License Capping for Db2 Web Query for i

This document describes licensing of IBM Db2 Web Query for i and workload capping considerations when running Db2 Web Query in more than one partition (LPAR/VM) on your server. Db2 Web Query may be installed and activated on multiple partitions of a system. The license keys are associated with the server and shared by the partitions. The capping capabilities of Web Query allow an administrator to limit the resources that Web Query uses on a single partition.

IBM's Db2 Web Query has both core and user-based licensing. The core-based products (any of the Editions as well as DataMigrator ETL) support "sub capacity" pricing which means you do NOT have to license these to all the cores on your server, nor all the cores in a specific LPAR/VM.

Both core and user licensing are associated with the server. For instance, if you had 10 "authorized user" licenses and 2 LPARs/VMs, you have 10 TOTAL and not 10 per LPAR/VM. This applies to each of the user licensing-based features ("authorized" -named - users, "run-time" users, and developer workbench users).

There are two kinds of capping: **CPU workload capping** (for core-based licensed features) and **user license capping**.

Workload Capping

The workload capping feature of the Db2 Web Query product limits the CPU resources that the product can use on a given partition. This capping process is based on the licenses installed for the 5733-WQX product, specifically the licenses for *BASE (5050) and the active options (5101 for Express, 5102 for Standard, 5108 for DataMigrator, 5109 for Scheduler and 5110 for RunTime User).

Once licenses are installed, the core limit specified on the license is used. For example, if a license for two cores of the Standard license (5102) is installed, the product will adjust to set its upper limit to use no more than two cores of CPU resource. Note that the *BASE (5050) license should always be applied prior to applying any of the other options.

Under normal circumstances, Db2 Web Query will set the cap to allow the product to use all available licensed cores on a single partition. However, sometimes it is desirable to utilize, or 'share', a license across two or more partitions on a given system. This is called license sharing.

The following describes these in more detail. You need never obtain more licenses for a single licensed program than the number of processors on the managed system.

1. **Capped Partitions.** If two or more partitions are defined to be capped partitions, and the sum of the capped partitions is less than or equal to the number of licensed cores of Db2 Web Query, then the same Db2 Web Query license(s) can be applied on those partitions and Db2 Web Query can run on all those partitions.

For example, suppose you had 4 cores activated and enabled to run IBM i. You have 2 LPARs/VMs (both capped) where you want to run Db2 Web Query. One partition is 1.5 cores and the other is .5, both capped. To run Db2 Web Query in both LPARs/VMs, you could get by with 2 core licenses.

2. **User Specified Core Capping.** The `CORE_CAP` setting can be used to communicate to the product how many cores to limit itself to on a given partition. The setting resides in the Web Query configuration file, QWQCONFIG, in library QWQREPOS.

   You should use an SQL interface (green screen STRSQL or preferably ACS' Run SQL Scripts) to set this value. Note: The `CORE_CAP` value must be specified as whole (integer) numbers. For example:

   Limit the number of cores of Db2 Web Query on a partition to one core:
   -- Make sure web query is ended before running the UPDATE statement
   CL: ENDWEBQRY
   UPDATE QWQREPOS/QWQCONFIG set VAL='1' where PARM='CORE_CAP'
   CL: STRWEBQRY

   When Db2 Web Query is restarted, the product will be limited to one core's worth of CPU resource. If the license was for more than one core, then potentially the Db2 Web Query license(s) can be applied to another partition.

3. **Capped Partitions in conjunction with User Specified Core Capping**. Both types of partition capping can be used together to share the licensing.

For example, suppose you had 4 cores activated and enabled to run IBM i. You have 2 LPARs/VMs (both capped). Partition A has a cap of 2.5. Partition B is capped at 1.5 but you've used the User Specified Core Capping to set it's maximum usage to 1. To run Db2 Web Query in both LPARs/VMs, you could get by with 2 core licenses.

Note:
Whenever any changes to licensing or workload capping are made, Db2 Web Query should be ended and restarted to pick up the change. This can be accomplished with the ENDWEBQRY/STRWEBQRY commands, the WRKWEBQRY command.

