



**Config@WEB RTU Firmware Update Instructions  
SAGE RTU with C3414 CPU  
V 2.7**

<b>Rev.</b>	<b>Date</b>	<b>By</b>	<b>Comment</b>
0.0	17-Jul-2003	DGM	Created for A7 release.
0.1	30-Jul-2003	DGM	Revised for A8 release.
0.2	09-Sep-2003	DGM	Revised for A9 release.
0.3	11-Dec-2003	DGM	Revised for AA release.
0.4	19-Dec-2003	DGM	Revised to instruction the user to first archive the XML and to now enter Username and Password at the login screen.
0.5	02-Sep-2004	DGM	Revised to load GUI first to get good FTP Active X control.
0.6	22-Feb-2005	DGM	Revised for B0 release.
0.7	28-Mar-2005	DGM	Added Appendix A, Conversion Tool Overview, updated text font to Telvent standards.
0.8	20-Jul-2005	DGM	Revised for C1 release.
0.9	02-Sep-2005	DGM	Revised for C2 release.
1.0	20-Oct-2005	DGM	Revised for C3 release.
2.0	28-May-2008	BG	Revised for CD release
2.1	15-Oct-2009	KAB	Revised to first download and convert configuration before starting new uploads.
2.3	19-Nov-2010	KAB	Revised to make specific to C3414 CPU.
2.4	25-Jan-2011	KAB	Revised for G0 release. Make remove block in program which allows for a choice between CPUs
2.5	21-Nov-2012	DJS	Add webcli information, Revise for G3_P4 release.
2.6	16-Jul-2013	DJS	Note about C3413 in intro and S2200, C3413 & C3414 in step 11 for configuration source. Change name from Telvent to Schneider Electric.
2.7	17-Jul-2013	DJS	Log on again after refresh of Up/Download Page

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**WARNING:** Although the Configuration Converter program will work with any configuration from S2200-500-001A5 through S2200-500-001B6 firmware, all C3413-500-001YZ firmware, and older versions of C3414-500-001YZ firmware, the output is designed to be used on the following RTUs only: SAGE 2400, SAGE 3030M, SAGE 1410, SAGE 1430, SAGE 1450 and LANDAC II.

**Note:** You cannot convert a configuration from a newer version of firmware to an older version of firmware.

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## Overview

See the Appendix for an overview and quick instructions for the experienced user.

## Description of Firmware Numbering System

The files required to update an RTU's firmware are located in a zip file.

The file name is based on the firmware numbering system. The zip file is named either:

“C3414-500-XXXYZ\_Update\_Files.zip” for a release.

“C3414-500-XXXYZ\_PN\_Update\_Files.zip” for a patch to the release.

The XXX field in the file name is the firmware number. Baseline firmware is number “001” while special firmware for a customer will have a number other than “001”.

