Reprocessing Guide for WES-2 Bridge
April 25, 2016

Prior Work: See Guide for Trimming AWIPS-2 Cases for WES-2 Bridge. Trimming cases prior to reprocessing will save lots of time later.

Hint: You can save time by reprocessing only the particular data types you need rather than the whole case (this depends on the reason to reprocess; sometimes you have no alternative but to reprocess the entire case).

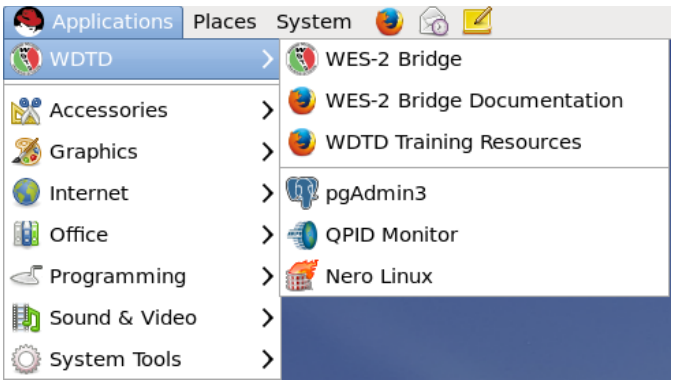
Other important background information: The document called "Complete Port Assignments for EDEX Instances" contains the port numbers required for a given instance. We always use EDEX_00 for reprocessing, and the rawPlay software uses the default port numbers for EDEX_00 for your convenience. Even so, the port numbers relevant to reprocessing data for EDEX_00 are repeated here for your convenience:

- edexHttpPort : 9581 ("E")
- jmsPort : 5672 ("P")
- qpidHttpPort : 8180 ("Q")
- qpidJmxPort : 8999 ("J")

Programs and their locations:

- rawPlay: `/w2b/util/rawPlay4.py`
- qpidMonitor: `/w2b/util/qpidmonitor/qpidmonitor.py`
- jconsole (packaged with Java as part of any system)

  qpidmonitor can be started using the entry in the WDTD group in the system's Application menu as shown below:



Setup or Verify the EDEX_00 Configuration:

If you will be reprocessing grib or grib2 data (especially for high-resolution models), ensure that EDEX_00 is localized for your AWIPS site ID. This ensures that CONUS grids are correctly subgridded for your particular WFO domain. Look at the AW_SITE_IDENTIFIER setting in /usr/local/edex-environment/EDEX_00/edex/bin/setup.env and change it to your AWIPS site ID, if necessary.

If your case contains many hours of METAR/obs data or if you will be reprocessing shef data, ensure that EDEX_00 is configured with your local hydro (WHFS) database. Follow the instructions in the guide entitled "Transferring Local Hydro Database to WES-2 Bridge".

Process for Reprocessing:

1. Use WES-2 Bridge to start up the EDEX_00 instance.

   ```
   cd /w2b/wes
   ./wes.sh
   ```

2. Verify the EDEX_00 instance is running (if this is the very first time for running this instance, it could take a long time for the EDEX database to completely initialize.

   To check out EDEX status:

   cd into EDEX logs location

   `cd /usr/local/edex-environment/EDEX_00/edex/logs` or

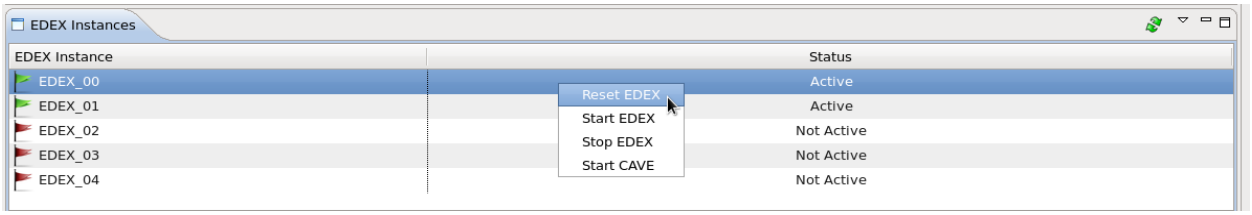
   tail appropriate logs

   `tail -f edex*YYYYMMDD*.log`
   `tail -f edex-ingest-YYYYMMDD.log edex-ingestGrib-YYYYMMDD.log`
   (and other datatype-specific logs)

   normal output: routes starting up and a message that says EDEX IS OPERATIONAL

   bad messages include "no connection to underlying database" or EDEX continually restarting

3. (Optional): Reset the EDEX_00 instance. If you have reprocessed a different case, you may want to reset the EDEX_00 instance to ensure the databases have been cleared of any extraneous data.



