Reducing the CPU usage of JQM servers in an SAP environment

This technical note provides information about reducing the CPU usage of JQM servers during OMSCB server polling by indexing the `-erp-job-retention-period` attribute in the job table of the JQM server using the `dbindex` utility.

NOTE: All JQM servers responsible for processing SAP jobs should be indexed.

Problem

The CPU usage of JQM servers increases when the OMSCB server polling option is enabled.

Solution

The OMSCB server queries JQM servers to get retained jobs with `erp-job-retention-period` greater than zero. As the OMSCB server queries according to the poll interval that is set, the JQM server is queried each time with `current-job-state` and `erp-job-retention-period` as the filtered attributes. This leads to an increase in CPU usage of the JQM server when the number of jobs in the database is large. To minimize the time required to search jobs in the database, specific job attributes are indexed in the job table of the server. Indexing the `erp-job-retention-period` attribute also reduces the memory usage of the JQM server. Indexing the attributes in the JQM server is equivalent to the traditional method of indexing in a database, where specific keys are maintained separately to facilitate faster record retrievals.

The JQM server indexes a default set of attributes that represents the common attributes used to search jobs. Searching for a job or a set of jobs qualified only by these indexed attributes, for example by using the `pdls` command, is faster than searches qualified by non-indexed attributes. However, mixing both indexed and non-indexed attributes results in slower searches as compared to the searches made by using only indexed attributes, because filtering of the results by the non-indexed attributes need to be filtered. Qualifying searches only by non-indexed attributes produces slow search results.

For OMSCB server polling, the `current-job-state` and `erp-job-retention-period` attributes need to be indexed for a faster search and reduction in the CPU usage of the JQM server. The `current-job-state` attribute is one of the default indexed attributes in the database of the JQM server. Hence, the `erp-job-retention-period` attribute should be indexed using the `dbindex` utility.

If you experience slow search results, use the `dbindex` utility to modify the jobs table of the JQM server. The `dbindex` utility indexes specific attributes and helps obtain search results qualified by those attributes at a faster rate.

List of default indexed attributes in the JQM server database

`-job-identifier`

`-job-name`

`-job-owner`

`-destination`

`-current-job-state`

`-queue-assigned`

`-job-completion-status`

`-physical-printer-assigned`

`-job-retention-time`

Re-indexing the JQM server jobs table

The following example describes the steps needed to re-index a jobs table of the JQM server and assumes that the `-erp-job-retention-period` attribute is the identified attribute to be indexed and the JQM server is named `jqm1`.

NOTE: HP recommends that you backup your MySQL installation before re-indexing the attributes.

To re-index the jobs table of the JQM server, perform the tasks given below:

Task 1: Modify the DPAOIDs file.

1. Create a backup for the `DPAOIDs` file.
2. Locate the `DPAOIDs` file installed on your system.
   For a Windows operating system, the file is at:
   `$DAZEL_HOME/bin`
   For a UNIX operating system, the file is at:
   `$DAZEL_HOME/nls/oid/$LANG`
3. Use a text editor to edit the file. The text file should be greater than 80 columns wide.
4. Find the attribute to be indexed (`-erp-job-retention-period` in this example) and locate the fourth column. This column might contain numerics or just a dash (-.)

   Example

   The `-erp-job-retention-period` attribute is displayed as:

   ```
   erp-job-retention-period            ..1.0.10175.1.0.0.3.1.230      TBSJ -  pm3     DeltaTime    001
   ```

   Here, the fourth column (−) contains a dash, which indicates that this attribute is currently not indexed for any server. The server for which the attribute will be indexed is designated by one of the following values:

Server Name	Value
CM	1
DLM	2
JQM	3
DSM	4

To indicate that this attribute is indexed by the JQM server, the value 3 replaces the dash in the fourth column:

```
erp-job-retention-period            ..1.0.10175.1.0.0.3.1.230      TBSJ 3  pm3     DeltaTime    001
```

The attribute is updated.

5. Save the `DPAOIDs` file and exit the text editor.

> NOTE: To index attributes for more than one server, combine the digits in the fourth column for example, an attribute indexed in both the Delivery Manager (DLM) and the JQM server has a value of 23.

Task 2: Execute the mkoiddb utility.

1. Stop all the delivery servers (DLM, JQM, and DSM) as well as the Configuration Manager (CM) by using the `stop_server` command.
2. Execute the `mkoiddb` utility in the same directory as the `DPAOIDs` file that you modified in Task 1, by using the following command:

   ```
   mkoiddb DPAOIDs
   ```

   The associated `DPAOIDs` files (`DPAOIDs.dat`, `DPAOIDs.dir` and so on) are created again.

> NOTE: Do not start the stopped servers at this point.

Task 3: Execute the dbindex utility.

1. Execute the `dbindex` utility with the appropriate database connection parameters, such as *hostname*, *port or socket*, *user name* and *password*.

> NOTE: The *user name* value must be of a user with administrative privileges.

   The syntax for the `dbindex` utility is as follows:

   ```
   dbindex -n<server name> -h<hostname> -j<port> | -o<socket> -b<user>
   -w<password>
   ```

   For the above example, the command is:

   ```
   dbindex -n jqm1 -h localhost -j 3306 -b root -w password.
   ```

   Depending on the number of records in the JQM server, this command might require several minutes to execute, because it rebuilds the database of the JQM server.
2. Start the CM and the delivery servers.

   The newly designated indexed attribute should now be properly indexed within the job database of the JQM server.

The `dbindex` utility can be used to re-index any databases of the delivery servers. However, the current intended use for the utility is to index attributes for the JQM jobs table because the `pdls` command is typically used to search through thousands of records in a jobs table of the JQM server.

> NOTE: To gather more information on how to use the `dbindex` utility, contact your HP Professional Services representative.

Conclusion

During OMSCB poll intervals, it is observed that the OMSCB server queries the JQM server several times to get job details. Use `dbindex` utility to index the `erp-job-retention-period` attribute for a faster database search. The `dbindex` utility should also be used to reduce the memory usage and the CPU usage of JQM server during the OMSCB polling activity. It is recommended that the `erp-job-retention-period` attribute should be indexed when the number of SAP jobs are high and polling is enabled.