Revision History

Documentation Revisions

The following table displays the revision history for this document. Revisions to the documentation are based on patches and new versions released to the field.

<table>
<thead>
<tr>
<th>Date</th>
<th>Revision</th>
<th>Description</th>
<th>Author</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/28/08</td>
<td>2.4</td>
<td>Updates:</td>
<td>Thom Blom Oakland, CA Office of Information field Office (OIFO)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Table 1-1 to add &quot;DEV&quot; entity and correct the OE/RR LIST file number from &quot;101.21&quot; to the correct &quot;100.21&quot; file number.</td>
<td></td>
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<td></td>
<td></td>
<td>• Made general format updates to follow current style guidelines and standards.</td>
<td></td>
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<td>01/03/05</td>
<td>2.3</td>
<td>Reviewed document and edited for the &quot;Data Scrubbing&quot; and the &quot;PDF 508 Compliance&quot; projects.</td>
<td>Lauren Gorgoglione, Bay Pines OIFO</td>
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<tr>
<td></td>
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<td><strong>PDF 508 Compliance</strong>—The final PDF document was recreated and now supports the minimum requirements to be 508 compliant (i.e., accessibility tags, language selection, alternate text for all images/icons, fully functional Web links, successfully passed Adobe Acrobat Quick Check).</td>
<td></td>
</tr>
<tr>
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<td>Updated documentation to include examples for all APIs.</td>
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<tr>
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<td>2.1</td>
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<td>Wally Fort, Oakland, CA OIFO; Thom Blom, Oakland, CA OIFO; Susan Strack, Oakland, CA OIFO</td>
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<td>2.0</td>
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<td>Wally Fort, Oakland, CA OIFO; Thom Blom, Oakland, CA OIFO</td>
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<tr>
<td>08/--/01</td>
<td>1.0</td>
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<td>Wally Fort, Oakland, CA OIFO; Marcia Insley, Salt Lake City, UT OIFO</td>
</tr>
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Patch Revisions

For a complete list of patches related to this software, please refer to the Patch Module on FORUM.
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Orientation

How to Use this Manual

Throughout this manual, advice and instructions are offered regarding the use of Kernel Toolkit and Patch XT*7.3*26 software and the functionality it provides for Veterans Health Information Systems and Technology Architecture (VistA) software products.

This manual uses several methods to highlight different aspects of the material:

- Various symbols are used throughout the documentation to alert the reader to special information. The following table gives a description of each of these symbols:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOTE/REF: Used to inform the reader of general information including references to additional reading material.</td>
<td></td>
</tr>
<tr>
<td>CAUTION/DISCLAIMER: Used to caution the reader to take special notice of critical information.</td>
<td></td>
</tr>
</tbody>
</table>

- Descriptive text is presented in a proportional font (as represented by this font).
- Conventions for displaying TEST data in this document are as follows:
  - The first three digits (prefix) of any Social Security Numbers (SSN) will begin with either "000" or "666".
  - Patient and user names will be formatted as follows: [Application Name]PATIENT,[N] and [Application Name]USER,[N] respectively, where "Application Name" is defined in the Approved Application Abbreviations document and "N" represents the first name as a number spelled out and incremented with each new entry. For example, in Kernel (KRN) test patient and user names would be documented as follows: KRNPATIENT,ONE; KRNPATIENT,THREE; etc.
- Sample HL7 messages, "snapshots" of computer online displays (i.e., roll-and-scroll screen captures/dialogues) and computer source code, if any, are shown in a non-proportional font and enclosed within a box.
- User's responses to online prompts will be boldface.
- References to "<Enter>" within these snapshots indicate that the user should press the Enter key on the keyboard. Other special keys are represented within <> angle brackets. For example, pressing the PF1 key can be represented as pressing <PF1>.
- Author's comments, if any, are displayed in italics or as "callout" boxes.

NOTE: Callout boxes refer to labels or descriptions usually enclosed within a box, which point to specific areas of a displayed image.
Orientation

- All uppercase is reserved for the representation of M code, variable names, or the formal name of options, field and file names, and security keys (e.g., the XUROGMODE key).

How to Obtain Technical Information Online

Exported VistA M Server-based software file, routine, and global documentation can be generated through the use of Kernel, MailMan, and VA FileMan utilities.

NOTE: Methods of obtaining specific technical information online will be indicated where applicable under the appropriate topic.

REF: Please refer to the Kernel Technical Manual for further information.

Help at Prompts

VistA M Server-based software provides online help and commonly used system default prompts. Users are encouraged to enter question marks at any response prompt. At the end of the help display, you are immediately returned to the point from which you started. This is an easy way to learn about any aspect of the software.

Obtaining Data Dictionary Listings

Technical information about VistA M Server-based files and the fields in files is stored in data dictionaries (DD). You can use the List File Attributes option on the Data Dictionary Utilities submenu in VA FileMan to print formatted data dictionaries.

REF: For details about obtaining data dictionaries and about the formats available, please refer to the "List File Attributes" chapter in the "File Management" section of the VA FileMan Advanced User Manual.