4. When EDEX is stable, run the rawPlay program. You need to give the appropriate switches: (below, the switches in green are required; the ones in blue are optional)

-r (root) = directory where data are located. This should be a directory that contains a lot of data type directories (it should look like /data_store on the operational AWIPS)

-x (edex) = switch that says actually send data to EDEX for processing

-d (data) = lists of datatypes to process (e.g., radar, grib, grib2, binlightning, sat) (-A feeds all datatypes rather than specifying each one individually).

-s (start) = starttime of when to start the feeding process (YYYYMMDD_HHMM)

-e (end) = endtime of when to stop feeding (YYYYMMDD_HHMM)

-v (verbose) = give verbose messages

-l (log) = make a log file in the directory you're running rawplay from.

-**p** (regular qpid port) = specify the JMS port noted above as "P"

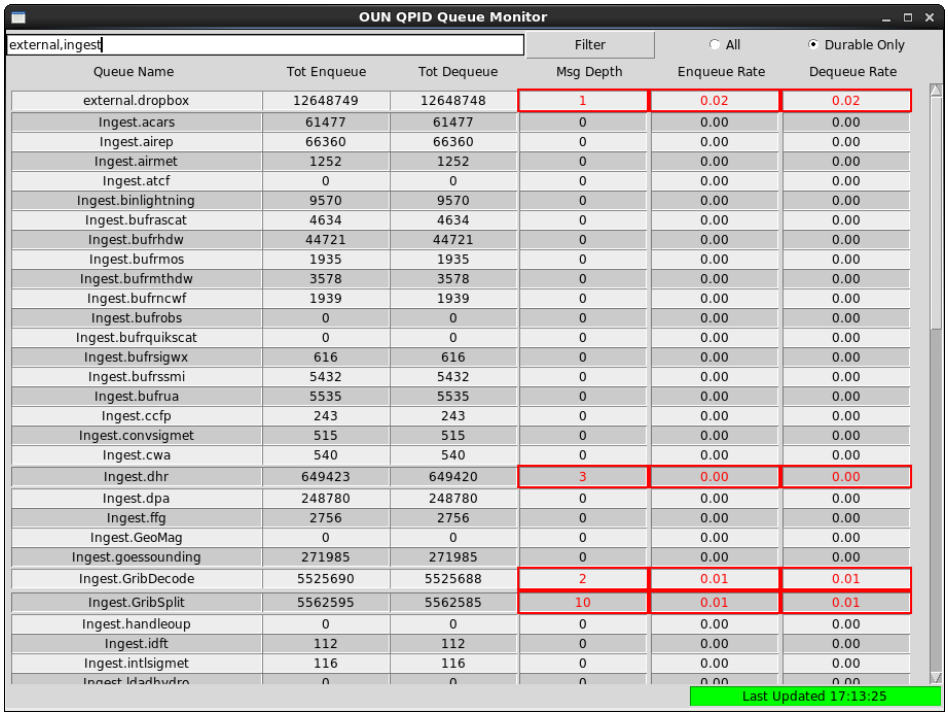
-q (qpid http port) = specify the QPID http port noted above as "Q"

5. Monitor the process using qpidmonitor. As shown above, you can start it from the system menu, but if you start it manually, it takes two switches:

-s for the **system** (host) you're connecting to. This could be localhost or wes2-xxx.

-p for the port to connect to. This is the same as the qpid http port (“Q”) above. The default value is 8180, so it works without specifying this parameter using EDEX_00 instance.

The filter line in the qpidmonitor GUI takes a regular expression. (Hint:use “ingest,external” or “ingest,external,generate”)