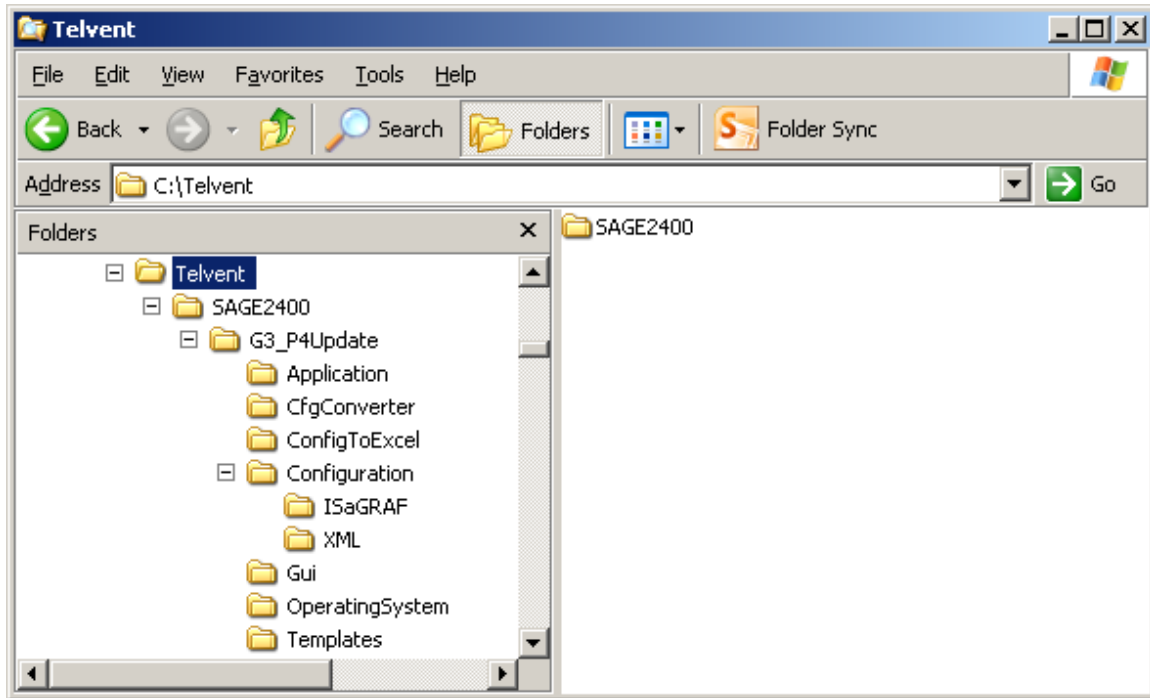
The Y field is the version number which started at E and will change by one letter for a new base release (XXXY0 release). Version C3414-500-001G0 firmware will be newer than C3414-500-001F0 or any patch of version of C3414-500-001F0 firmware. A version number change occurs when any major function is added to the baseline firmware.

The Z field is the step of the version which starts at 0 and increases by 1 for new release until a new version number release is done. The firmware named C3414-500-001F2 is newer than C3414-500-001F1 firmware. A change in any of the configuration (XML) files used by the RTU forces a new step number to be created.

If a patch release is done, N is the patch number. C3414-500-001F0\_P2 firmware is newer than C3414-500-001F0\_P1 firmware. Patches use the same version configuration as the base version number release. Changes to the Application or the GUI force a new patch.

## Description of Zip File, Folders and Types

When you extract a firmware update zip file, you will have a file structure as shown below regardless of where you extract the set.



The **Telvent** folder serves as the root of the update set.

The **SAGE2400** folder is used as the base folder for the update set. The update set can be used on any of the supported products, not just the SAGE 2400.

The **G3\_P4Update** (or **G3Release** for non-patched versions) folder contains the rest of the folders associated with this set of firmware, in this case, C3414-500-001G3\_P4.

The **GUI** is a compressed file containing a series of HTML (HyperText Markup Language) and other files that are used to give the RTU the graphical user interface that appears in Internet Explorer. This file must always be loaded after the Operating System into an RTU whenever the firmware is updated or restored. There is a single file in the GUI folder, the compressed GUI file with a name of the firmware release number with an extension of ".gui".

The **Application** is the actual firmware that runs the RTU. This is a binary file and has the name of the firmware release number with an extension of ".out". There is one file in the Application folder. This file is loaded after the Operating System and the GUI when updating or restoring the firmware set.

The **Configuration** folder contains the following two folders, XML and Template described below.

The **XML** folder holds a series of XML (extensible markup language) files that contain all the port, hardware, and other configurations of the RTU. Whenever you configure an RTU and wish to save the configuration for future reference, these are the files you would “Get from RTU”. Before a firmware update you should “Get” these files and store them in a known location to use with the configuration conversion program. During an update to a new revision of firmware you will need to run these configuration files through the Convert\_to\_nn program to ensure compatibility with the new Application and GUI files. The number of files varies from version number to version number, but all files have an extension of “.xml” and should never be 0 bytes in length. You can view these files in Internet Explorer by launching the file with Windows Explorer. If Internet Explorer presents any type of error, the content of the file is invalid and will not be usable by the RTU firmware.