Assumptions About the Reader

This manual is written with the assumption that the reader is familiar with the following:

- VistA computing environment:
  - Kernel—VistA M Server software
  - VA FileMan data structures and terminology—VistA M Server software
- Microsoft Windows environment
- M programming language
This manual provides an overall explanation of Kernel and the functionality contained in Kernel 8.0. However, no attempt is made to explain how the overall VistA programming system is integrated and maintained. Such methods and procedures are documented elsewhere. We suggest you look at the various VA Internet and Intranet Web pages for a general orientation to VistA. For example, go to the Office of Information and Technology (OI&T) VistA Development Intranet Website:

http://vista.med.va.gov/

Reference Materials

Readers who wish to learn more about the Kernel Toolkit software should consult the following:

- *Kernel Toolkit Release Notes*
- *Kernel Toolkit Installation Guide*
- *Kernel Systems Management Guide*
- *Kernel Developer's Guide*
- *Kernel Technical Manual*
- *Kernel Security Tools Manual*
- Kernel Website:

  http://vista.med.va.gov/kernel/index.asp

This site contains other information and provides links to additional documentation.

⚠️ NOTE: This site contains additional information and documentation.

VistA documentation is made available online in Microsoft Word format and in Adobe Acrobat Portable Document Format (PDF). The PDF documents must be read using the Adobe Acrobat Reader, which is freely distributed by Adobe Systems Incorporated at the following Website:

http://www.adobe.com/

VistA documentation can be downloaded from the VHA Software Document Library (VDL) Website:

http://www.va.gov/vdl/

VistA documentation and software can also be downloaded from the Product Support (PS) anonymous directories:

- Preferred Method download.vista.med.va.gov

This method transmits the files from the first available FTP server.

- Albany OIFO ftp.fo-albany.med.va.gov
- Hines OIFO ftp.fo-hines.med.va.gov
- Salt Lake City OIFO ftp.fo-slc.med.va.gov
DISCLAIMER: The appearance of external hyperlink references in this manual does not constitute endorsement by the Department of Veterans Affairs (VA) of this Website or the information, products, or services contained therein. The VA does not exercise any editorial control over the information you may find at these locations. Such links are provided and are consistent with the stated purpose of this VA Intranet Service.
1. User Manual—Parameter Tools

This is the User Manual section of this supplemental documentation for the Parameter Tools software (i.e., Kernel Toolkit Patch XT*7.3*26).

The intended audience for this chapter is the Information Resource Management (IRM) at a local site. However, it can also be helpful to application developers of Veterans Health Information Systems and Technology Architecture (VistA) software and others in VA Office of Information & Technology (OI&T), and Product Support (PS).

Introduction

This supplemental documentation is intended for use in conjunction with the Parameter Tools patch (XT*7.3*26). This documentation explains the functions available with the use of the Parameter Tools and describes the APIs that are part of the patch. It combines information from the patch description and two Integration Agreements (IAs): 2263 and 2336, as well as providing additional explanatory material and a generic example to illustrate the use of the Parameter Tools.

In brief, the Parameter Tools patch provides a method of managing the definition, assignment, and retrieval of parameters for VistA software applications.

VistA software applications are designed to be used in a variety of ways. Many aspects of hospital activity vary from one hospital to another and thus there are many possible ways software applications can be used that also vary from one institution to another. Each site has its own requirements—its own settings for each software application. IRM staff must modify the software parameters to fit their requirements.

Previously, each software application had its own files and options but no two software applications had the site parameters set up the same way or found in the same place. Thus, when a new software application was released, each site would have to look for the location where the settings were stored for that software. Next, they would have to look to see what settings were available and how to set them. Very little about the parameters was uniform from software to software.

With the Computerized Patient Record System (CPRS) software, the idea was born that a parameter file could be created to export with the software. The CPRS parameter file and parameter utility were subsequently modified to create a generic method of exporting and installing other VistA software applications. Most developers were willing to abandon previous methods and use this tool for software they were developing.

Parameter Tools was designed as a method of managing the definition, assignment, and retrieval of parameters for VistA software. A parameter may be defined for various levels at which you want to allow the parameter described (e.g., software level, system level, division level, location level, user level).


**Background**

Whenever you have an entity with many attributes that apply to it, you can do either of the following:

1. Make one big relation to represent that entity.
2. Create a "binary" relation to represent the entity. In the latter case, the relation consists of two columns (thus the term binary), one representing the attribute and the other representing the value for that attribute. So each tuple (i.e., a data type/data object containing two or more components) of the relation represents a single attribute and its associated value.

**NOTE:** This works only when the individual attributes are independent observations (have no dependencies on anything other than the key that identifies the entity). Such a relation tends to look a lot like a Windows INI file.

Most of the VistA parameter files were very long lists of independent values that pertained to a single entity. In most cases, this entity was the site or system on which the software was running [similar to an INI file]. In other cases, however, the parameter files had multiples that made things more complex. These multiples generally allow parameters to be defined at levels more specific than the site (e.g., by divisions or hospital location). It seems best to accommodate this by using both an entity identifier and parameter together to name any given value. This yields a relation with a compound key:

Entity | Parameter = Value

Finally, it seems that multiple-valued parameters (e.g., collection times) occur often enough that it is worthwhile to add a field to identify the parameter instance. So the relation becomes:

Entity | Parameter | Instance = Value

This is the relation that the PARAMETERS file (#8989.5) is intended to represent.

Software parameter files frequently maintain parameters that apply to the site, a division, or a location. In addition, many parameters that apply to individual users are kept in the NEW PERSON file (#200). Also, many parameter values are hard-coded in individual software routines for the case when the site has not set up a value for a given parameter. Entity, then, is implemented as a variable pointer.

A given parameter may occur for a variety of entities. In fact, we frequently need to obtain the value of a parameter by following an entity "chain." For example, the Add Orders menu a CPRS user sees may be defined at various levels. Initially, a site generally creates a custom Add Orders menu. Later, hospital locations may each build a custom menu that more specifically meets their needs. Individual users may also have their own Add Orders menus. If no site configuration has been done, the Add Orders menu exported with OE/RR is used. So, when OE/RR needs to display an Add Orders menu, a chain is followed that looks first to see if the user has their own menu. Next, the current location is checked, followed by the site. Finally, if no values exist, the software default menu is used.

