Center for Advanced Decision Support for
Water and Environmental Systems (CADSWES)
UNIVERSITY OF COLORADO **BOULDER**

Documentation Overhaul

Presenter: David Neumann

2018 RiverWare User Group Meeting February 1-2, 2018

PDFs aren’t cutting it anymore

- Great for Print
- Hard to navigate and search
- Too many pages
- Time consuming to generate

Multi-format Help is the future

- Author once, publish to different formats
- HTML is nicer and easier to search
- Leads to context sensitive help

Sample

File Edit View History Bookmarks Tools Help

2.2 Rulebased Simulation Run Para

file:///R:/doc/Documentation/UpdatedDocu

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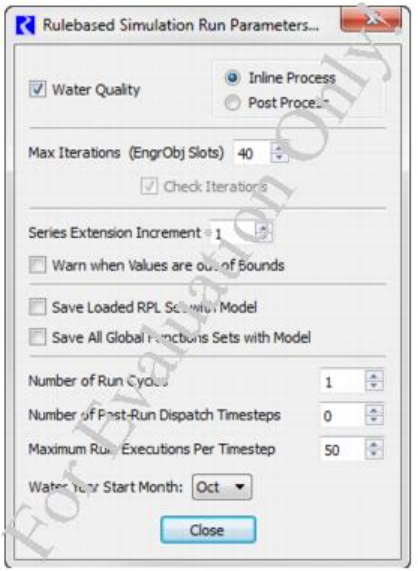
2.2 Rulebased Simulation Run Parameters

Water Quality

Water Quality calculations may be enabled and configured. This is described in the water quality documentation HERE (WaterQuality.pdf, Section 1.)



Max Iterations(EngrObj Slots)

Represents the maximum number of times a slot can be reset or recalculated on a given timestep.

Series Extension Increment

RiverWare allocates space for the entire run length of each series. If, during the run, timesteps beyond the run are given values, RiverWare has to extend the series and copy over all the existing values, because RiverWare requires that the series values be stored in contiguous memory. This is a time consuming operation, so it is in the users' interest to avoid this operation. Thus, this parameter allows the users to allocate a little extra space if they know that their models will be solving for timesteps beyond the end of the run. This is particularly important where reach routing causes timesteps beyond then end of the run to acquire values. For example, if a reach has a routing coefficient vector of 40 elements, the series extension increment should be at least 40. A second example is if the model solves into the future throughout a defined forecast period. Set the Series Extension Increment equal to the forecast period as that

Status

- Documentation experts are:
  - Standardizing documents
  - Creating templates
  - Designing Online Help System

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Software Development, Maintenance, Releases, Issue Tracking and Tech Transfer

Presenters: Edie Zagona

2018 RiverWare User Group Meeting February 1-2, 2018

5 Major RiverWare Activities at CADSWES

- Software development (R&D)
- Basin Specific modeling and sponsor support
- Software Maintenance and Releases
- Help Desk/ User Support
- Training/ Tech Transfer

Software Development (R&D)

Goal: deliver professional quality software applications that meet users' needs

R&D Team:, water resources engineers, operations research analyst, professional software developers

Support Team: software configuration management, hardware and software maintenance, licensing, releases

Process

- Requirements analysis and documentation
- High level design document/ Estimates
- Detailed designs for sponsor review
- Implementation and testing
- Pre-release or snapshots for testing
- Feedback from sponsors, further testing
- Final release, user documentation, regression tests

Funded typically by Sponsors, sometimes by others under contract agreements (all users have access to all development)

Basin Specific Modeling/Reviews

CADSWES focuses on R&D and Tech Transfer, but assists with applications when necessary (funded by users or sponsors under contracts or user support funds). Examples:

- Models that use new RiverWare software features/functionality
- Applications or special studies that benefit from expertise not yet developed in agencies or with consultants
- Model reviews, performance analysis

We encourage in-house expertise and use of consultants; this benefits all users and CADSWES

Software Maintenance and Releases

This work includes

- **Keeping the software upgraded** for new versions of compilers, operating systems, platforms and third-party software libraries

  (Qt (with WebKit), Qwt, CPLEX, Concert, GDAL/OGR, FlexLM, Reprise, Oracle, Tcl,netCDF, Google Protocol Buffers, QuaZIP, Java Runtime Environment)

