The Power of Mass Compile

The Mass Compile option has been available for many years; originally being implemented on the System/38 version of PATHFINDER. It allows a list of programs and/or files to be compiled as a single job. The list could be generated based on "Where used" information stored in the PATHFINDER X-ref, or simply a list that you provided. Once in batch, the process consists of the same steps you would have needed to perform by hand.

File Objects

The option will allow recreation of database files (physical, logical and join-logical) and device files (printer and display). For database files, data can be mapped to the new file from an existing file object in the same or different library. It will take care of maintaining all dependent logicals, recreating the physical file object and then copying the data to the new record format. The file characteristics of triggers and referential integrity constraints are also managed by disabling them before compilation and restarting after it's complete. And, the existing attributes can be applied to the new object for both database and device files. Device file attributes have been a thorn for many programmers. PATHFINDER will retain important existing attributes such as DFRWRT (), PAGESIZE (), LPI () or CPI () for device files, or MAXMBRS () or SIZE () for database files.

OPM & ILE Objects

Mass Compile will recompile both OPM (Old Program Model) and ILE (Integrated Language Environment) programs. The OPM programs are recompiled using the appropriate create commands. ILE introduces the concept of programs that are a "bound" group of "modules". They are more complicated, but handled completely by Mass Compile.

If a file is specified on the entry panel, the modules which reference that file will automatically be added to the list of objects to compile. Additionally, any ILE programs or service programs that reference the module will be added to the list and will be "updated". When ILE objects are entered through "F19=Add program" or "F20=Add source", the objects will be "created". ILE programs created through the CRTBNDxxx (Create bound program) commands that use the file will be recreated using the same command.

Mass Compile can even be used to convert OPM programs to ILE programs. Using Mass Compile for the conversions will allow the existing program's attributes and authorities to be retained and applied to the newly created ILE programs. Use the following steps to perform the conversion:

1. Run the OPM source through IBM's conversion utility (CVTRPGSRC).
2. Use Mass Compile's "F20=Add source" to enter the converted source. (Generic* or *ALL is supported for "Member name".)
3. Run the Mass Compile job. ILE programs will be created using the CRTBNDxxx command.

Reports

Two reports are provided that serve as a hardcopy trail of what was requested and what actions were performed toward accomplishing it.

The first is the “request Report” identified as “*REQUEST” on the spoolfile’s user data. It is used to document the requested list of objects and the specific values to be used for compilation, data or attribute mapping and command parameters.

The second is the “Status Report” identified as “*STATUS” on the spoolfile’s user data. It is used to audit the activities of the job. Every step that is performed is logged here including the editing steps, object backup, object archival, object compilation, data mapping, as well as information about any errors encountered and the recovery actions taken. This is an incredibly complete document. It will be helpful in identifying the objects that did not complete normally as well as the serious errors that may have caused the entire job to terminate.

Editing

All file objects are addressed first. They are ordered such that the logical file and reference file dependencies will be handled appropriately. In this phase, it will check for dependency or object authority problems that would require the job to stop. One case is a “circular” dependency when two files depend on each other’s existence to be recreated. Another dependency problem is when reference files can’t be located in the library list. Authority problems would include not having existence rights to the original objects or not having the authority to assign the requested ownership. These or any other problems identified here will cause the job to terminate, since successfully compiled database files will likely be required for all other compiles. Nothing will have been changed in the existing objects. The status report will provide the information required to determine the cause of the termination.

If the editing phase is passed, the job will continue by creating all the database file objects and then the device file and program objects. Logic or syntax errors may cause individual device file or program compiles to end abnormally. These problems will not terminate the job. Rather the job will complete allowing you to recreate the remaining objects separately. Since an error here will likely only affect a few objects, the job will continue and not force the entire process to be redone. Again the status report will identify the objects remaining to be completed and a message is sent to the user indicating that some objects didn’t complete.

Recovery

If the job should end for some unexpected reason such as power failure, job cancelled by a user or a PATHFINDER program termination, the job will go into “Failed-Abnormal” state. When entering Mass Compile from the menu, the “F8=Work with” panel will appear automatically if a job is in this state. From the “F8=Work with” panel, a job can be recovered or restarted. If recovered, any objects that have been replaced will be restored to the original and the job will complete. If restarted, any objects that have been replaced will be restored and then the job

will start over. Restoring the original objects first ensures that we won't encounter any partially completed processes when rerunning.