In the PARAMETER DEFINITION file (#8989.51), a multiple lists which entities are valid with a given parameter. These entities are also assigned a precedence, so that it is possible to write functions that will "chain" through entities until a value is found, using the proper sequence.
Description

Patch XT*7.3*26 contains a developer toolset that allows creation of software parameters in a central location. Integration Agreements (IAs) 2263 and 2336 define the supported entry points for this application. Kernel Patch XU*8.0*201 allows KIDS to transport the parameters.

Parameter Tools is a generic method of handling parameter definition, assignment, and retrieval. A parameter can be defined for various entities where an entity is the level at which you want to allow the parameter defined (e.g., software level, system level, division level, location level, user level, etc.). A developer can then determine in which order the values assigned to given entities are interpreted.

Definitions

The following are some basic definitions used by Parameter Tools.

Entity

An entity is a level at which you can define a parameter. The entities allowed are stored in the PARAMETER ENTITY file (#8989.518). Kernel Toolkit patches maintain entries in this file. The list of allowable entries is as follows:

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Message</th>
<th>Points To File</th>
</tr>
</thead>
<tbody>
<tr>
<td>PKG</td>
<td>Package</td>
<td>PACKAGE (#9.4)</td>
</tr>
<tr>
<td>SYS</td>
<td>System</td>
<td>DOMAIN (#4.2)</td>
</tr>
<tr>
<td>DIV</td>
<td>Division</td>
<td>INSTITUTION (#4)</td>
</tr>
<tr>
<td>SRV</td>
<td>Service</td>
<td>SERVICE/SECTION (#49)</td>
</tr>
<tr>
<td>LOC</td>
<td>Location</td>
<td>HOSPITAL LOCATION (#44)</td>
</tr>
<tr>
<td>TEA</td>
<td>Team</td>
<td>TEAM (#404.51)</td>
</tr>
<tr>
<td>CLS</td>
<td>Class</td>
<td>USR CLASS (#8930)</td>
</tr>
<tr>
<td>USR</td>
<td>User</td>
<td>NEW PERSON (#200)</td>
</tr>
<tr>
<td>BED</td>
<td>Room-Bed</td>
<td>ROOM-BED (#405.4)</td>
</tr>
<tr>
<td>OTL</td>
<td>Team (OE/RR)</td>
<td>OE/RR LIST (#100.21)</td>
</tr>
<tr>
<td>DEV</td>
<td>Device</td>
<td>DEVICE (#3.5)</td>
</tr>
</tbody>
</table>

Package (PKG), as an entity, allows the software defaults to be handled the same way as other parameters rather than hard-coded.

System (SYS), Division (DIV), Location (LOC), and User (USR) are frequent entries in existing software parameter files (or additions to the NEW PERSON file [#200]).
Service (SRV), Team (TEA), and Class (CLS) are referenced frequently by parameters that pertain to Notifications.

The process of exporting software using this kind of parameters file involves sending:

- Parameter definitions that belong to the software (entries in the PARAMETER DEFINITION file [#8989.51]).
- Actual parameter instances that point to the software (entries in the PARAMETERS file [#8989.5] that have an entity that matches the software).

All the other entries in the PARAMETERS file (#8989.5 (those that correspond to entities other than package [PKG]) would never be exported, as they are only valid for the system on which they reside.

**Parameter**

A parameter is the actual name under which values are stored. The name of the parameter must be namespaced and it must be unique and start with two uppercase characters. Parameters can be defined to store the typical software parameter data (e.g., the default add order screen in OE/RR), but they can also be used to store graphical user interface (GUI) application screen settings a user has selected (e.g., font or window width). With each parameter, a more readable display name can also be defined. When a parameter is defined, the entities that may set that parameter are also defined. The definition of parameters is stored in the PARAMETER DEFINITION file (#8989.51).

**Instance**

An instance is a unique value assigned to an entity/parameter combination. For most parameters, there will only be one instance, that is, instance does not apply and is simply set to "1".

However, a parameter can be multi-valued—it can have more than one instance. More than one value can be assigned to the parameter as it relates to a specific entity. For example, lab collection times at a division. For a single entity (division in this case), multiple collection times may exist. Each collection time would be assigned a unique instance.

A parameter is not considered multi-valued if it can apply to several entities, but for each entity only one value of the parameter exists. For example, "maximum days for a lab order" can be set for every location in the hospital. However, since there is only one value for each location, "maximum days for a lab order" is not multi-valued.
When a parameter that is multi-valued is defined, the instance can be defined as any of the following:

- Numeric
- Date/Time
- Pointer
- Set Of Codes
- Free Text
- Yes/No

The validating logic for an instance is defined the same way as for a value.

Value

A value can be assigned to every parameter for the entities allowed in the parameter definition. Values are stored in the PARAMETERS file (#8989.5). Fields in the PARAMETERS file (#8989.5) map to DIR fields. DIR is used to validate the data. Values can be any of the following:

- Numeric
- Date/Time
- Pointer
- Set Of Codes
- Free Text
- Yes/No
- Word-processing Type

Parameter Template

A Parameter template is similar to an Input template. It contains a list of parameters that can be entered through an input session (e.g., an option). Templates are stored in the PARAMETER TEMPLATE file (#8989.52). Entries in this file must also be namespaced.

