**CADSWES Maintenance Accomplishment Report Compilation -- January 2017**
Phil Weinstein, edit 2-17-2017.

**January 2017 Maintenance Highlights:**

1. RiverWare 7.0.2 Patch Release (1-25-2017)
2. RiverWare 7.0.3 Patch Release (1-31-2017)
3. Seventeen (17) completed bug fixes.
4. Simplification of the treatment of the SCT's "Default" font
5. Significant size reduction of generated image files
6. New RPL editor "Rename variable/argument" action
7. Ongoing: Monitoring and maintaining daily RiverWare regression tests.
8. Ongoing: Installation Process and Licensing development and administration.

Report contributors:

* Substantive content from: Phil, Patrick, David, Jessica.
* Bug fix items from: Phil (10), Patrick (4), Bill (1), David (1), Robynn (1).
* Indicated that they had no maintenance accomplishments to report this month: Mitch, Willard, Tim.

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| (II) RiverWare Software Maintenance1. Releases, Patches and Snapshots
2. Software Updates, Bug fixes (not associated with new development)
3. Development tool improvements; issue tracking software; modelcomp
4. Enhancements or changes to regression tests (not part of development tasks)
5. Download, Install and Release Processes
6. Updates to license software/procedures
7. Updates to download/install/configure user documentation
8. Modification to Web pages for downloads and installs
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### (II.A) Releases, Patches and Snapshots

The following releases were generated this month:

* RiverWare 7.0.2 Patch Release (1-25-2017)
* RiverWare 7.0.3 Patch Release (1-31-2017)

**RiverWare 7.0.2 (1-25-2017) Release Notes:**

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| **Reduced File Size of Generated Images**A significant reduction of the size of generated image files was applied to:* Image files generated for model reports.
* Image files created as part of the chart animation video generation.

In some cases, the file sizes were reduced by a factor of 30 without any impact on file quality.**Batch Mode RCL Command**The batch mode command InvokeDssDMI was generalized to set the DSS File path or F Part information outside of a CWMS run. The syntax is as follows: InvokeDssDMI <DMI name> !DssFile <DSS file> !DssFPart <DSS F part>* <DMI name> is the name of the DSS DMI to invoke. If the name contains embedded white space, it must be enclosed in braces.
* <DSS file> is the name of the DSS file. If the file name contains embedded white space, it must be enclosed in braces.
* <DSS F part> is the DSS F part. If the F part contains embedded white space, it must be enclosed in braces.

**Bugs**The following issues were addressed:* 5856: On the Table Slot dialog, column deletion created a blank column.
* 5867: An automatically generated post-optimization ruleset was invalid.
* 5871: In the SCT, the pre-run divider was incorrect after a run abort.
* 5877: In the SCT, removing a slot led to blank columns or rows.
* 5880: In the SCT, printing could include hidden rows/columns.
* 5884: The Object Account Summary was not showing columns correctly when accounts were removed from the list.
* 5885: The Muskingum Cunge, Muskingum Cunge Improved, and MacCormack reach routing methods were not initialized correctly.
* 5886: A crash could occur saving a model after deleting an object.
* 5890: A crash could occur when right-clicking in an empty Model Report layout.
* 5891: Deleting a column on a custom table slot on a simulation object deleted custom column labels.
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**RiverWare 7.0.3 (1-31-2017) Release Notes:**

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| **New Muskingum with Segments Reach Routing Method**A new routing method was added to the Reach object. The "Muskingum with Segments" method allows you to route using the standard Muskingum equation, Outflow = C0 Inflow (t) + C1 Inflow (t-1) + C2 Outflow (t-1), but further discretize the reach into sub-segments. Each segment uses the same routing parameters as specified in the Routing Parameters category. In addition, this method has fewer requirements for initial data than the original Muskingum method; if the initial Outflow is not known, it is set to the Inflow. Please contact us if you have questions on this method or would like the documentation.**Bugs**The following issues were addressed:* 5876: A crash could occur when loading a model with a DMI dialog open.
* 5899: A crash could occur within RPL editing when using the undo feature for certain expressions.
* 5900: Within Plotting, editing Marker settings incorrectly set the date of the Marker back one day.
* 5902: Plot Pages created from the Output Manager were not always saved to the model file.
* 5903: Within Scripts, the Set Table Slot Value Script Action was not correctly setting values with the DateTime unit type.
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### (II.B) Software Updates, Bug fixes (not associated with new development)

**The following bugs were fixed:**

1. Bug 5856: On the Table Slot dialog, column deletion created a blank column.
2. Bug 5867: Automatically generated post-optimization ruleset is invalid
3. Bug 5871: SCT pre-run divider is incorrect when run aborts.
4. Bug 5872: Turbine Release Extrapolation during Sim results in RBS interpolation error
5. Bug 5875: Removed access to old Plot Page editor
6. Bug 5876: Loading a model with a database DMI dialog open crashed
7. Bug 5877: SCT display issues when cutting (removing) a slot.
8. Bug 5880: Printed SCT has extra partial rows printed
9. Bug 5884: Object Account Summary was not showing columns correctly when accounts were removed.
10. Bug 5885: Muskingum Cunge routing did not correctly compute parameters.
11. Bug 5886: Crash saving a model after deleting an object
12. Bug 5890: Right click in empty Model Report layout causes crash.
13. Bug 5891: Deleting column on custom table slot loses column labels
14. Bug 5899: Crash when using Ctl-Z to undo in initialization rule
15. Bug 5900: RiverWare shifts marker X-position back 1 day when editing
16. Bug 5902: Plot Pages created in Output Manager not saved in model file
17. Bug 5903: Scripts, Set Table Slot Value Script Action not correctly setting values with DateTime unit type.

