

4.9.17 QAMUT Utility

The QAMUT is an operational support tool used for updating the values of the QA flags in the ECS inventory metadata in the Science Data Server database. The QAMUT sets the QA values for data granules containing one or more measured parameters after they have been assessed by the Science Computing Facility (SCF) or DAAC staff regarding their quality. The QAMUT can be used to update the Science and Operational QA flags and the corresponding explanation fields only.

The utility can be run on the command line in two ways, one of which takes in a file name as a parameter and the other doesn't. Both allow or suppress prompts and detailed information to be displayed on the screen for the operator. Both allow the operator to choose either to continue or to exit when non retryable errors occurred.

The QAMUT Utility connects to the SDSRV database and does the updates directly from the Perl driver.

There are three scripts to the QAMUT utility: **EcDsQAMUT.pl**, **EcDsQAMUTBcp.pl** and **EcDsQAMUTEmailScript.pl**.

EcDsQAMUT.pl is the main script that does the update. See 4.9.17.1 on how to run the program.

EcDsQAMUTBcp.pl is an assistant script that helps the DAAC to load the Site information and the related ESDTs the site is allowed to update to the DsQAMUTESDTSite table in SDSRV database. This has to be done before EcDsQAMUT can process any update requests. See 4.9.17.6 on how to run it.

EcDsQAMUTEmailScript.pl is generated by EcDsQAMUTEmailScriptMkcfg. It's used to direct the email QAMUT update requests to the proper request directories. See 4.9.17.3 on how to set up email aliases to redirect email requests.

4.9.17.1 Using the QAMUT Utility

The QAMUT Utility is started by entering the following command:

> **EcDsQAMUT.pl** <command line parameters>

There are various command line parameters that are used in combination with each other. Table 4.9.17-1 provides a description of these parameters.

Table 4.9.17-1. Command Line Parameters of the Granule Update Utility

Parameter Name	Description
<mode>	A mandatory parameter specifying which mode the utility will be running against. It has to be the first argument on the command line.
-noprompt	Directs the utility to run with no confirmation prompts. This also suppresses any information output to the screen about granules as they are updated.
-file <filename>	An input parameter that specifies the file to be used to input granule data to the utility. <filename> is the name of a file containing a list of granules to be updated by the utility.
-noexitonerr	Directs the utility to continue when non retryable error occurred when a specific line in the request is processed. Non retryable errors include: a) invalid QA flags; b) No granules found for the given parameters (Could be wrong ShortName, VersionID, dbID, LGID, Temporal range or ParameterName.) When not set, QAMUT utility exits the request when either one of the non retryable errors first occurs.

Input parameters after <MODE> are optional. If you don't specify anything, default setting allows QAMUT to process the files in the configurable QAMUTRequestDir directory with prompt and exit request on the first occurrence of non retryable error.

4.9.17.2 QAMUT Utility Commands

The QAMUT Utility provides the following 8 granule update options. Within each option, the order of the command line arguments can be switched except that the MODE has to be the first argument and the filename has to follow -file.

1. **EcDsQAMUT.pl <MODE>** Process all the request files from the QAMUTRequestDir directory, displays detailed information to the operator about granules as they are updated. The operator is also asked for confirmation before the update. Utility exits the request when the first non retryable error occurs in that request.
2. **EcDsQAMUT.pl <MODE> -noprompt** Same as 1 except that it does not display detailed information to the operator and the operator is not asked for confirmation before the update.
3. **EcDsQAMUT.pl <MODE> -noexitonerr** Same as 1 except that the utility continues processing the request when non retryable error occurs in that request.
4. **EcDsQAMUT.pl <MODE> -noprompt -noexitonerr** Same as 2 and 3 combined.
5. **EcDsQAMUT.pl <MODE> -file <filename>** Same as 1 except that it only processes one file from the command line.
6. **EcDsQAMUT.pl <MODE> -file <filename> -noprompt** Same as 2 except that it only processes one file from the command line.
7. **EcDsQAMUT.pl <MODE> -file <filename> -noexitonerr** Same as 3 except that it only processes one file from the command line.

8. **EcDsQAMUT.pl** <MODE> -file <filename> -noprompt -noexitonerr Same as 6 and 7 combined.

4.9.17.3 Required Operating Environment

The QAMUT Utility will run on Linux platforms.

EcDsQAMUTEmailScript.pl will reside on the central mail servers while the rest of the **QAMUT** will reside on the Science Data Server Database boxes. The directories containing the email script output (/usr/ecs/<mode>/CUSTOM/data/DSS/QAMUT/ and subdirectories) will be created on the Science Data Server Database boxes and NFS mounted on the central mail servers. Email aliases need to be set up to direct email QAMUT update request to the email script that parses the request and moves it to the proper request directory.

The following is how to set up email aliases on the central mail servers:

We need to have one email alias for each mode:

qamut_<MODE>: “| /usr/ecs/<MODE>/CUSTOM/utilities/EcDsQAMUTEmailScript.pl”

4.9.17.4 Interfaces and Data Types

Table 4.9.17-2 lists the supporting products that this tool depends upon in order to function properly.

