

“EVENT-DRIVEN” HYDROLOGIC SERVICE BACKUP UTILIZING THE WFO HYDROLOGIC FORECAST SYSTEM

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Introduction

The Weather Forecast Office (WFO) Hydrologic Forecast System (WHFS) provides an integrated suite of hydrologic software which is used by the Service Hydrologist to manage the WFO hydrology program. This suite also provides hydrologic tools which allows all WFO operational staff to more efficiently monitor current hydrologic conditions, as well as prepare daily river and hydrologic products, watches and warnings.

Though WHFS is robust enough to allow offices to monitor conditions in neighboring Hydrologic Service Areas (HSA), it lacks an efficient mechanism to initiate or cancel HSA backup operations at the WFO's discretion. This application provides a means which will allow the WFO to initiate and cancel HSA backup operations, on an event-driven basis.

This ATN will have you perform the following steps:

- Configure the Hydrologic Database to incorporate the backup forecast points into the Hydroview and Riverpro Applications.
- Edit the hydroBackup setup file and script for your own local site backup requirements.
- Create Riverpro template files for each backup assignment.
- Add a “Backup Operations” menu to Textdemo's root (right-mouse click) menu system.

Assumptions

- Ability to change Hydrobase parameters.
- Ability to edit templates in RiverPro.
- Ability to use a “unix” tar file and perform “unix” editing of files.
- Ability to ftp a file across the AWIPS firewall.

Procedure

This procedure section is divided into four portions. The first section addresses the WHFS modifications necessary to perform event-driven backup operations. The second section

addresses the installation of the unix script that enables the event-driven capability. The third section addresses testing of the unix script from the command line. The fourth section provides instructions to add a “Backup Operations” submenu to the text workstation’s right pulldown menu.

1. WHFS Configuration

a. Add backup points to WHFS

Ensure that WHFS has been configured to include all river forecast points for both primary and secondary backup office assignments. Support to obtain HSA backup points for WHFS is available, if necessary, from the WHFS Support Team (http://www.nws.noaa.gov/oh/hod_whfs/).

b. Assign values to each Flood Category

Using the Hydrobase application, assign the appropriate stage values to each backup river forecast point for each category of flooding. This will allow Riverpro to react properly to the flood status.

c. Create backup forecast group id and name

Using the Hydrobase application, create a forecast group id and name for each backup office assignment (see Setup menu, RiverPro Forecast Groups/Pt submenu). All forecast points for the given backup office should be assigned to this group. The authors recommend using the following naming convention **BKUPXXX** where xxx is the office identifier.

Example: If WFO OKX is an office to backup, the basin name would be: **BKUPOKX**

d. Assign these backup groups an order of 1

Using the Hydrobase application, assign these backup forecast groups an order of 1 (see Setup menu, RiverPro Forecast Groups/Pt submenu). This will place them near the top of the forecast point groupings in the Riverpro interface, there by making them easy to recognize and to toggle off when statements for the local office are being composed. Users can reorder all groups, leaving only the “BKUPxxx” forecast groups with an order of 1. This would ensure that they appear first forecast point groupings.

e. Modify the appropriate Riverpro template structures for the backup offices

Using Riverpro, if you have not already done so, develop the appropriate templates to support office backup. This will include:

- a. Header templates - which are specific for each backup office (ensure proper WMO headers for your backup offices).

- b. Tabular templates for river statements where appropriate.
- c. Roundup templates where appropriate.

Also, ensure that HSA backup products are properly contained in your AWIPS A2A (afos to awips) file.

f. Exit Riverpro.

2. Obtaining and configuring the backup script.

This section describes the retrieval of the hydroBackup.tar file from the ERH ftp server and the modification of two files which are used in event-driven hydrologic backup operations.

a. Open a telnet window and log in as user fxa

b. Change to the AWIPS workstation directory where you plan to install the script; /data/local/scripts is the suggested path.

c. External to AWIPS, download the tar file “hydroBackup.tar” from the AWIPS Local Applications web site: <http://isl715.nws.noaa.gov/LAD/index.php3>, and transfer/ftp the tar file to AWIPS using local methods.

d. Untar the file “hydroBackup.tar”.

```
tar -xvf "hydroBackup.tar"
```

There will be two files, "hydroBackup.sh" and "backupList.txt".

e. Edit the “backupList.txt” file.