The **Template** files are XML files that are created in the RTU that are used as a basis for common configuration parameters. The latest Convert\_to\_nn program includes an option to also convert template files. The Template(s) must be run through the conversion program separately from the configuration. This folder may contain only a “templ.txt” file or if you have created templates, files with the extension “.xml”. The template files can be viewed as a configuration file above.

The **Operating System** folder contains programs that manage the firmware running in the RTU. The VxWorks operating system (“vxworks”) and web server (“webcli”) are contained in this folder. The Operating system is loaded first when updating or restoring the firmware set.

The **CfgConverter** folder contains the conversion converter program that will take an existing configuration that is loaded onto the PC from the RTU and update it to run with the version of firmware that matches the name of the converter program. It may have to add tags to existing configuration files or add completely new files to the configuration to match the new firmware set. Existing configuration files may be run through the converter program multiple times. This document is also contained in the folder (this document).

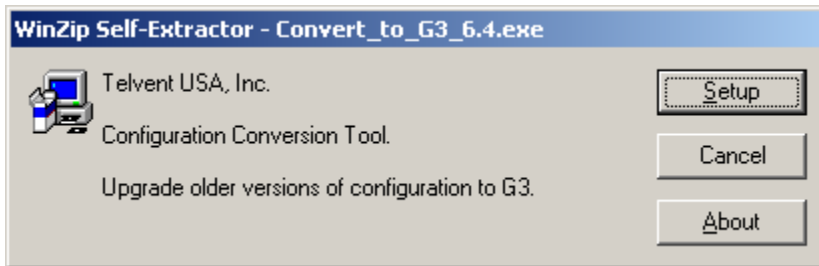
The **ConfigToExcel** folder contains two files, the Excel macro to convert the XML file configuration to an Excel spreadsheet and the documentation file that contains the directions on how to perform this task.

## Step by Step Instructions:

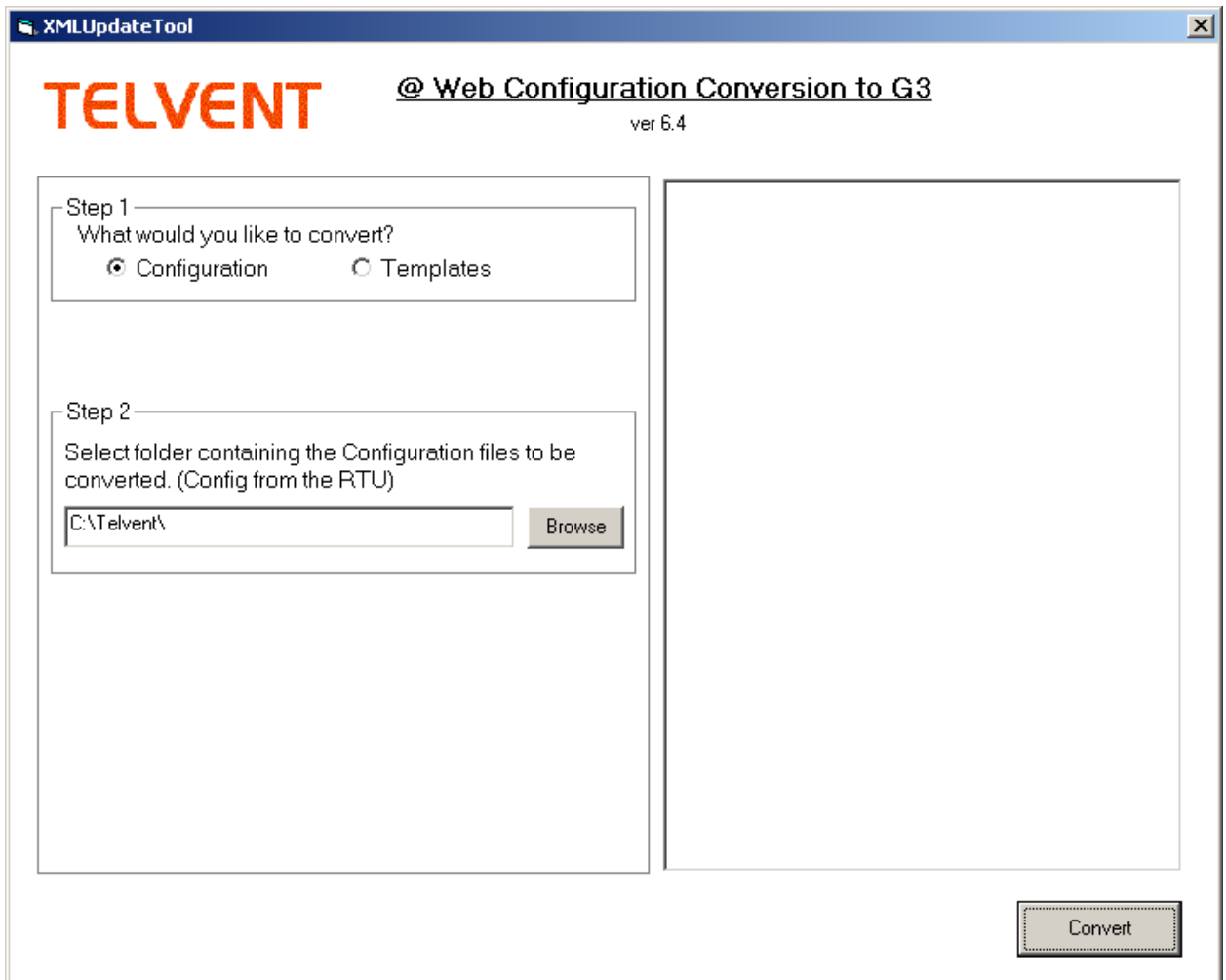
Note that the files may be “unzipped” anywhere by the user, but the following instructions assume the file is unzipped into the C:\ folder and that the firmware to be installed is a patch.