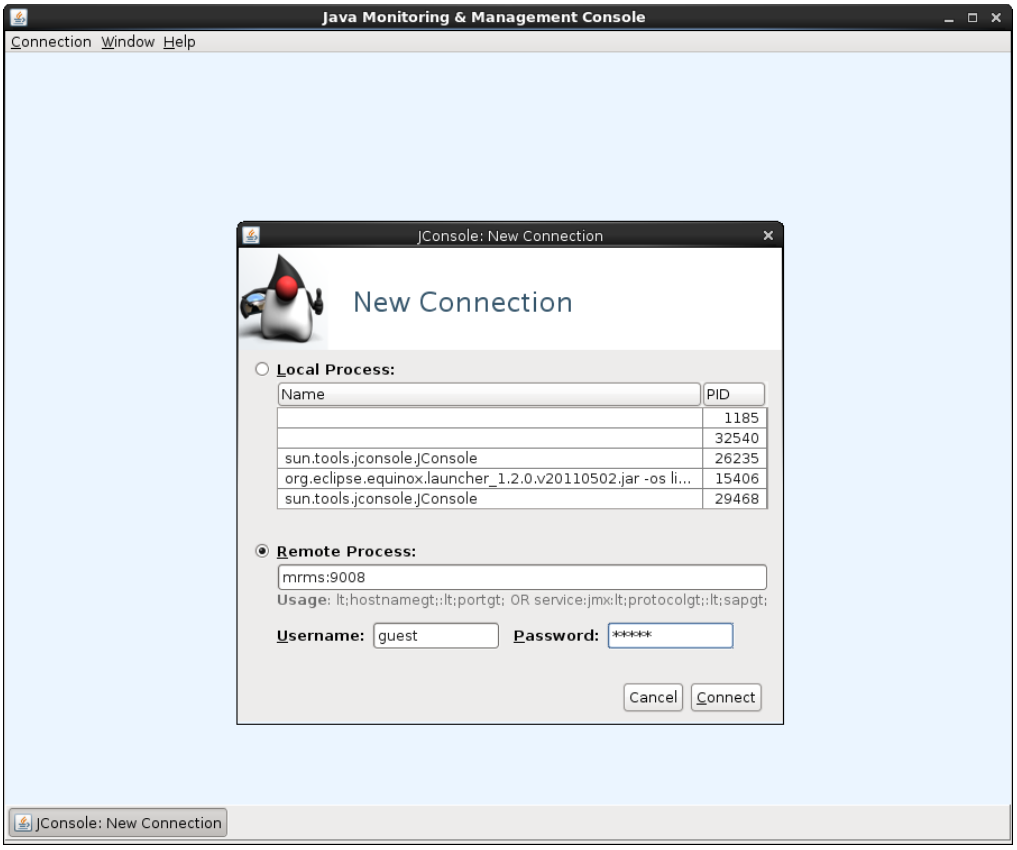
6. Monitoring and Clearing queues

If a qpid queue is backed up or you need to clear out all the queues to start over, there are two ways to do it:

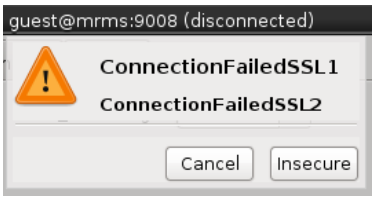
- Method 1: Use jconsole

At a terminal prompt, type `jconsole`

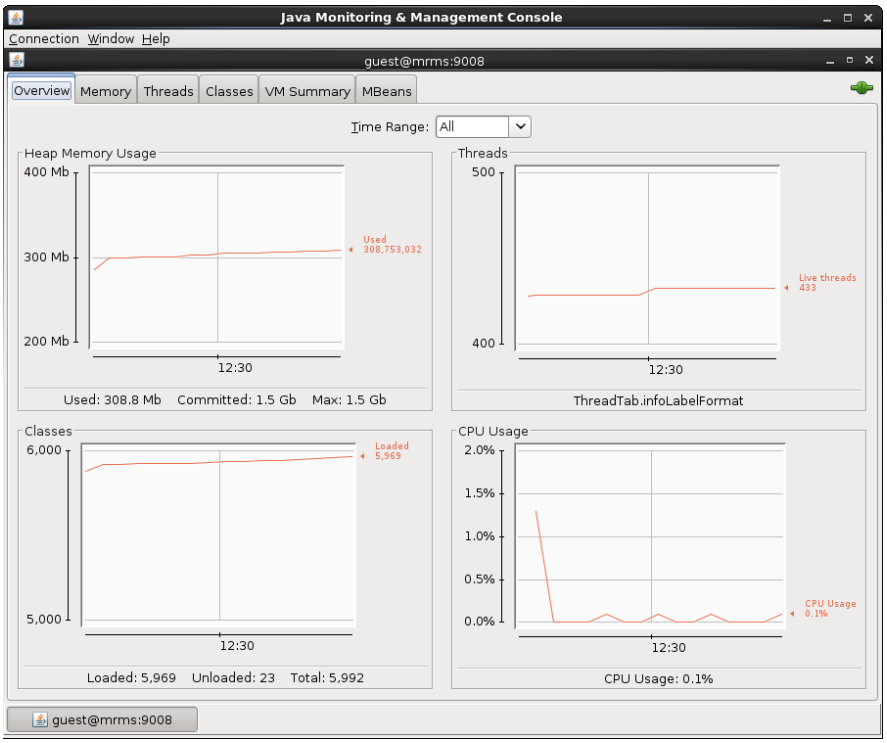
When the jconsole GUI comes up use remote process to connect to the name of the host and with the qpidJMXport (e.g., localhost:8999 for EDEX_00; port number “J” from above). The Username and Password are both guest.