This file contains the forecast points pertaining to each backup office assignment. Editing can be done using any available editor, including “vi”, dtpad, etc. The first line with the # is a comment which shows the proper format of the file. This line may be left in, but is not required!

Enter the office name, basin name and associated river forecast points for each of the assigned backup offices. This basin name must be the same as what was entered into Hydrobase in section A. An example is provided below:

```
# office id | basin name | list of gages |
OKX | BKUPOKX | YTCC3 BEAC3 BRXN6 YONN6 GRDN6 MAWN4 LODN4 |
CAR | BKUPCAR | EDDM1 WENM1 DOVM1 FTKM1 DICM1 WSHM1 |
GYX | BKUPGYX | RMFM1 AUBM1 NSTN3 DLTN3 WELV1 WLBN3 SKOM1 WTVM1 AUGM1 |
```

Note: There can be an unlimited number of gages, however they must all be on the same line. Do not use a line feed or carriage return to force the list to a second line. If you

have so many gages that the line is too long, then set up 2 groups for the same backup assignment. Example:

```
GYX | BKUPGYX |RMFM1 AUBM1 NSTN3 DLTN3 WELV1 WLBN3 SKOM1 WTVM1 AUGM1 |
GYX | BKUPGYX |BXM1 PLMN3 FRJN3 |
```

This ends the modifications to the “backupList.txt” file. Save your changes and close this file.

f. Edit the “hydroBackup.sh” script to set local paths.

Using any available editor, open the “hydroBackup.sh” shell script.

There are three script variables that may need modification for use of this script on your AWIPS system.

progPath=/data/local/scripts - This is the path to this program and the backupList.txt file.

dbName=hd1_2box - This is the hydro database name at WFO BOX; replace “box” with your 3-letter AWIPS id.

fileDir=/awips/hydroapps/whfs/local/data/app/riverpro/ - The path to the local hydroapps riverpro directory. This is where the riverpro template files are located.

3. Test “hydroBackup.sh” from a unix command line.

Once you have made the modification listed above, you are ready to test the script from the unix command line.

a. From a telnet window, as user fxa, run the script by typing:

```
/data/local/scripts/hydroBackup.sh arg1 arg2
```

where:

arg1 - The type of action to perform (init or cancel). “init” - initiates backup operations for the given office in WHFS. “cancel” - cancel backup operations for the given office.

arg2 - 3 letter id of the office for which backup operation will be performed.

Note: The arguments are case sensitive. Small letters should be used.

b. “init” process description

During the initiation (init) process, the script copies the xxxrvs.tmp, xxxfls.tmp, and

xxxflw.tmp files to .pcc files in awips/hydroapps/whfs/local/data/app/riverpro thereby allowing them to be presented in the Riverpro application. It also runs "dbaccess" with the appropriate SQL commands to add entries for the backup office forecast points to tables "rpfctpoint" and "stnclass". These changes allow the backup forecast points to be displayed in Hydroview and RiverPro.

The user can now bring up both the Riverpro and Hydroview applications. If the script has run properly, the user should see their local forecast points and backup office forecast points on the Hydroview Display from "Forecast Points" in the Control Display Menu. In Riverpro, the user should find the backup basins and corresponding forecast points under "Settings", "Select Forecast Points" menu.

c. "cancel" process description

During the cancellation (cancel) process, the script copies the xxxrvs.pcc, xxxfls.pcc, and xxxflw.pcc in the /awips/hydroapps/whfs/local/data/app/riverpro directory, to xxxrvs.tmp, xxxfls.tmp, and xxxflw.tmp, and deletes the .pcc files for these statement types. It also runs "dbaccess" with the appropriate SQL commands which removes entries for the backup office forecast points from tables "rpfctpoint" and "stnclass".

d. On the command line, cancel backup operations for your first backup office assignment.