There are two Input templates for adding parameter definitions:

<table>
<thead>
<tr>
<th>Template</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>XPAR SINGLE VALUED CREATE</td>
<td>For adding/editing parameters that will be single valued</td>
</tr>
<tr>
<td>XPAR MULTI VALUED CREATE</td>
<td>For adding/editing parameters that will be multiple valued</td>
</tr>
</tbody>
</table>
Why Would You Use Parameter Tools?

The reason a developer would use Parameter Tools is to allow a hierarchical designation of a parameter value. Thus, rather than many parameters that exist now, which are just for the system level or just for a particular clinic, Parameter Tools allows you to define:

- Different levels at which the parameter can be set.
- In what priority the values are used.

Take, for example, setting up a default order menu for a person. Each facility may have a default order menu for their primary care clinicians. Each division may have one that is slightly different if their practices vary enough. For each location, they may set up a different order menu so that users working in a cardiology clinic get a different set of possible orders than those in a dermatology clinic. And there may be reasons to give one specific person a different order menu because they are authorized to prescribe additional medications, because they tend to practice in a different flow, or for other reasons. It's one parameter, but it allows the parameter to be set for multiple entities (at multiple levels). Those entities are defined in the IA, but can include package (PKG, which only developers should set—these are default export values), system (SYS, whole medical facility), division (DIV), location (LOC), room-bed (BED), team (TEA), provider, etc.

The PARAMETER DEFINITION file (#8989.51) defines what entities are allowed to be used for a parameter and in which order they are resolved (individual takes precedence over location takes precedence over division takes precedence over system which takes precedence over package). Sometimes you would want to create defaults for your medical center, but allow users in a certain area to customize what they see and do for their particular role.

XPAR finds the appropriate value based on the parameter definitions and settings that may exist. This way, the developer does not need to look at multiple different location or person files to determine how the software should operate.

With integrations, this is even more important because it allows facilities to integrate; however, at the same time, continue some business practices based on parameters set at the division level rather than at the system level.

Example

The following is a simple example of a way you might use the Parameter Tools. Suppose you needed a parameter that could be set as a default for the system (account) and also overridden for a given user. Previously, you had to add a field to a software site file (e.g., the KERNEL SYSTEM PARAMETERS file [#8989.3]) and then add a similar field to the NEW PERSON file (#200). This situation is a perfect use of the Parameter Tools.
1. You need the equivalent to a data dictionary (DD) entry. Figure 1-1 goes into the PARAMETER DEFINITION file (#8989.51). In this case we need a Yes/No Set of Codes. So, this is what you set up:

**Figure 1-1. Setting up the PARAMETER DEFINITION file (#8989.51)**

<table>
<thead>
<tr>
<th>Name: XUS-XUP VPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY TEXT: Drop into VPE</td>
</tr>
<tr>
<td>MULTIPLE VALUED: n &lt;Enter&gt; No</td>
</tr>
<tr>
<td>VALUE DATA TYPE: y &lt;Enter&gt; yes/no</td>
</tr>
<tr>
<td>VALUE HELP: Should XUP drop the user into the VPE environment?</td>
</tr>
<tr>
<td>Description...</td>
</tr>
<tr>
<td>PRECEDENCE: 1 ENTITY FILE: USER</td>
</tr>
<tr>
<td>PRECEDENCE: 2 ENTITY FILE: SYSTEM</td>
</tr>
</tbody>
</table>

**NOTE:** Figure 1-1 only shows the fields with the data necessary to set up the PARAMETER DEFINITION file (#8989.51).

Figure 1-1 lists the order that values are looked for and/or returned. You want a USER value (File #200) if there is one; otherwise a SYSTEM value (File #4.2). It also gives the entities that are allowed to have values of this data. In the place of SYSTEM, you could have used PACKAGE.

2. You can use ^XPAREDIT to enter a value for your new parameter:

**Figure 1-2. Use ^XPAREDIT to enter a value for your new parameter**

```
>D ^XPAREDIT
--- Edit Parameter Values ---
Select PARAMETER DEFINITION NAME: XUS-XUP VPE <Enter>  Drop into VPE
XUS-XUP VPE may be set for the following:
  1   User          USR    [choose from NEW PERSON]
  2   System        SYS    [NXT.KERNEL.ISC-SF.VA.GOV]
```

Enter selection: 2 <Enter>  System   NXT.KERNEL.ISC-SF.VA.GOV

```
----- Setting XUS-XUP VPE for System: NXT.KERNEL.ISC-SF.VA.GOV ---------
Value: NO
...
```

3. How do you get this value out in your VistA application?

**Figure 1-3. Get the value of your new parameter for your VistA application**

```bash
>S X=$$GET^XPAR("USR^SYS","XUS-XUP VPE",1,"Q") ;X will be null, 0 or 1.
```
For the first parameter, you want a value from USR (user / New Person) or SYS (system)
Next, this is the name of the parameter: "**XUS-XUP VPE**"

Next, in this example you only allow one instance (optional, Defaults to 1 if not passed in).

Last, the format to return: Use "Q" to get the internal value.