**Additionally, analysis was done on the following bugs:**

* 5901: Marker Label does not display unless a Line Style is selected.

**Simplification of the treatment of the SCT's "Default" font**:

The SCT configuration supports three font choices: "Default", "Font A", and "Font B". The latter two are user configurable fonts retained within the SCT configuration. The effective font used in the Default case had previously depended on the workspace font at the time the SCT was created. Now, in RiverWare 7.1, the Default font selection is the font currently in use in the Workspace; changes to the Workspace font are immediately propagated to the SCT. (The Workspace font is set from the Workspace menubar: Utilities >> Windows >> "Set Font...", and, as currently implemented, applies to only the current RiverWare session).

This change is described further in this document:

* [SCT Default Font Simplification in RiverWare 7.1](http://cadswes2.colorado.edu/~philw/2017/SCT/Fonts/SctDefaultFontRedesign-Jan2017.html)
R:\doc\sct\2017\Fonts\SctDefaultFontRedesign-Jan2017.docx
R:\doc\sct\2017\Fonts\SctDefaultFontRedesign-Jan2017.pdf

**Significant size reduction of generated image files:**

In the course of providing an option to generate RiverWare Model Report HTML files with all images embedded (see COE SWD 5, part C), it was discovered that the image files we were generating for model reports -- and also for frame images for the new chart animation video file generation feature -- were much larger than they needed to be (e.g. by a factor of 30). This often resulted in Model Report files (either with embedded images, or image files bundled with the HTML file) too large to attach to an e-mail message or convey in some other way. This has been fixed for images generated from RiverWare graphics (e.g. plots, charts, RPL code) in RiverWare 7.0.2 and 7.1 development.

For chart animation video file generation, this frame image file size reduction doesn't seem to reduce the size of the generated video file. But the size reduction should improve the performance of the video file generation process, as image files for every frame of the video needs to be written out to the hard disk; those image files are now significantly smaller than they had been.

Note: This optimization was not applied to Model Report Image items (originally created by loading an external image file) when generating Model Reports with external image files (rather than using the new "embedded" image capability). Instead of just recreating the image file with the captured image file data, the image file is regenerated using the old algorithm without compression. Such image files are still unnecessarily large -- larger than the original image file from which the Model Report Image item had been created. This could be addressed in the future.

**New RPL editor "Rename variable/argument" action**

CADSWES staff completed implementation of a new "Rename..." operation that provides an easy way to rename all occurrences of a variable or argument within a RPL editor. The "Rename…" operation is available in the right click context menu when the current RPL selection is a variable or argument name, whether that name is part of the declaration of that name or is a reference to the value associated with the name. Note that names can be appear within statements (FOR and WITH variables names), expressions (FOR and WITH variable names), and functions (argument names). When the new operation is invoked, RiverWare first presents a simple dialog that displays the number of occurrences of the name to be replaced and allows the user to type in the new name. Once the user has entered a new variable name and clicked the OK button, the old name is replaced with the new name throughout the scope of the name’s declaration.

Activities in January 2017 include: software refactoring, bug fixing, extension of functionality to function constraints, and simplification of the Rename dialog.

**CADSWES maintenance accomplishments during FY 2016** (October 2015 through September 2016) are described in this document:

* CADSWES FY 2016 Annual Maintenance Accomplishments
R:\doc\Accomplishments Reports\FY16\SoftwareMaintenanceSummaryFY16.docx
R:\doc\Accomplishments Reports\FY16\SoftwareMaintenanceSummaryFY16.pdf

### (II.C) Development tool improvements; issue tracking software; modelcomp

**General Development Systems Improvements**

CADSWES staff (Edie Zagona, Bill Oakley, Jim Pasquotto, Patrick Lynn) met with Orrie Gartner and Vasa Dasan of CU’s Office of Information Technology (OIT) to share with them a description of the software development activities at CADSWES and to discuss with them how OIT services might help support those activities. As a result of that meeting, CADSWES have begun exploring the option to move the internally hosted git repositories to the BitBucket Server hosting supported by OIT.

**Hardware maintenance**

The disk drive of a software development machine began to show signs of failure and CADSWES staff began the process of backing up and replacing the drive.

### (II.D) Enhancements or changes to regression tests (not part of development tasks)

The regression tests continue to be maintained on a daily basis. This involves updating the regression tests to exercise new developments in the code. Also, as new code is added to the development area, the model comparisons performed in the nightly regression tests usually show differences (for example, because a new method category may have been added). When this occurs, the regression tests need to be updated to reflect the current state of the development area so model comparisons do not fail. In addition, every week, the daily history of each regression test is analyzed to determine if the run time or model size has significantly changed because of new development.

In January 2017, the 32-bit builds on and regression tests stopped working because of configuration conflicts. These were fixed.

### (II.E) Download, Install and Release Processes

* Updated the year of copyrights from 2016 to 2017 in all of the InstallShield project files and in the RiverWare "About" Dialog.
* Started looking into Bug 5541: File association after install of 6.5 and 6.5.1.Unresolved.
* Working on Bug 5893: Uninstall leaves folder "servers" behind. Tested and reported the problem to Flexera and working with their support to resolve this. Based on the initial response from Flexera support, we have made the required changes to all of the Product/Upgrade/Package/component GUID codes in each project files in each release. In progress.

### (II.F) Updates to license software/procedures

* Maintaining RiverWare licenses for internal development systems. This is an ongoing task.

### (II.G) Updates to download/install/configure user documentation

None reported for January 2017.

### (II.H) Modification to Web pages for downloads and installs

None reported for January 2017.

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