Online Copy Jobs

Bj® applications typically access data using two different methods: direct file access, and SQL. In either case, the system writes and reads data to and from individual data files. If it became necessary to make a backup copy or make structural changes to one or more data files, it was necessary to first notify all users that the file (or sometimes the entire system) is unavailable, then perform the necessary backup or file modifications. In many installations, this was and still is not an option due to such business requirements as 24/7 availability. The Online Copy Job feature provides the ability to make a backup copy of a file or changes to the structure of a file while users are still making changes to that file! This article discusses when, where, and how to use this new feature.

Online Backup Jobs

An online copy/backup consists of a definition file in XML format that contains a list of files to copy, the destination, and various parameters and settings. The beauty of using an Online Copy Job to perform a backup of one or more data files is that the backup can occur even while one or more BBj or ODBC/JDBC applications are reading or writing to those files. When the backup job begins, BBj Services creates a new file with the same structure as the original. It then begins copying records from the source file to the destination file. If any changes occur to the source file, those changes are propagated to the destination file. Once the contents of the destination file match the source file, synchronization continues until an administrator finishes the job or aborts the job by removing the destination file(s). Once the job completes, the destination file(s) no longer continues to synchronize with the original source file(s). **>>**
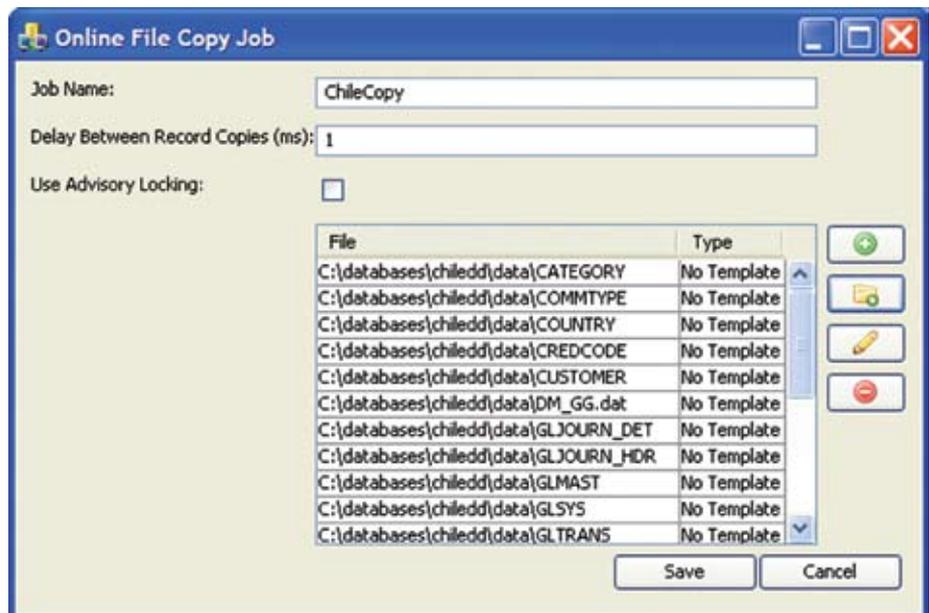

Figure 1. Creating an Online Copy Job

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Creating a backup job is quite simple, as shown in **Figure 1**.

1. Create a new Online Copy Job in Enterprise Manager.
2. Click the [Add Folder] button.
3. Select the folder of files to back up.

It is important to note that online copies can only occur on Mkeyed, Xkeyed, Vkeyed, Direct, Sort, and Serial files. Files of other types will be copied, however, the copy will not maintain synchronization of any changes made to the source file during the copy operation.

File Structure Modification Jobs

There are a number of instances where it might also be useful to modify the structure of one or more data files (record layout, record size, keys/indexes, file type, etc.) while they are in use by an application.

For example, it is very common for a major application upgrade to require additional fields and keys/indexes in one or more data files to accommodate new application functionality. In a large database, it might take hours or even days to update all of the necessary data files to the new structure. However, it may be undesirable or frankly impossible, due to business requirements, to prevent anyone from using the system during this time. Online Copy Jobs can make this upgrade process easy and pain-free.

