> NURY NURSCPLC\*

>> NURZ NURSCPLC\*

>> POP NURSCPLC

>> SSN NURSCPLC\*

U NURSCPLC

>> VA("BID" NURSCPLC

VADM NURSCPLC!

VADM(1 NURSCPLC

VAIN NURSCPLC!

VAIN(5 NURSCPLC

X NURSCPLC\*~

>> ZTDESC NURSCPLC\*

>> ZTRTN NURSCPLC\*

>> ZTSK NURSCPLC

Global Variables

^DIC(213.9 NURSCPLC

^DPT( NURSCPLC

^NURSA(214.6 NURSCPLC

^NURSF(211.4 NURSCPLC

^NURSF(213.3 NURSCPLC

^NURSF(214 NURSCPLC

^TMP($J NURSCPLC\*!

Naked Globals

^(0 NURSCPLC

Cache Objects

NONE

Marked Items

NONE

Routine Invokes:

NURSCPLC $$GET1^DIQ,EN1^NURSAGSP,EN5^NURSAGSP,EN9^NURSAGSP,PRD^NURSAGSP

NURSAPCH,EN6^NURSAUTL,EN2^NURSCUTL,EN6^NURSCUTL,NURSKILL

EN6^NURSUT0,EN7^NURSUT0,CLOSE^NURSUT1,ENDPG^NURSUT1

NODATA^NURSUT1,$$CNTR^NURSUT2,$$EN12^NURSUT3,1^VADPT,DEM^VADPT

$$REPEAT^XLFSTR

Routine is Invoked by:

$$GET1^DIQ NURSCPLC

EN1^NURSAGSP NURSCPLC

EN5^NURSAGSP NURSCPLC

EN9^NURSAGSP NURSCPLC

PRD^NURSAGSP NURSCPLC

^NURSAPCH NURSCPLC

EN6^NURSAUTL NURSCPLC

EN2^NURSCUTL NURSCPLC

EN6^NURSCUTL NURSCPLC

^NURSKILL NURSCPLC

EN6^NURSUT0 NURSCPLC

EN7^NURSUT0 NURSCPLC

CLOSE^NURSUT1 NURSCPLC

ENDPG^NURSUT1 NURSCPLC

NODATA^NURSUT1 NURSCPLC

$$CNTR^NURSUT2 NURSCPLC

$$EN12^NURSUT3 NURSCPLC

1^VADPT NURSCPLC

DEM^VADPT NURSCPLC

$$REPEAT^XLFSTR NURSCPLC

\*\*\*\*\* END \*\*\*\*\*

--- END ---

VISTAS1:VISTA>

Source Code Changes

This appendix displays the VistA code before and after the updates required for this code modification were implemented. The following routines were affected:

**Modified routines:** NURSCPLC

**New routines:** none

**NURSCPLC**

* NSR20160204 *Identify Patients Opting Out of Directory on Ward Census Print*
* NSR20160205 *Truncate SSN on Ward Census Print Option*

**Before:**

SORT ; SORT OF PATIENT CENSUS

 S NURFAC(2)=$S($$EN12^NURSUT3(NURIEN)'="":$$EN12^NURSUT3(NURIEN),1:" BLANK")

 S NURPROG(4)=+$P(^NURSF(211.4,+NURIEN,1),U,4),NURPROG(4)=$$GET1^DIQ(212.7,+NURPROG(4),.01,"I") S:NURPROG(4)="" NURPROG(4)=" BLANK"

 I NURMDSW,$G(NURFAC)=0,NURFAC(2)'=NURFAC(1) Q

 I NURPLSW,$G(NURPROG)=0,NURPROG(4)'=NURPROG(1) Q

 D 1^VADPT

 S NBED=$S(VAIN(5)="":"  BLANK",1:VAIN(5)),N1=$S(VADM(1)="":"  BLANK",1:VADM(1))

 S:$G(NURSORT)="" NURSORT=1

 N X S X=$G(^TMP($J,"L",NURFAC(2),NURPROG(4),NURSWARD))

 I X="" S X=NURSORT,NURSORT=NURSORT+1,^TMP($J,"L",NURFAC(2),NURPROG(4),NURSWARD)=X,^TMP($J,"NURLOC",NURSWARD)=""

 S ^TMP($J,"L1",X,NBED,N1,DFN)=""

HEADER ; PRINTING OF HEADING ROUTINE

 I 'NURQUEUE,NURSW1,$E(IOST)="C" D ENDPG^NURSUT1 Q:NUROUT

 S NURSHD="PATIENT CENSUS"\_$S($D(^TMP($J,"NURLOC",NL1)):" FOR "\_$E(NL1,1,12),1:"")

 S NURSW1=1

 S NURPAGE=NURPAGE+1 W:$E(IOST)="C"!(NURPAGE>1) @IOF

 I NURMDSW,$G(NURHOSP) W !,?$$CNTR^NURSUT2($G(NURFAC(2))),$S($G(NURFAC(2))=" BLANK":"NO FACILITY",1:$G(NURFAC(2)))

 W !,$E(DT,4,5),"/",$E(DT,6,7),"/",$E(DT,2,3),?28,NURSHD,?68,"PAGE: ",NURPAGE,!