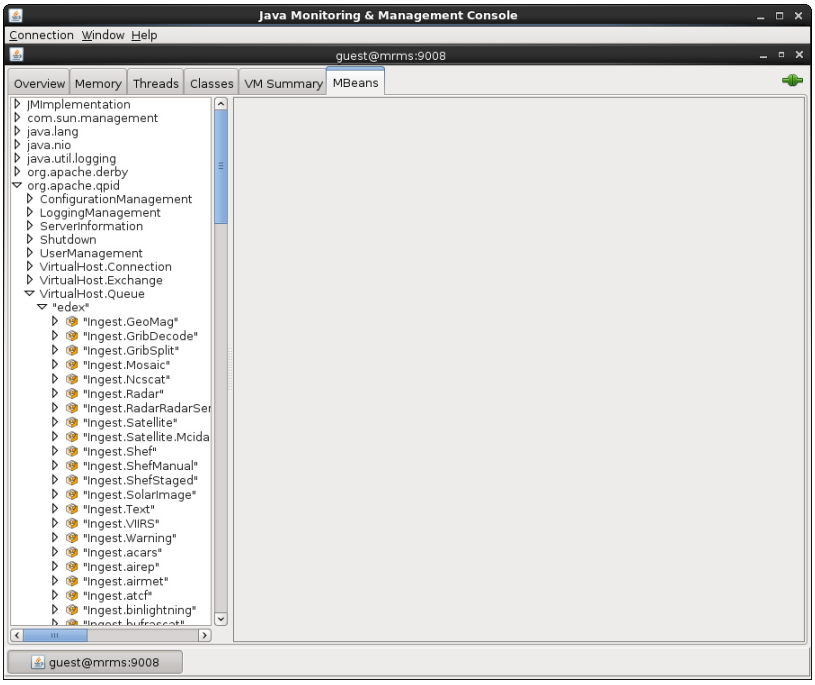
It's OK to use an insecure connection when that question comes up.



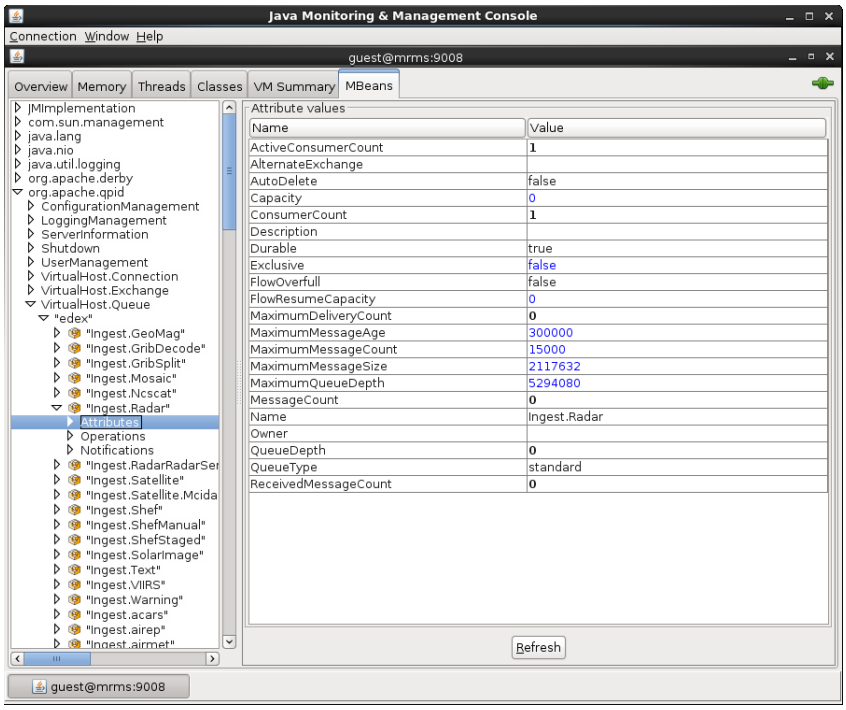
When the jconsole monitoring GUI comes up, go to the MBeans tab.