1. Unzip (extract) all files into root (C:\) directory. Ensure to select "Use folder names", this will create a path as follows: C:\Telvent\SAGE2400\YZUpdate, where “Y” is the version of update and Z is the step. A patch will create a path of the form C:\Telvent\SAGE2400\YZ\_PNUpdate.
2. Connect the RTU to PC via cross-over Ethernet cable or via in-house LAN connection (whichever is appropriate for RTU Ethernet connectivity)
3. Open Internet Explorer and type in the IP address of the RTU in the “Address” window.
4. When the RTU Logon screen appears, enter user name, password and click “Log In”, then click the “Up/Download” tab on RTU user interface. Connect using the “Connection” box parameters if required. Older sets of firmware may not have the “Connection” box.
5. Select “Configuration” from the drop-down combo box labeled “File Type” on the RTU user interface.
6. Click on “Get” button. For this step allow the RTU to send the file to the default path it comes up with, which will be:  
C:\Telvent\rtutype\rtuname\Configuration, where rtutype is the RTU model and where rtuname is whatever the RTU is named in the CPU configuration screen. If a pop-up window appears that reads "ISaGRAF Configuration, Operation Cancelled", just click "OK". **Make a backup copy of this configuration directory for archival purposes.**
7. If the RTU does not have templates to be converted, ignore the rest of this step. Otherwise select “Templates” from the drop-down combo box labeled “File Type” on the RTU user interface. Then Click on “Get” button. For this step allow the RTU to send the file to the default path it comes up with, which will be: C:\Telvent\SAGE2400\rtuname\Templates, where rtuname is whatever the RTU is named in the CPU configuration screen. **Make a backup copy of this templates directory for archival purposes.**
8. Run the RTU configuration conversion tool. The tool is in the folder:  
C:\Telvent\SAGE2400\YZUpdate\CfgConverter. This step will allow the user to merge an existing configuration (RTU firmware revision A5 or greater) with the latest XML released configuration format. NOTE: The result of the conversion will over-write your old configuration files with the new updated configuration files.