Table 4.9.17-2. Interface Protocols

Product Dependency	Protocols Used	Comments
SDSRV database	SQL	Via SQL server machines
Perl DBI	DBD::Sybase	Requires proper install of Perl 5.005

4.9.17.5 Input File Format

FileName

The input file name has to follow the following format depending on MODE, SCF site where the request is from and when the request is generated:

<MODE>_<SCFSite>_QAUPDATE.<year><month><day><hour><minute><second>

The following example shows the filename from LDOPE for OPS mode at 12:20:30 on Feb. 28, 2001.

OPS_LDOPE_QAUPDATE.20010228122030

Note: All the files in the request directory will be processed alphabetically by file name. This guarantees that all the requests coming from the same site will be processed in the right order.

When DAAC operator copies files from MODE dependent FTP site to MODE dependent QAMUTRequestDir directory, he or she needs to copy all the files with filenames starting with that particular MODE. This way, we can minimize the risk of processing requests intended for a different MODE. QAMUT also double checks the file name it processes in regard to the MODE.

In the situation when the email is used to send request, a file that follows the same naming convention should be created and attached to the email. Requests for different MODEs should be sent to different email aliases at each DAAC. **EcDsQAMUTEmailScript.pl** checks if the attachment file exists and if the file name follows the naming convention. If failed, the email script sends an email back to the requester indicating error, otherwise it saves the email in the MODE dependent QAMUTRequestDir directory using the same file name as the attachment file.

Note: We can not guarantee that email requests can arrive in sequence according to the time they are produced. Therefore, if SCF needs to update the same granule(s) again for some reason, it needs to contact the DAAC operator to make sure that the previous requests for the same granule(s) have been finished.

Request Header

For requests from FTP sites, the header contains one line indicating which site this request is from:

```
From <SCFSite><return>
```

Example:

```
From LDOPE
```

For requests sent through emails, the headers are automatically generated, standard email headers.

Request Body

For requests based on LGID:

```
begin QAMetadataUpdate {Science | Operational} LGID
```

```
<ShortName><tab><VersionID><tab><LGID><tab><measured parameter  
name/ALL><tab>< QA flag value><tab>< QA flag explanation value><return>
```

```
.....repeat for each LGID
```

```
end QAMetadataUpdate
```

For requests based on GranuleUR:

```
begin QAMetadataUpdate {Science | Operational} GranuleUR
```

```
<ShortName><tab><VersionID><tab><GranuleUR><tab><measured parameter  
name/ALL><tab>< QA flag value><tab>< QA flag explanation value><return>
```

.....repeat for each GranuleUR

end QAMetadataUpdate

For requests based on ESDT and temporal range:

Begin QAMetadataUpdate {Science | Operational} ESDT

<ShortName><tab><VersionID><tab><range beginning date><tab><range ending date><tab><measured parameter name/ALL > <tab><QA flag value><tab><QA flag explanation value><return>

.....repeat for each ESDT

end QAMetadataUpdate

4.9.17.6 Configuration File Format

There are two configuration files. One is used by DAAC operator and the other is used by both **EcDsQAMUT.pl** and **EcDsQAMUTBcp.pl**.

The one used by the DAAC operator contains the mapping of ESDT names and SCF sites. It is actually a configurable data file. The DAAC operator needs to create and maintain this file if he or she chooses to populate DsQAMUTESDTSite table using **EcDsQAMUTBcp.pl**.

The configuration file used by DAAC operator needs to have the following format:

<ESDTShortName><tab><SITEName>

...repeat for each SCF site and all the ESDTs it can update.

No blank line is allowed in the file.

Example:

AST_L1BT oneseite

AST_L1BT oneseite

AST_04 anothersite

...

After the DAAC operator creates the file, he or she can run **EcDsQAMUTBcp.pl** on the command line:

>EcDsQAMUTBcp.pl <MODE> filename

This will replace the contents in DsQAMUTESDTSite table with the content in the file. The old content in DsQAMUTESDTSite table before running the script is saved in DsQAMUTESDTSite.out in /usr/ecs/<MODE>/CUSTOM/data/DSS/QAMUT/QAMUTUndo directory.

The configuration file used by QAMUT is called EcDsQAMUT.CFG. It contains details about how to connect to the Sybase database as well as DAAC specific information. Without this file, the utility can not run. The config file must be a single-entry plain text ASCII file, which has the following format:

SYB_USER = <string>
SYB_SQL_SERVER = <string>
SYB_DBNAME = <string>
SYB_PASSWD = <string>
NUM_RETRIES = <integer>
SLEEP_SEC = <integer>

QAMUTRequestDir = <string>
QAMUTCompleteRequestDir = <string>
QAMUTErrRequestDir = <string>
QAMUTUndoRequestDir = <string>
MAILX = <string>

<SCFSite>_FromAddresses = <string1,string2,string3...>
...repeat for each site

<SCFSite>_ReplyAddress=<string>
...repeat for each site

DAACAddresses=<string1,string2,string3)

<SCFSite>_Notification={Y|N}
...repeat for each site

VALIDQAFLAG = <string> value1,value2,value3,value4,value5,value6,value7,value8
MAX_NUM_GRANULES = <integer>
UpdateBatchSite = <integer>

Table 4.9.17-3 describes the breakdown of the individual parameters for QAMUT.