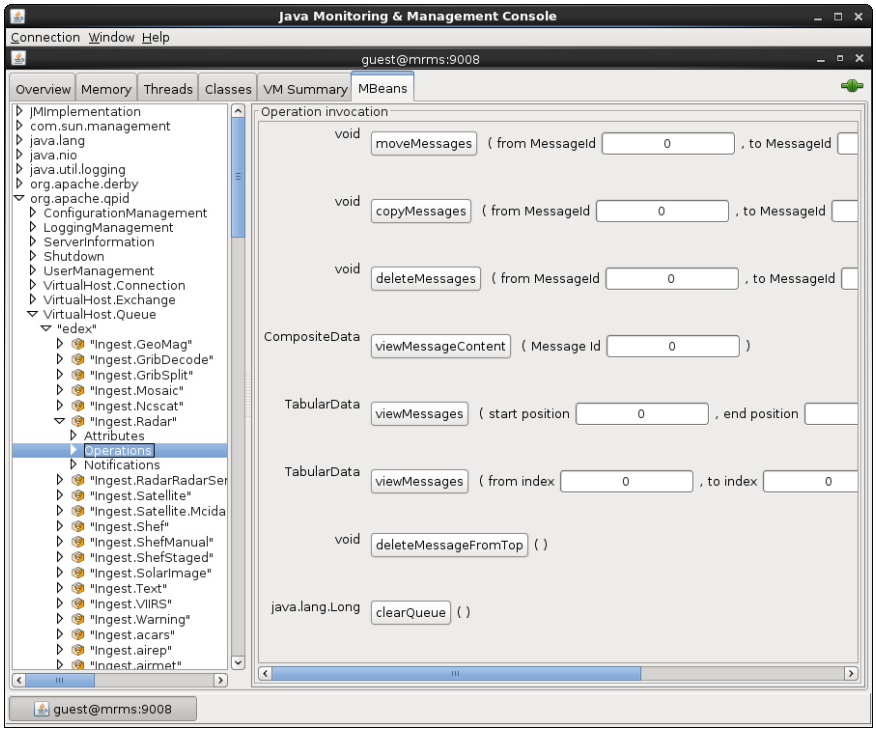


On the MBeans Tab, at the left, open up the tree for org.apache.qpid ➤VirtualHost.Queue➤edex. Here you will see individual queues.



You can also examine various attributes (messageDepth is how many messages are currently on a queue) and clear out individual queues.





- Method 2: The second way to clear out a queue is to completely stop qpid. You can stop the whole instance or just the qpid part of the instance. Once qpid is stopped, you can delete the message store (e.g., delete this directory for the EDEX_00 instance: /usr/local/edex-environment/EDEX_00/qpid/messageStore/edex)

Additional Information:

Starting and Stopping individual EDEX instance components

```
cd /usr/local/edex-environment/EDEX_00/edex-environment
```

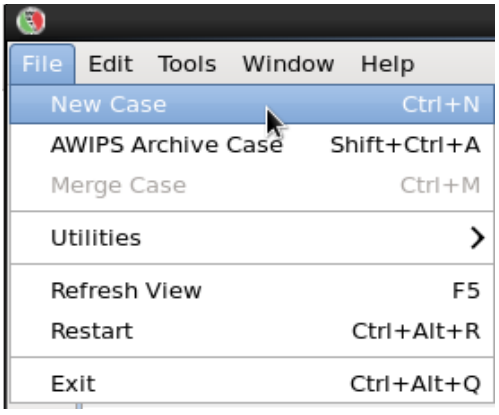
For each component run the appropriate script (as root):

```
/bin/bash edex_camel start          (or stop)
/bin/bash edex_postgres start       (or stop)
/bin/bash qpidd start               (or stop)
/bin/bash httpd-pypies start        (or stop)
```