Adding the parameter template with VA FileMan, Figure 1-4:

---

**Figure 1-4. Adding a sample parameter template**

Select PARAMETER DEFINITION NAME: XUS-XUP VPE  <Enter>  Drop into VPE

NAME: XUS-XUP VPE  <Enter>
DISPLAY TEXT: Drop into VPE  <Enter>
MULTIPLE VALUED: No  <Enter>
INSTANCE TERM: <Enter>
VALUE TERM: <Enter>
PROHIBIT EDITING: <Enter>
VALUE DATA TYPE: yes/no  <Enter>
VALUE DOMAIN: <Enter>
VALUE HELP: Should XUP drop the user into the VPE environment.
VALUE VALIDATION CODE: <Enter>
VALUE SCREEN CODE: <Enter>
INSTANCE DATA TYPE: <Enter>
INSTANCE DOMAIN: <Enter>
INSTANCE HELP: <Enter>
INSTANCE VALIDATION CODE: <Enter>
INSTANCE SCREEN CODE: <Enter>
DESCRIPTION:
1> This parameter controls if a user when exiting XUP is dropped into
2> VPE or right to the ">" prompt.
EDIT Option: <Enter>
Select PRECEDENCE: 2  <Enter>
PRECEDENCE: 2  <Enter>
ENTITY FILE: SYSTEM  <Enter>
Select PRECEDENCE: <Enter>
2. Programmer Manual—Parameter Tools

This is the Programmer Manual section of this supplemental documentation for the Parameter Tools software (i.e., Kernel Toolkit Patch XT*7.3*26).

The intended audience for this chapter is the application developers of VistA software. However, it can also be helpful to others in Information Resource Management (IRM), Product Support (PS), and Application Structure and Integration Services (ASIS).

Application Program Interfaces (APIs)—^XPAR Routine

The following is a list of APIs available in the ^XPAR routine.

### ADD^XPAR(): Add Parameter Value

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<thead>
<tr>
<th>Reference Type</th>
<th>Supported</th>
</tr>
</thead>
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<tr>
<td>Category</td>
<td>Toolkit—Parameter Tools</td>
</tr>
<tr>
<td>IA #</td>
<td>2263</td>
</tr>
<tr>
<td>Description</td>
<td>This API can be called to add a new parameter value as an entry to the PARAMETERS file (#8989.5) if the Entity/Parameter/Instance combination does not already exist.</td>
</tr>
</tbody>
</table>

**REF:** For descriptive information about the elements and how they are used in the callable entry points into XPAR, please refer to Chapter 1, "User Manual Information" in this manual.

<table>
<thead>
<tr>
<th>Format</th>
<th>ADD^XPAR(entity,parameter[,instance],value[,,.error])</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input/Output Parameters</td>
<td>For the definition of the input and output parameters used in this API, please refer to the EN^XPAR(): Add, Change, Delete Parameters API.</td>
</tr>
</tbody>
</table>

**Example:**

```
>D ADD^XPAR("PKG.KERNEL","XPAR TEST FREE TEXT",,"Today Good",.ERROR)
```
CHG^XPAR(): Change Parameter Value

Reference Type  Supported
Category  Toolkit—Parameter Tools
IA #  2263
Description  This API can be called to change the value assigned to an existing parameter if the Entity/Parameter/Instance combination already exists.

REF: For descriptive information about the elements and how they are used in the callable entry points into XPAR, please refer to Chapter 1, "User Manual Information" in this manual.

Format  CHG^XPAR(entity,parameter[,instance],value[,error])
Input/Output Parameters  For the definition of the input and output parameters used in this API, please refer to the EN^XPAR(): Add, Change, Delete Parameters API.

Example

>D CHG^XPAR("PKG.KERNEL","XPAR TEST FREE TEXT","Tomorrow Hot",.ERROR)

DEL^XPAR(): Delete Parameter Value

Reference Type  Supported
Category  Toolkit—Parameter Tools
IA #  2263
Description  This API can be called to delete an existing parameter instance if the value assigned is "@".

REF: For descriptive information about the elements and how they are used in the callable entry points into XPAR, please refer to Chapter 1, "User Manual Information" in this manual.

Format  DEL^XPAR(entity,parameter[,instance][,.error])
Input/Output Parameters  For the definition of the input and output parameters used in this API, please refer to the EN^XPAR(): Add, Change, Delete Parameters API.
Example

>DELPAR("PKG.KERNEL","XPAR TEST FREE TEXT",), .ERROR) I ERROR>0 W !.ERROR
EN^ XPAR(): Add, Change, Delete Parameters

**Reference Type**  
Supported

**Category**  
Toolkit—Parameter Tools

**IA #**  
2263

**Description**  
This API performs any one of the following functions:

- Adds the value as a new entry to the PARAMETERS file (#8989.5) if the Entity|Parameter|Instance combination does not already exist.
- Changes the value assigned to the parameter in the PARAMETERS file (#8989.5) if the Entity|Parameter|Instance combination already exists.
- Deletes the parameter instance in the PARAMETERS file (#8989.5) if the value assigned is "@".

**Format**  
EN^ XPAR(entity, parameter[,instance], value[, .error])

**Input Parameters**

**entity**:  
(required) Entity can be set to the following:

- Internal variable pointer (nnn;GLO(123,)
- External format of the variable pointer using the three-character prefix (prefix.entryname)
- Prefix alone to set the parameter based on the current entity selected. This works for the following entities:
  - "USR"—Uses current value of DUZ.
  - "DIV"—Uses current value of DUZ(2).
  - "SYS"—Uses system (domain).
  - "PKG"—Uses the package to which the parameter belongs.

**parameter**:  
(required) Can be passed in external or internal format. Identifies the name or internal entry number (IEN) of the parameter as defined in the PARAMETER DEFINITION file (#8989.51).

**instance**:  
(optional) Defaults to 1 if not passed. Can be passed in external or internal format. Internal format requires that the value be preceded by the grave accent (’) character.

**value**:  
(required) Can be passed in external or internal format. If using internal format for a pointer type parameter, the value must be preceded by the accent grave (`) character.