Object Archiving

Since you may be working with a large number of objects, including important corporate data, you may want to have a backup of the objects before anything is changed. As an option, you can have PATHFINDER save the existing objects to a savefile before replacing anything. This could be used for an off-line backup or to return any objects to their previous state. The location of the savefile is identified in the status report and on the "F8=Work with" panel. You can then use standard operating system commands to save or restore as your needs dictate.

Compile Lists

A compile list is a list of objects that Mass Compile option can use as input, compiling everything on the list. To work in conjunction with Mass Compile, option "13=Add to compile list" is available on all PATHFINDER list panels to add items to a Compile list.

The "F18=Change defaults" panel allows you to set a default Compile list for your session. Then by placing a "13" in front of an objects(s) on any PATHFINDER list panel, the objects(s) is added to the Compile list. The first time this option is selected in the session, a Confirm Compile list window will allow you to change the default if necessary or create a new Compile list. The user-default option, "AE" is also provided in the HAWKEYE/USERPDM User-defined option file for use within PDM list panels.

On the "F18=Change defaults" panel, "*ALL" entry for the Compile list will give you the "Work with Compile List" panel. From this panel Compile lists can be created, copied, deleted or changed. A Compile list can be secured or shared with other users. And, an optional value on the Compile list will cause the Mass Compile option to include all related objects in the create job. You can use the Compile list feature as a project management tool by building a list of objects as work progresses and then compiling them at one time when done. Or, different user Compile lists can be merged into a single unique list. Also, the commands WRKCMPL (work with compile lists), CRTCMPL (create compile list), DSPCMPL (display compile list) and ADDCMPLE (add compile list entry) are provided for integration with your own user written programs or for use from a command line.

Screen Flow

The Mass Compile option requires plenty of information to begin performing the task. Once you have identified the objects to be compiled, the "Mass Compile – Options" screen is presented so you can choose the information that you wish to review. If there are any errors that will require your attention on those screens, they will automatically be shown. The additional screens allow you to confirm source, object authorities, command parameters and object text.

These confirmation screens include some functions that many users of the option are unaware of. One is "F14=Change" to make global changes to the list of objects being compiled. It allows

you to change some information and apply that change to all objects in the list or only objects with errors. Another is “F6=Counts” that shows a breakdown of your list of objects by type.

Also on the “Mass Compile – Options” screen is an option to set the library list for compiling to *CURRENT, *JOBD or *SYSVAL. And for use with ILE objects, a binding directory entry is provided.

Command Parameters

Another feature is a confirmation screen called “Mass Compile – Confirm Parms”, allowing you to set the create parameters on the individual create commands. This gives you control of each compile. Option “1=Prompt” or “F4=Prompt” on any of the objects in the list will prompt the create command being used. Any parameters that are not being set by another screen in the Mass Compile are available to be overridden. It is also important to note that the create command to use is determined by the source member type associated with the object. Which means that you can take a group of “RPG38” program objects, change the source type to “RPG” and have them recreated as native “RPG” type objects.

What Now?

Give it a try! Examples to start with:

1. Take the set of objects that you are currently working with and add them to a Compile list. Then use the Mass Compile option to recompile them as a single job.

2. If you don’t have a current set of objects to work with, use “F19=Add programs” on the “Mass Compile – Confirm Compile” panel to take a library of objects or a group of objects and submit them to be compiled into a testing library.

3. Or, use “F20=Add sources” on the “Mass Compile – Confirm Compile” panel to compile a set of source members to a test library.

4. Instead of recreating that file with LVLCHK (*NO), use the PATHFINDER X-ref to select it and all the programs that reference it. Submit the job to recompile them, map the data and attributes to the new record format and archive the entire set of objects.

For further information, please contact our Technical Services department. We can be reached by email at info.hawkinfo.com or call us Monday-Thursday, 7 a.m. to 5 p.m. (MST) and Friday 7 a.m. to 3 p.m., VOICE (970) 498-9000 or FAX (970) 498-9096.