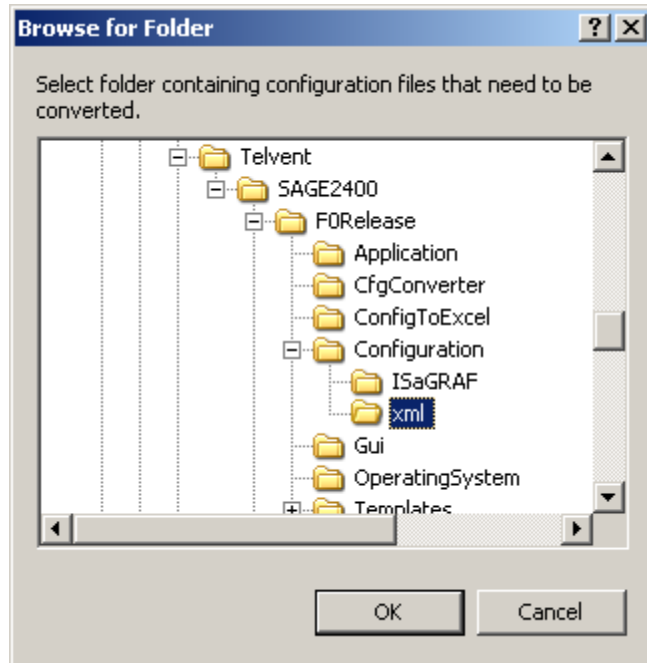
9. The first window to appear will be the following splash screen: Click Setup to continue to the next screen, shown below.



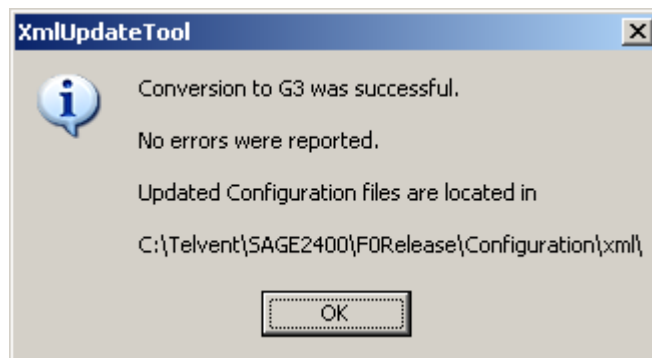
10. In Step 1 of the XML Update Tool (see below), select whether you want to convert Configuration files or Template files (you can come back and do the other when you finish with either type).