If the value is being assigned to a word-processing parameter, the text can be passed in the subordinate nodes of Value (e.g., Value(1,0)=Text) and the variable "Value" itself can be
Output Parameter .error: (optional) If used, *must* be passed in by reference. It returns any error condition that may occur:

- 0 (Zero)—If no error occurs.
- "#\text{errortext}”—If an error does occur.

The "#" is the number in the VA FileMan DIALOG file (#.84) and the "errortext" describes the error.

Example

```
>D EN\^XPAR("SYS","XPAR TEST FREE TEXT",0,"Good times",.ERROR)
>D EN\^XPAR("SYS","XPAR TEST FREE TEXT",1,"to night",.ERROR)
```

**ENVAL\^XPAR(): Return All Parameter Instances**

**Reference Type** Supported

**Category** Toolkit—Parameter Tools

**IA #** 2263

**Description** This API can be called to return all parameter instances.

![image](https://via.placeholder.com/150)

**REF:** For descriptive information about the elements and how they are used in the callable entry points into XPAR, please refer to Chapter 1, "User Manual Information" in this manual.

**Format** 

```
ENVAL\^XPAR(.list,parameter,instance[,,.error][,.gbl])
```

**Input/Output Parameter**

- **.list** (required) If the gbl parameter is set to 1, then the .list parameter becomes an input and holds the closed root of a global where the GETLST\^XPAR(): Return All Instances of a Parameter API should put the output. For example:
  
  ```
  $NA(^\text{TMP}(^J,"XPAR"))
  ```

**Input Parameters**

- **parameter:** (required) For a description of this parameter, please refer to the EN\^XPAR(): Add, Change, Delete Parameters API.

- **instance:** (required) For a description of this parameter, please refer to the EN\^XPAR(): Add, Change, Delete Parameters API.

- **gbl:** (optional) If this optional parameter is set to 1, then the parameter ".list" *must* be set before the call to the closed global root where the return data should be put. For example:
S LIST=$NA(^TMP($J))
ENVAL^XPAR(LIST,par,inst,.error,1)

If this optional variable is set to 1. Then the parameter List must be set before the call to the closed global root where the return data should be put. For example:

GETLIST^XPAR($NA(^TMP($J)),ent,par,fmt,.error,1)

**Output**

Parameter .error: (optional) For a description of this parameter, please refer to the EN^XPAR(): Add, Change, Delete Parameters API.
$$GET^XPAR(): Return an Instance of a Parameter

Reference Type: Supported

Category: Toolkit—Parameter Tools

IA #: 2263

Description: This extrinsic function retrieves the value of a parameter. The value is returned from this call in the format defined by the input parameter named "format."

REF: For descriptive information about the elements and how they are used in the callable entry points into XPAR, please refer to Chapter 1, "User Manual Information" in this manual.

Format: $$GET^XPAR(entity,parameter,instance,format)

Input Parameters:

- entity: (required) Entity is defined as the single entity or group of entities you want to look at in order to retrieve the value. Entities may be passed in internal or external format (e.g., LOC.PULMONARY or LOC."57 or 57;SC(). The list of entities in this variable may be defined as follows:
  - A single entity to look at (e.g., LOC.PULMONARY).
  - The word "ALL" which will tell the utility to look for values assigned to the parameter using the entity precedence defined in the PARAMETER DEFINITION file (#8989.51).
  - A list of entities you want to search (e.g., "USR^LOC^SYS^PKG"). The list is searched from left to right with the first value found returned.

  Items 2 or 3 with specific entity values referenced such as:
  - ALL^LOC.PULMONARY—To look at the defined entity precedence, but when looking at location, only look at the PULMONARY location.
  - USR^LOC.PULMONARY^SYS^PKG—To look for values for all current user, PULMONARY location, system, or package).

- parameter: (required) For a description of this parameter, please refer to the EN^XPAR(): Add, Change, Delete Parameters API.

- instance: (required) For a description of this parameter, please refer to the EN^XPAR(): Add, Change, Delete Parameters API.

- format: (required) Format determines how the value is returned. It can be set to the following:
- "I" - Internal, returns internal value.
- "Q" - returns the value in the quickest manner - internal format.
- "E" - returns external value.
- "B" - returns internal\external value.
## GETLST^XPAR(): Return All Instances of a Parameter

<table>
<thead>
<tr>
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<th>Supported</th>
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<tbody>
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<tr>
<td>IA #</td>
<td>2263</td>
</tr>
<tr>
<td>Description</td>
<td>This API is similar to the ENVAL^XPAR(): Return All Parameter Instances API; however, it returns all instances of a parameter.</td>
</tr>
</tbody>
</table>

**REF:** For descriptive information about the elements and how they are used in the callable entry points into XPAR, please refer to Chapter 1, "User Manual Information" in this manual.

### Format

GETLST^XPAR(.list,entity,parameter,format[,,.error][,.gbl])

### Input/Output Parameter

**.list:** (required) The array passed as List will be returned with all of the possible values assigned to the parameter.

**REF:** To see how this data can be returned, please refer to the "format" parameter description below.

If the gbl parameter is set to 1, then the .list parameter becomes an input and holds the closed root of a global where the GETLST^XPAR(): Return All Instances of a Parameter API should put the output [i.e., $NA(^TMP($J,"XPAR"))].

### Input Parameters

**entity:** (required) For a description of this parameter, please refer to the EN^XPAR(): Add, Change, Delete Parameters API.

**parameter:** (required) For a description of this parameter, please refer to the EN^XPAR(): Add, Change, Delete Parameters API.

**instance:** (required) For a description of this parameter, please refer to the EN^XPAR(): Add, Change, Delete Parameters API.