The following steps outline the process for performing this type of upgrade:

1. Create a new Online Copy Job in the Enterprise Manager.
2. Add the file to upgrade to the job.
3. Specify the template used to describe the source file, and the template that describes the record layout of the destination file. Add any new columns to the destination template, and remove any columns that should not be included in the new destination file.
4. Specify the column mapping from source columns to destination columns.
5. Specify any key/index changes that should be made to the destination file.
6. Repeat steps 2 through 5 for each file to upgrade.

Running a Job

Once administrators or developers create a job, they can run the job immediately or at another time. Enterprise Manager shows a list of jobs currently running on the server (see **Figure 2**), along with a snapshot of the progress of any running jobs and the progress of each file in the job.
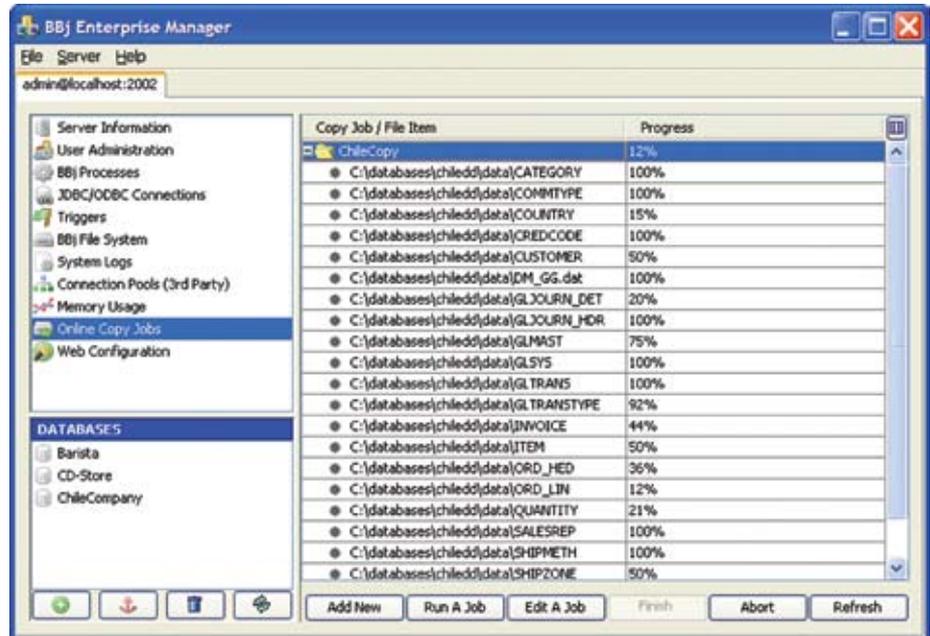

Figure 2. EM displaying a snapshot of an Online Copy Job in progress

When a backup job is 100% complete and the end users confirmed they have reached the desired 'known point' such as month-end processing, the administrator arranges for all users to exit the application, then clicks the [Finish] button to stop the synchronization. This effectively creates a "snapshot" of the files in the database at that point in time, like month-end. For modification jobs, once the job finishes and the users are out of the system, all that remains is to replace the original file(s) with the newly created file(s) and install the new software if necessary. For example, adding new keys to a Xkeyed, Vkeyed or Mkeyed file or converting from a single keyed Mkeyed file to a multi-keyed Mkeyed file would only require changes to utilities that re-created the files or examined the key structure. When the users log back in, they will do so with the upgraded application using the newly structured database without the traditional long downtimes previously associated with upgrades that required the restructuring of the database.

Summary

The Online Copy Jobs feature provides a powerful and flexible means for performing two very common tasks – creating a backup of files and upgrading data files while they are in use by an application. Developers and administrators will find that this powerful new feature in BBj makes the job of upgrading an application database or making numerous changes to one or more data files much less daunting. Implementing Online Copy Jobs means that end users are no longer inconvenienced by halting productive work during a major file upgrade, a 'known point' backup, or routine system backup. ■