For example, type: `/data/local/scripts/hydoBackup.sh cancel okx`

To verify proper script operations, you should note the following:

- 1) In /awips/hydroapps/whfs/local/data/app/riverpro directory, the xxxfls.pcc, xxxflw.pcc, xxxrvs.pcc files have been renamed xxxfls.tmp xxxflw.tmp, xxxrvs.tmp.
- 2) Open Riverpro, the backup offices (OKX) templates have been removed from the template listing.
- 3) Open Hydroview, the backup offices (OKX) forecast points are displayed as regular points vs. forecast points.
- 4) Exit Riverpro and Hydroview.

e. On the command line, initiate backup operations for your first backup office assignment.

For example, type: `/data/local/scripts/hydoBackup.sh init okx`

To verify proper script operations, you should note the following:

- 1) In /awips/hydroapps/whfs/local/data/app/riverpro directory, the xxxfls.tmp

xxxflw.tmp, xxxrvs.tmp files have been renamed xxxfls.pcc, xxxflw.pcc, xxxrvs.pcc

2) Open Riverpro, the backup offices (OKX) templates have been included in the template listing.

3) Open Hydroview, the backup offices (OKX) forecast points are displayed as forecast points.

4) Exit Riverpro and Hydroview.

f. This completes the command line testing required for one backup office. Repeat steps “d and e” for each backup assignment.

4. Add a “Backup operations” menu to the right pulldown on the text workstation.

a. Open a telnet window and log in as: fxa

b. For any text ws and using any available editor, open the dtwrc file in the /awips/fxa/textdemo/.dt/ directory.

c. Add appropriate menu structure. Example:

```
Menu Hydro
{
  "Hydrologic Applications Menu"  f.title
  no-label                       f.separator
  "HydroView"                    f.exec  "/awips/hydroapps/whfs/standard/bin/start_hv"
  "Riverpro "                    f.exec  "/awips/hydroapps/whfs/standard/bin/start_riverpro"
  "Hydro database manager"       f.exec  "/awips/hydroapps/whfs/standard/bin/start_hydrobase"
  no-label                       f.separator
  "Backup Operations"           f.menu "Backup"
}

Menu Backup
{
  "Hydro Backup Scripts"         f.title
  no-label                       f.separator
  "Initiate OKX backup"         f.exec  "hpterm -sb -e /data/local/scripts/hydroBackup.sh init okx"
  "Cancel OKX backup"          f.exec  "hpterm -sb -e /data/local/scripts/hydroBackup.sh cancel okx"
  "Initiate GYX backup"         f.exec  "hpterm -sb -e /data/local/scripts/hydroBackup.sh init gyx"
  "Cancel GYX backup"          f.exec  "hpterm -sb -e /data/local/scripts/hydroBackup.sh cancel gyx"
  "Initiate CAR backup"         f.exec  "hpterm -sb -e /data/local/scripts/hydroBackup.sh init car"
  "Cancel CAR backup"          f.exec  "hpterm -sb -e /data/local/scripts/hydroBackup.sh cancel car"
}
```

e. Save and close this file

f. On the same text ws, reload the root menu system (right mouse, .) Your menu changes made in step “c” above should be visible.

g. Try initiating and canceling backup for each office via the text workstations right menu.

h. Once satisfied that the menu's work correctly, copy the dtwmrc file to all other text workstations and reload the root menu system (step f) on these workstations.

```
rcp /awips/fxa/textdemo/.dt/dtwmrc ws#:/awips/fxa/textdemo/.dt
```

References

National Weather Service, 1999: WHFS - WFO Hydrologic Forecast System, Revision 2.2, Operational User's Guide and training Manual. National Weather Service Office of Hydrology, Silver Spring, MD.