**format:** (required) For a description of this parameter, please refer to the $$GET^XPAR(): Return an Instance of a Parameter API.

**gbl:** (optional) If this optional variable is set to 1. Then the parameter ".list" must be set before the call to the closed global root where the return data should be put. For example:

GETLST^XPAR($NA(^TMP($J)),ent,par,fmt,.error,1)

### Output Parameter

**.error:** (optional) For a description of this parameter, please refer to the EN^XPAR(): Add, Change, Delete Parameters API.
Example:

```plaintext
>DLST^XPAR(.LIST,"SYS","XPAR TEST MULTI FREE TEXT",,.ERROR)
```

**GETWP^XPAR(): Return Word-processing Text**

**Reference Type**  
Supported

**Category**  
Toolkit—Parameter Tools

**IA #**  
2263

**Description**  
This API returns word-processing text in the returnedtext parameter. The returnedtext parameter itself contains the value field, which is free text that may contain a title, description, etc. The word-processing text is returned in returnedtext(#,0).

**REF:** For descriptive information about the elements and how they are used in the callable entry points into XPAR, please refer to Chapter 1, "User Manual Information" in this manual.

**Format**  
GETWP^XPAR(returnedtext,entity,parameter[,instance][,.error])

**Input/Output Parameter**

- **.returnedtext** (required) This parameter is defined as the name of an array in which you want the text returned. The .returnedtext parameter is set to the title, description, etc. The actual word-processing text will be returned in returnedtext(#,0). For example:
  ```plaintext
  >returnedtext="Select Notes Help"
  >returnedtext(1,0)="To select a progress note from the list, "
  >returnedtext(2,0)="click on the date/title of the note."
  ```

**Input Parameters**

- **entity:** (required) For a description of this parameter, please refer to the EN^XPAR(): Add, Change, Delete Parameters API.
- **parameter:** (required) For a description of this parameter, please refer to the EN^XPAR(): Add, Change, Delete Parameters API.
- **instance:** (optional) For a description of this parameter, please refer to the EN^XPAR(): Add, Change, Delete Parameters API.

**Output Parameter**

- **.error** (optional) For a description of this parameter, please refer to the EN^XPAR(): Add, Change, Delete Parameters API.

Example:

```plaintext
>DL WP^XPAR(.X,"PKG","ORW HELP","lstNotes",.ERROR)
```
NDEL^XPAR(): Delete All Instances of a Parameter

Reference Type Supported
Category Toolkit—Parameter Tools
IA # 2263
Description This API can be called to delete the value for all instances of a parameter for a
given entity.

REF: For descriptive information about the elements and how they are used
in the callable entry points into XPAR, please refer to Chapter 1, "User

Format NDEL^XPAR(entity,parameter[,error])
Input/Output Parameters For the definition of the input and output parameters used in this API, please refer
to the EN^XPAR(): Add, Change, Delete Parameters API.

Example

>D NDEL^XPAR("SYS","XPAR TEST MULTI FREE TEXT",.ERROR)

PUT^XPAR(): Add/Update Parameter Instance

Reference Type Supported
Category Toolkit—Parameter Tools
IA # 2263
Description This API can be called to add or update a parameter instance and bypass the input
transforms.

REF: For descriptive information about the elements and how they are used
in the callable entry points into XPAR, please refer to Chapter 1, "User

Format PUT^XPAR(entity,parameter[,instance],value[,error])
Input/Output Parameters For the definition of the input and output parameters used in this API, please refer
to the EN^XPAR(): Add, Change, Delete Parameters API.
Example:

```
> D PUT^XPAR("SYS","XPAR TEST MULTI FREE TEXT",0,"Good times",.ERROR)
```

**REP^XPAR(): Replace Instance Value**

**Reference Type**  
Supported

**Category**  
Toolkit—Parameter Tools

**IA #**  
2263

**Description**  
This API can be called to replace the value of an instance with another value.

**REF:** For descriptive information about the elements and how they are used in the callable entry points into XPAR, please refer to Chapter 1, "User Manual Information" in this manual.

**Format**  
```
REP^XPAR(entity,parameter,currentinstance,newinstance[,,.error])
```

**Input Parameters**

- **entity:** (required) For a description of this parameter, please refer to the EN^XPAR(): Add, Change, Delete Parameters API.

- **parameter:** (required) For a description of this parameter, please refer to the EN^XPAR(): Add, Change, Delete Parameters API.

- **currentinstance:** (required) The instance for which the value is currently defined.

- **newinstance:** (required) The instance to which you want to assign the value that is currently assigned to currentinstance.

**Output Parameter**

- **.error:** (optional) For a description of this parameter, please refer to the EN^XPAR(): Add, Change, Delete Parameters API.
Application Program Interfaces (APIs)—^XPAREDIT Routine

The following is a list of APIs available in the ^XPAREDIT routine. The calls are supported for use with the Parameter Tools and are part of the Parameter Tools component of Kernel Toolkit. These calls contain some additional utilities for editing parameters and are covered by IA #2336. (See IA #2263 for the main XPAR entry points to this module.)

BLDLST^XPAREDIT(): Return All Entities of a Parameter

Reference Type  Supported
Category          Toolkit—Parameter Tools
IA #              2336
Description      This API returns in the array "list" all entities allowed for the input parameter named "parameter."
Format           BDLST^XPAREDIT(.list,parameter)
Input Parameters
               .list: (required) Name of array to receive output.
               parameter: (required) Internal Entry Number (IEN) of entry in the
                                        PARAMETER DEFINITION file (#8989.51).
Output Parameter
               .list: The array passed as "list" is returned with all of the possible
                       values assigned to the parameter.
                       Data is returned in the list(ent,inst)=val format.