- **Issue tracking and fixing**
  - Maintain issue tracking application (Gnats, per CGI Scripts)
  - Critical issues fixed immediately for next patch release
  - Non-critical issues deferred to next major release or later

- **Minor enhancements, refactoring, modernizing GUI**

- **Maintaining Development Environments**:

  Microsoft Visual Studio, Source control (Git and Git Extensions), Rational Purify and Quantify, DevPartner BoundsChecker, Regression tests, modelcomp

Software Maintenance and Releases

- **Releases**

  Major releases: RiverWare 7.2 – usually 2 per year

  Fully tested (after pre-release), updated online help and release notes

  Patch releases: RiverWare 7.2.1 – as needed

  Generated from last full release with fixes and minor enhancements, possible doc updates; Tested and verified (usually without a prerelease)

- **Installation and Licensing**

  Installshield updates, license software updates, issue licenses, maintain online payment web pages, maintain user databases, send quotes, invoices, renewal notices

- **Maintain download Web sites, upload ftp site, user support tracking tools**

Funded by sponsors and license fees
(by MOU agreement with CU, BOR, TVA, USACE)

Highlights of FY2017 Software Maintenance Tasks

- Two major RiverWare releases (7.0 and 7.1) and 13 patch releases (6.9.6, 6.9.7, 7.0.x, 7.1.1-7.1.3).
- Six snapshots of build development area for end-user testing
- Addressed and closed 228 bugs/issues
- The RiverWare Git revision control system was migrated to the CU hosted BitBucket cloud server.
- Work began to migrate the primary file server to a new Linux server hosted by OIT.
- RiverWare and RiverSMART were upgraded from Microsoft Visual Studio C++ VS 2010 to VS 2013.
- Software maintenance tasks include improving and refactoring existing code and adding new units.
- The port to Qt5 was completed.
- The RiverWare “About RiverWare” dialog was redesigned and enhanced.
- Significant reduction in size of generated image files.
- Standardized OK/Cancel/Apply button order on dialogs
- Continued improving optimization documentation
- Set up new activation key method of generating View licenses with new instructions.
- Implemented a new shared floating license feature and wrote a user configuration guide.

User Support

Provided to sponsors through contract support tasks and licensees through purchased support hours

All user support questions should be sent to:

riverware-support@colorado.edu

Multiple support staff receive email and most appropriate or available person can respond

Provides assistance for

- “How to” use the software to accomplish your modeling objectives
- Analyzing problems
- Interpreting results

Training

Standard 3-day Training offered whenever possible/needed

- Intro to Simulation
- Rulebased Simulation
- Accounting
- Optimization
- Overview: Broadly cover both Simulation and Rules

Dedicated Training

Online materials – to be increased as possible

Needs? Special topics?

Funded by attendee payments; covers time, materials, updates to training materials

Other Training Tools

- Video Demonstrations
  - Model Reports
  - RiverSMART
  - Notes on Series Slots
  - Database DMI Excel
  - Database DMI DSS
  - Smart Linker
  - Open Object Dialogs
  - Unit Schemes
- Informational Tutorials
  - Simulation
  - Rulebased Simulation
  - Multiple Run Management

http://www.riverware.org/PDF/RiverWare/documentation/

Upcoming Migration to new Bug/Issue Tracking SystemGnats:

Current: GNU (GNATS) System

- Used by CADSWES since 1994
- No longer well supported
- Attachments not supported
- Over 6000 issues stored in flat files
- Difficult to maintain

Product Evaluation

Mantis

IssueTrak

Manuscript

Atlassian JIRA Service Desk

Bugify

Gemini

DoneDone

NetResults

HelixIM

Zoho

Bugzilla

JIRA Service Desk

- Intuitive Customer Portal
- Large attachments
- Widely used
- Fully supported ☺
- Highly customizable
- Import prior issues

Benefits for CADSWES

- Issues linked with RiverWare source code
- Robust query language
- Bulk edits
- Customizable views – by user
- Extensive documentation
- Active user community

All these things save time.

Next Steps

- Format Gnats data for import
- Acquire and install
- Configure and import
- Notify you!