Using Reprocessed Data

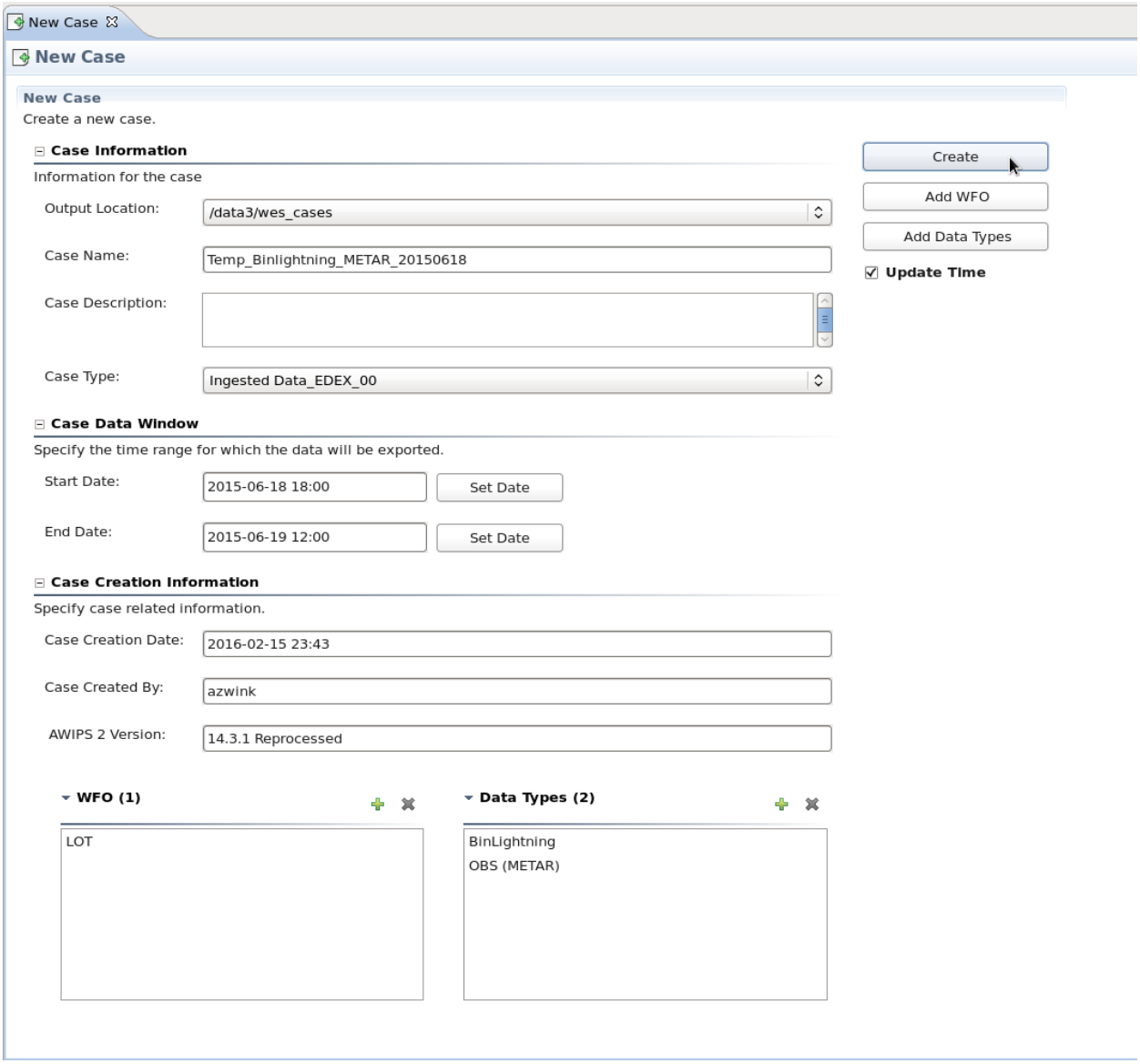
When you use rawPlay, the data are located inside of EDEX_00. You can use a CAVE attached to EDEX_00 to view this data, but in general, you will want to make a case out of it so you can use it for a case review or a simulation at a later time.

At the top of the WES-2 Bridge GUI, select the File Menu and then the “New Case” option.



In the next screen, fill out the information. Ensure these options have values:

- “Case Type”: make sure it shows “Ingested Data_EDEX_00”,
- WFO: hit the plus sign and select your site identifier
- Data Types: select the data types that were reprocessed.



Conceptual Model of Data Reprocessing in EDEX_00

The diagram below illustrates conceptually the data flow during data reprocessing through EDEX_00. Running rawPlay sends messages to EDEX_00 to trigger it to read and process the Raw data from the original case. After EDEX_00 does its work, the data reside inside EDEX_00, in its HDF data store and inside the EDEX_00 postgres database. The New Case option of WES-2 Bridge causes a case to be created out of

the EDEX_00 data, which is analogous to running the AWIPS Archiver on an operational AWIPS system.