Note that if you are running Db2 Web query under the trial period (no permanent licenses have been applied) the product will be limited to use no more than one core of CPU resources.

User Capping

A customer, such as a managed service provider (MSP) who provides partitions to different tenants, may want to limit how much of the licensed 'user pool' that a given partition can use.

The user capping enhancement allows administrators to limit the license usage on a partition. Each of the user-registered features ("authorized", "run-time", and Developer workbench) may be separately capped.

In QWQCONFIG, the user capping options allow an administrator to specify whether capping is desired on a partition and the maximum number of user licenses to allow. The default is no capping. Changes to a user capping value take effect immediately with no need to restart Web Query. If an administrator changes a cap to a value that is less than the current usage allocation on the partition, it is the administrator's responsibility to resolve the overage.

To display or change the settings, use SQL SELECT and UPDATE statements. An example SQL UPDATE statement to limit the number of Authorized Users on a partition to four is:

UPDATE QWQREPOS/QWQCONFIG set VAL='4' where PARM='USER_CAP'

For example, suppose you had 4 cores activated and enabled to run IBM i. You have 3 LPARs/VMs and you have a total of 20 "authorized" user licenses. LPAR A is production, and you need 14 user licenses for that, but partitions B and C can split the remaining 6 (3 each). You can use the above UPDATE statement to update the 'USER_CAP' parameter for each of your partitions.

Partition A: UPDATE QWQREPOS/QWQCONFIG set VAL='14' where PARM='USER_CAP'
Partitions B and C: UPDATE QWQREPOS/QWQCONFIG set VAL='3' where PARM='USER_CAP'

QWQCONFIG File Information

The Web Query configuration file QWQCONFIG in library QWQREPOS provides administrators with the ability to dynamically modify or override settings in their Web Query environment. Each partition running Web Query has its own QWQCONFIG file. This allows each partition to be configured separately. There is one record in the file for each configurable setting. The QWQCONFIG file contains four settings, one for each of the capping options.

The configuration file is created automatically by Web Query and is primed with one record for each setting. When upgrading from earlier versions of Web Query that used the QWQWLCGRP data area to set capping, the primed value for workload capping will be retrieved from the data area. The primed values for the other settings will be set to the default value of no capping.

The following table provides more detail on the configuration options that can be set in the QWQCONFIG file.

Table 1. Web Query Settings in the QWQCONFIG File

Parameter	Value	Description
CORE_CAP	*DEFAULT	The default value is *NONE.
	*NONE	There is no workload capping for this partition.

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Parameter	**Value**	**Description**
	Integer value	The maximum number of CPU cores to use for Db2 Web Query for this partition. It must be an integer number from 1 to n.
USER_CAP	*DEFAULT	The default value is *NONE.
	*NONE	There is no Developer User capping for the partition.
	Integer value	The maximum number of licensed Developer Users to allow for Db2 Web Query for this partition. It must be an integer number from 1 to n.
WORKBENCH_CAP	*DEFAULT	The default value is *NONE.
	*NONE	There is no Developer Workbench user capping for the partition.
	Integer value	The maximum number of licensed Developer Workbench users to allow for Db2 Web Query for this partition. It must be an integer number from 0 to n. If 0 is specified, then no users are allowed.
RUNTIME_GROUPS_CAP	*DEFAULT	The default value is *NONE.
	*NONE	There is no Runtime Enablement Group capping for the partition.
	Integer value	The maximum number of licensed Runtime Enablement Group profiles to allow for Db2 Web Query for this partition. It must be an integer number from 0 to n. If 0 is specified, then no users are allowed.

For more information on licensing and workload capping, refer to these knowledge center documents:
https://www.ibm.com/support/knowledgecenter/POWER6/iphat/iphatos400license.htm
https://www.ibm.com/support/knowledgecenter/POWER7/p7hat/iphatos400license.htm
https://www.ibm.com/support/knowledgecenter/POWER8/p8hat/p8hat_os400license.htm
https://www.ibm.com/support/knowledgecenter/POWER9/p9hat/p9hat_os400license.htm