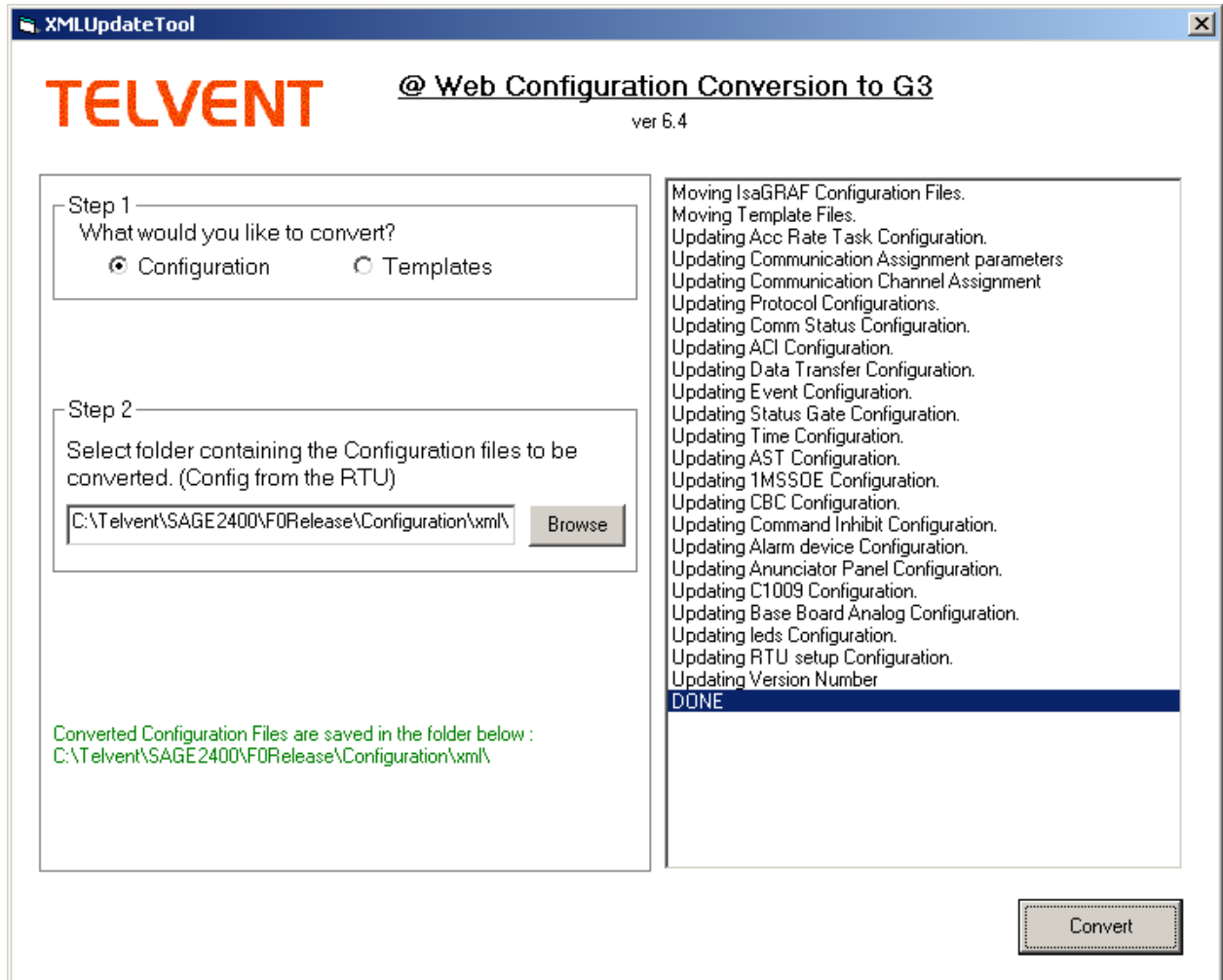
11. In Step 2 of the XML Update Tool, type in the path, C:\Telvent\SAGE2400\YZ\_PNUpdate\Configuration\xml or browse to the 'xml' folder, for the old configuration files, as shown above (may be from S2200, C3413 or C3414 firmware as noted in the introduction to this document). The conversion program automatically creates a backup copy of the old configuration files.



12. To convert files, click the convert button. An example result is shown below.







13. Use steps 10 through 12 to convert the Templates if necessary.

14. Once the conversion is DONE, you are ready to load the update into the RTU.

If the time taken to convert the configuration exceeds the timeout of the session on the RTU, you will have to log in again. This will be indicated by having the log in screen on the GUI instead of the Up/Download page. If the RTU log in page is displayed, enter the user name, the password and click "Log In", then click the "Up/Download" tab. If the "Connection" box is displayed, fill in the parameters in the box and log in.

15. Select "Operating System" from the drop-down combo box labeled "File Type" on the RTU user interface.

16. Click on "Send" button. You will get a pop-up file navigation screen. Navigate to C:\Telvent\SAGE2400\YZUpdate\OperatingSystem.