EDIT^XPAREDIT(): Edit Instance and Value of a Parameter

Reference Type  Supported
Category          Toolkit—Parameter Tools
IA #              2336
Description      This API interactively edits the instance (if multiple instances are allowed) and the
                       value for a parameter associated with a given entity.
Format           EDIT^XPAREDIT(entity,parameter)

Make sure to perform the following steps before calling this API:

• NEW all variables.
• Set all input variables.
• Call the API.

If you do not follow these steps, the variables could unintentionally assume the values of the variables of the current running task.

**Input Parameters**
- **entity**: (required) Identifies the specific entity for which a parameter may be edited. The entity *must* be in variable pointer format.
- **parameter**: (required) Identifies the parameter that should be edited. Parameter should contain two pieces:

  IEN^DisplayNameOfParameter

**Output Parameters**
- **.LIST**: The array passed as "list" is returned with all of the possible values assigned to the parameter.

  **REF**: For a description of this parameter, please refer to the "format" parameter in the ENVAL^XPAR(): Return All Parameter Instances API.

- **.error**: (optional) For a description of this parameter, please refer to the EN^XPAR(): Add, Change, Delete Parameters API.

---

**EDITPAR^XPAREDIT(): Edit Single Parameter**

**Reference Type**
- Supported

**Category**
- Toolkit—Parameter Tools

**IA #**
- 2336

**Description**
- This API is used to edit a single parameter.

**Format**
- EDITPAR^XPAREDIT(parameter)

**Input Parameter**
- **parameter**: (required) For a description of this parameter, please refer to the EN^XPAR(): Add, Change, Delete Parameters API.

**Output**
- Returns requested parameter.
EN^XPAREDIT(): Parameter Edit Prompt

Reference Type Supported
Category Toolkit—Parameter Tools
IA # 2336
Description This API is called to prompt the user for a parameter to edit. This is provided as a tool for developers and is not intended for exported calls as it allows editing of any parameter.

Format EN^XPAREDIT
Input Parameter none
Output none

GETENT^XPAREDIT(): Prompt for Entity Based on Parameter

Reference Type Supported
Category Toolkit—Parameter Tools
IA # 2336
Description This API interactively prompts for an entity, based on the definition of a parameter.

Format GETENT^XPAREDIT(.entity,.parameter[,.onlyone?])
Output .entity (required) Returns the selected entity in variable pointer format.
Input Parameter parameter: (required) Specifies the parameter for which an entity should be selected. Parameter should contain two pieces:
   IEN^DisplayNameOfParameter
Output Parameter onlyone? (optional) Returns "1" if there is only one possible entity for the value. For example:
   • 1—If the parameter can only be set for the system, onlyone?
   • 0—If the parameter could be set for any location, onlyone?
GETPAR^XPAREDIT(): Select Parameter Definition File

Reference Type  Supported
Category        Toolkit—Parameter Tools
IA #            2336
Description     This API allows the user to select the PARAMETER DEFINITION file
                (#8989.51) entry.
Format          GETPAR^XPAREDIT(.variable)

Make sure to perform the following steps before calling this API:

- NEW all variables.
- Set all input variables.
- Call the API.

If you do not follow these steps, the variables could unintentionally assume the values of the variables
of the current running task.

Input Parameter .variable: (required) The name of the variable where data is
                returned.

Output Variable .OUTPUTVALU: Returns the value Y in standard DIC lookup format.
TED^XPAREDIT(): Edit Template Parameters (No Dash Dividers)

Reference Type  Supported

Category  Toolkit—Parameter Tools

IA #  2336

Description  This API allows editing of parameters defined in a template. The parameters in the template are prompted in VA FileMan style—prompt by prompt. No dashed line dividers are displayed between each parameter.

Since the dashed line headers are suppressed, it is important to define the VALUE TERM for each parameter in the template, as this is what is used to prompt for the value.

Format  TED^XPAREDIT(template[,reviewflags][,allentities])

Input Parameters  

template:  (required) The Internal Entry Number (IEN) or NAME of an entry in the PARAMETER TEMPLATE file (#8989.52).

reviewflags:  (optional) There are two flags (A and B) that can be used individually, together, or not at all:

- A—Indicates that the new values for the parameters in the template are displayed after the prompting is done.
- B—Indicates that the current values of the parameters are displayed before editing.

allentities:  (optional) This is a variable pointer that should be used as the entity for all parameters in the template. If left blank, prompting for the entity is done as defined in the PARAMETER TEMPLATE file (#8989.52).
TEDH^XPAREDIT(): Edit Template Parameters (With Dash Dividers)

Reference Type  Supported
Category         Toolkit—Parameter Tools
IA #             2336

Description     This API is similar to the TED^XPAREDIT(): Edit Template Parameters (No Dash Dividers) API except that the dashed line headers are shown between each parameter.
                 
                 It allows editing of parameters defined in a template. The parameters in the template are prompted in VA FileMan style—prompt by prompt.

Format          TEDH^XPAREDIT(template[,reviewflags][,allentities])

Input Parameters

- template (required) For a description of this parameter, please refer to the TED^XPAREDIT(): Edit Template Parameters (No Dash Dividers) API.
- reviewflags (optional) For a description of this parameter, please refer to the TED^XPAREDIT(): Edit Template Parameters (No Dash Dividers) API.
- allentities (optional) For a description of this parameter, please refer to the TED^XPAREDIT(): Edit Template Parameters (No Dash Dividers) API.

Output          none
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