Table 4.9.17-3. QAMUT Utility Individual Parameters (1 of 2)

Parameter Name	Description
SYB_USER	The user name for the Sybase connection.
SYB_SQL_SERVER	The name of the SQL sever for this Sybase connection.
SYB_DBNAME	The name of the database you intend to connect to
SYB_PASSWD	Program ID used to get Sybase password through a decryption program called EcDsDcrp.
NUM_RETRIES	The maximum number of times the utility will try to connect to the database or retry deadlock . The recommended default is 5.
SLEEP_SEC	The number of seconds the utility will wait ('sleep') between connect. Recommended default is 10.
QAMUTRequestDir	The directory where all the QAMUT update request files reside
QAMUTCompleteRequestDir	The directory where all the completed QAMUT update request files reside.
QAMUTErrRequestDir	The directory where all the QAMUT update requests with non retryable errors reside
QAMUTUndoRequestDir	The directory where all the information required to undo each request is stored in the same filename as the original request. If a request is run multiple times due to recoverable errors, there will be multiple
MAILX	The command including the full path for "mailx"
<SCFSite>_FromAddresses	Each SCF site can have multiple From email addresses separated by ",". These email address are used for authentication as well as email addresses for QAMUT to send notification back
<SCFSite>_ReplyAddress	Each SCF site can have 0 to 1 Reply-To address. Enter nothing after the "=" sign if the site doesn't have any Reply-To address. This address is used for email notification.
DAACAddresses	A list of internal DAAC e-mail addresses separated by "," to which email notification are Copied upon completion of a QA update run. The completion means finishes without retryable errors--internal errors in the DAAC.

Table 4.9.17-3. QAMUT Utility Individual Parameters (2 of 2)

Parameter Name	Description
<SCFSite>_Notification	Email notifications are sent in the following situations: Authentication failure. ESDT update not allowed. Format errors of the request Non retryable errors in the request and no retryable errors occurred (QAMUT reprocesses the request until it overcomes all the retryable errors before notifying the requester of the non retryable errors) Successful completion. This is when the Notification option makes the difference. If "Y", a notification will be sent upon successful completion, otherwise no notification will be sent.
VALIDQAFLAGS	Contains 8 valid values separated by ","
MAX_NUM_GRANULES	Contains the DAAC configurable maximum threshold
UpdateBatchSize	The number of granules the utility will update in a batch.

The following is an example of the EcDsQAMUT.CFG

```

SYB_USER=EcDsQAMUT
SYB_SQL_SERVER=f2acg01_srvr
SYB_DBNAME=EcDsDb_Proto
SYB_PASSWD=4000020
NUM_RETRYs=5
SLEEP_SEC=10
QAMUTRequestDir=/usr/ecs/sxu/CUSTOM/data/DSS/QAMUT/QAMUTRequest
QAMUTCompleteRequestDir=/usr/ecs/sxu/CUSTOM/data/DSS/QAMUT/QAMUTComplete
QAMUTErrRequestDir=/usr/ecs/sxu/CUSTOM/data/DSS/QAMUT/QAMUTErr
QAMUTUndoRequestDir=/usr/ecs/sxu/CUSTOM/data/DSS/QAMUT/QAMUTUndo
MAILX=/usr/bin/mailx
LDOPE_FromAddresses=sxu@eos.hitc.com,pmacharr@eos.hitc.com
mysite_FromAddresses=sxu123@yahoo.com

```

#Reply-To address is optional

LDOPE_ReplyAddress=

mysite_ReplyAddress=sxu@eos.hitc.com

DAACAddresses=sxu@eos.hitc.com,pmacharr@eos.hitc.com

LDOPE_Notification=N

mysite_Notification=Y

VALIDQAFLAGS=Passed,Failed,Being Investigated,Not Investigated,Inferred Passed,Inferred Failed,Suspect,Hold

MAX_NUM_GRANULES=1000

UpdateBatchSize=20

4.9.17.7 Special Constraints

The QAMUT Utility runs only if the SDSRV database is available and Sybase server is running. It also assumes the request files are present in the designated mode dependent ftp directories and an email alias is set up for each mode.

4.9.17.8 Outputs

Output of update events and errors will be always appended to a single log file. If specified as an option, a confirmation prompt will be displayed to the screen.

4.9.17.9 Event and Error Messages

In any “prompt” options (default), confirmation messages are displayed to the operator, as well as information of granules affected. In any ‘noprompt’ options, all the prompts and screen displays are suppressed. All the error messages are written in the log file except for command line syntax errors which are displayed on the screen for both the ‘noprompt’ and “prompt” options.

4.9.17.10 Reports

None.

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