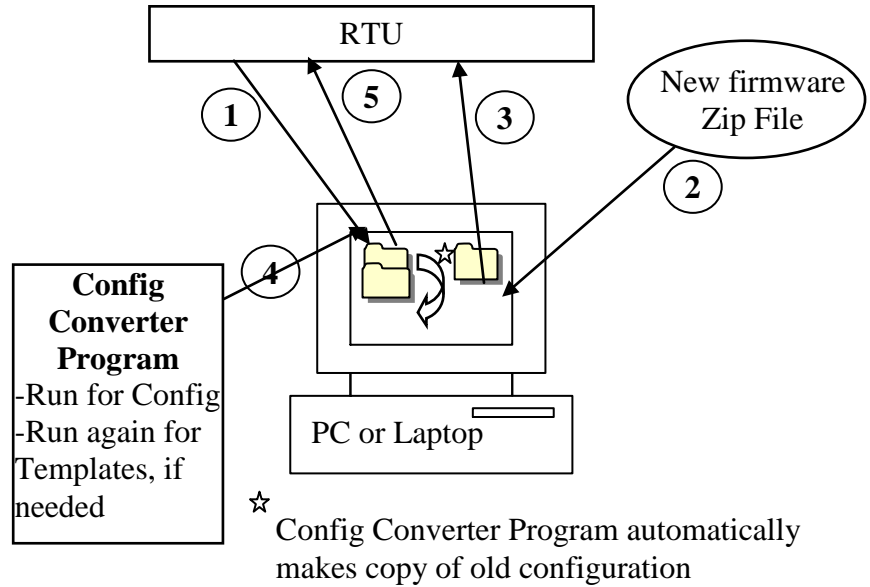
17. You will see a “vxworks” file. Select this file. Click on “Open”.
18. A dialogue box will pop up asking if you want to over-write the existing vxworks file. Click “OK”. The vxworks may take several seconds to send to the RTU.
19. Next, select “GUI” from the drop-down combo box labeled “File Type” on the RTU user interface.
20. Click on “Send” button. You will get a pop-up file navigation screen. Navigate to C:\Telvent\SAGE2400\YZUpdate\GUI.
21. You will see a “C3414-500-XXXYZ.gui” file. Select this file. Click on “Open”.
22. A dialogue box will pop up asking if you want to over-write the existing GUI files. Click “OK”. The GUI is the largest portion of the RTU update and may therefore take several minutes.
23. When the “Result” window shows “OK”, refresh the Up/Download page by pressing the F5 key. This loads the new FTP control. It also forces a log out of the current user of the Up/Download page. Reconnect using the “Connection” box parameters if they are displayed.
24. Select “Application” from the drop-down combo box labeled “File Type” on the GUI.
25. Click on “Send” button. You will get a pop-up file navigation screen. Navigate to “C:\Telvent\SAGE2400\YZUpdate\Application\C3414-500-XXXYZ.out”.
26. Click on that file to highlight it and click on “Open”.
27. A dialogue box will pop up asking if you want to over-write the existing application. Click “OK”. The transfer should take under 30 seconds.
28. Now use the "Up/Download" feature to 'Send' the converted configuration back to the RTU. Note: The directory to be selected should be the default one containing the current RTU configuration files that were originally downloaded from the RTU in step 7. This directory now contains the modified files after the conversion.
29. Ensure “Configuration” is visible on drop-down combo box labeled “File Type” on RTU user interface.

30. Click on “Send” button. You will get a pop-up file navigation screen. Navigate to C:\Telvent\SAGE2400\rtuname\Configuration\xml, where rtuname is whatever the RTU is named in the CPU configuration screen.
31. Click on “Open”.
32. A dialogue box will pop up asking if you want to replace the existing xml files. Click “OK”.
33. Repeat steps 28 -31 for sending the “Template” file(s) if needed. Navigate to the appropriate directory in step 29 (i.e. Templates).
34. Press “Reset” button and confirm you wish to reset when the pop-up dialogue box asks. The RTU will reset in about 60 seconds.
35. The RTU is now updated with the newer firmware and should still be configured as it was before the update process.

## Appendix A

### Configuration Upgrade Quick Instructions

1. GET Config (and Templates) from RTU to PC
2. Unzip new firmware to PC
3. Run Config Converter program on items from step 1
4. SEND new firmware Operating System, GUI, Application, and Config (and Templates) to RTU



End of File