 W !,"ROOM/BED",?17,"PATIENT NAME",?42,"SSN",?55,"ABSENCE",?64,"BED SEC",?73,"ACUITY"

 W !,$$REPEAT^XLFSTR("-",80),!

PRINT1 D DEM^VADPT S SSN=VA("PID") D ^NURSAPCH

 S NSEC=$S('$D(^NURSF(214,DFN,0)):"",$P(^(0),"^",4)="":"",'$D(^NURSF(213.3,$P(^NURSF(214,DFN,0),"^",4),0)):"",1:$P(^NURSF(213.3,$P(^NURSF(214,DFN,0),"^",4),1),"^",1)) D FNDCLAS

 D:$Y>(IOSL-6)!('NURSW1) HEADER Q:NUROUT  W !,$S(NBED'="  BLANK":NBED,1:""),?17,$S(N1'="  BLANK":$E(N1,1,19),1:""),?38,SSN,?56,$S($D(NURSX):NURSX,1:""),?66,NSEC,?75,NURCAT

**After:**

SORT ; SORT OF PATIENT CENSUS

 S NURFAC(2)=$S($$EN12^NURSUT3(NURIEN)'="":$$EN12^NURSUT3(NURIEN),1:" BLANK")

 S NURPROG(4)=+$P(^NURSF(211.4,+NURIEN,1),U,4),NURPROG(4)=$$GET1^DIQ(212.7,+NURPROG(4),.01,"I") S:NURPROG(4)="" NURPROG(4)=" BLANK"

 I NURMDSW,$G(NURFAC)=0,NURFAC(2)'=NURFAC(1) Q

 I NURPLSW,$G(NURPROG)=0,NURPROG(4)'=NURPROG(1) Q

 D 1^VADPT

 S NBED=$S(VAIN(5)="":"  BLANK",1:VAIN(5)),N1=$S(VADM(1)="":"  BLANK",1:VADM(1))

 S:$G(NURSORT)="" NURSORT=1

 N X S X=$G(^TMP($J,"L",NURFAC(2),NURPROG(4),NURSWARD))

 I X="" S X=NURSORT,NURSORT=NURSORT+1,^TMP($J,"L",NURFAC(2),NURPROG(4),NURSWARD)=X,^TMP($J,"NURLOC",NURSWARD)=""

 S ^TMP($J,"L1",X,NBED,N1,DFN)=$S(N1="  BLANK":"  ",'$D(^DPT(DFN,.109)):"  ",^DPT(DFN,.109)=0:"  ",1:"! ")

HEADER ; PRINTING OF HEADING ROUTINE

 I 'NURQUEUE,NURSW1,$E(IOST)="C" D ENDPG^NURSUT1 Q:NUROUT

 S NURSHD="PATIENT CENSUS"\_$S($D(^TMP($J,"NURLOC",NL1)):" FOR "\_$E(NL1,1,12),1:"")

 S NURSW1=1

 S NURPAGE=NURPAGE+1 W:$E(IOST)="C"!(NURPAGE>1) @IOF

 I NURMDSW,$G(NURHOSP) W !,?$$CNTR^NURSUT2($G(NURFAC(2))),$S($G(NURFAC(2))=" BLANK":"NO FACILITY",1:$G(NURFAC(2)))

 W !,$E(DT,4,5),"/",$E(DT,6,7),"/",$E(DT,2,3),?28,NURSHD,?68,"PAGE: ",NURPAGE,!

 W !,"ROOM/BED",?17,"PATIENT NAME",?40,"Last 4",?55,"ABSENCE",?64,"BED SEC",?73,"ACUITY"

 W !,$$REPEAT^XLFSTR("-",80),!

PRINT1 D DEM^VADPT S SSN=VA("BID") D ^NURSAPCH

 S NSEC=$S('$D(^NURSF(214,DFN,0)):"",$P(^(0),"^",4)="":"",'$D(^NURSF(213.3,$P(^NURSF(214,DFN,0),"^",4),0)):"",1:$P(^NURSF(213.3,$P(^NURSF(214,DFN,0),"^",4),1),"^",1)) D FNDCLAS

 D:$Y>(IOSL-6)!('NURSW1) HEADER Q:NUROUT  W !,$S(NBED'="  BLANK":NBED,1:""),?17,^TMP($J,"L1",NURSORT,NBED,N1,DFN),$S(N1'="  BLANK":$E(N1,1,19),1:""),?42,SSN,?56,$S($D(NURSX):NURSX,1:""),?66,NSEC,?75,NURCAT

 Q