

Limited Use Virtual Server and Limited Use Socket Sub-capacity Licensing Guide

Sub-capacity licensing is an option that allows for licensing the Program on a subset of a physical server's processor cores. Sub-capacity licensing gives the flexibility to install eligible software on any size physical server.

This Guide provides information and examples regarding Sub-capacity licensing under both Limited Use Virtual Server (LU Virtual Server) and Limited Use Socket (LU Socket) licensing. For details on Sub-capacity licensing under Processor Value Unit ("PVU") licensing terms, see: <http://www-01.ibm.com/software/lotus/passportadvantage/subcaplicensing.html>.

1. LU Virtual Server Sub-capacity Licensing

A LU Virtual Server is a physical server or a virtual server created by partitioning the resources available to a physical server using an eligible virtualization technology (see http://public.dhe.ibm.com/software/passportadvantage/Sub-capacity/Eligible_Virtualization_Technology.pdf). A server is a physical computer that is comprised of processing units, memory, and input/output capabilities and that executes requested procedures, commands, or applications for one or more users or client devices. Where racks, blade enclosures, or other similar equipment is being employed, each separable physical device (e.g., a blade or a rack-mounted device) that has the required components is considered itself a separate Server. You must: (1) acquire one LU Virtual Server entitlement for each LU Virtual Server on which an instance of the Program is installed as described below; and (2) for each instance of the Program comply with the resource use restrictions.

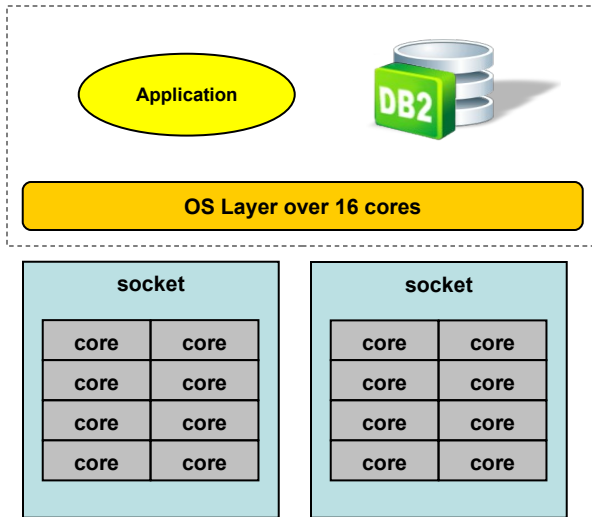
The process for determining the number of required LU Virtual Server licenses is:

1. Total up all the un-partitioned physical and virtual servers that the Program using the LU Virtual Server metric is or will be deployed in
2. The required number of LU Virtual Server licenses is equal to this count

Note: In order to help you comply with the processor core resource usage restrictions, DB2 Express will not use more than 8 cores per physical server or, where partitioned virtual server, on Windows and Linux x64 platforms.

Example 1.1: Physical server with a single server of DB2 Express

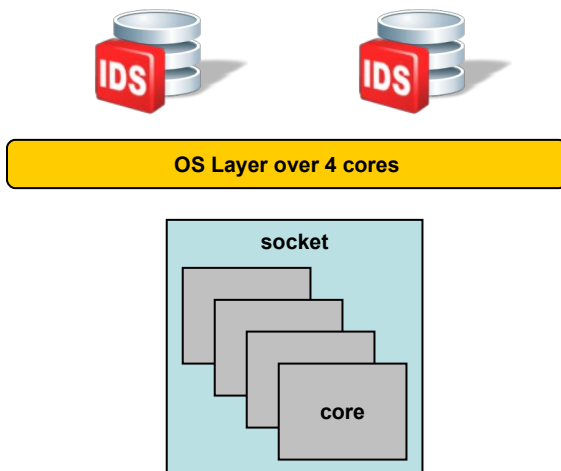
One un-partitioned physical server with 16 processor cores on 2 sockets



In order to install one or more copies of DB2 Express on an un-partitioned Windows or Linux x64 physical server, you require a single LU Virtual Server license. The number of cores on the server doesn't matter as DB2 Express will automatically use no more than 8 cores in total on Windows and Linux x64 platforms. However, if the server was Solaris x64, you could not install DB2 Express unless you used an eligible virtualization technology to restrict all copies of DB2 Express to using up to the same 8 processor cores.

Example 1.2: Physical server with multiple copies of Informix Innovator-C

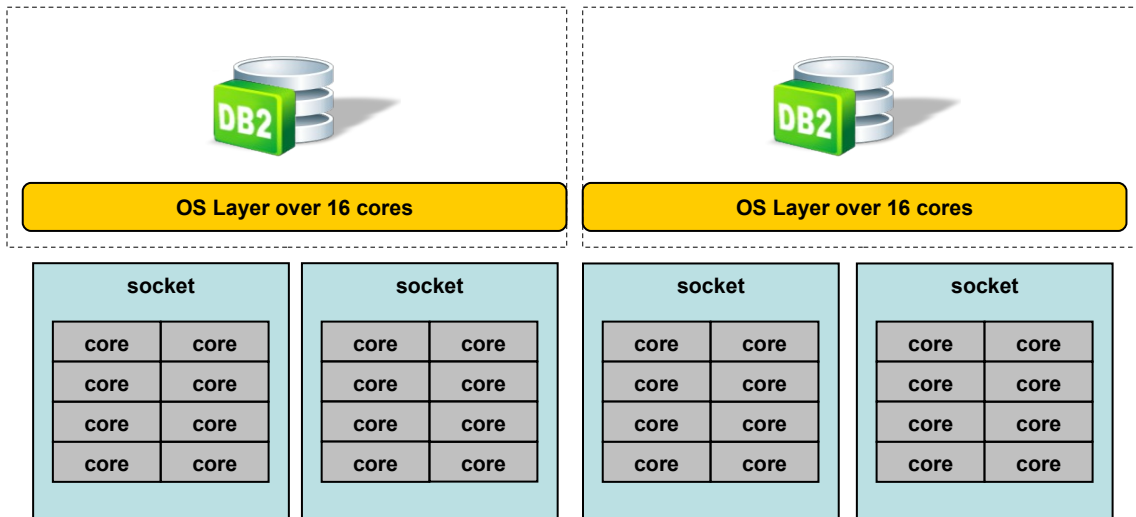
One un-partitioned physical server with 4 processor cores



If your un-partitioned server contains only 4 processor cores total, you may install and run as many copies of Informix Innovator-C as you wish with a single LU Virtual Server license, because each is limited to the same 4 processor cores.

Example 1.3: Using DB2 Express with virtual servers

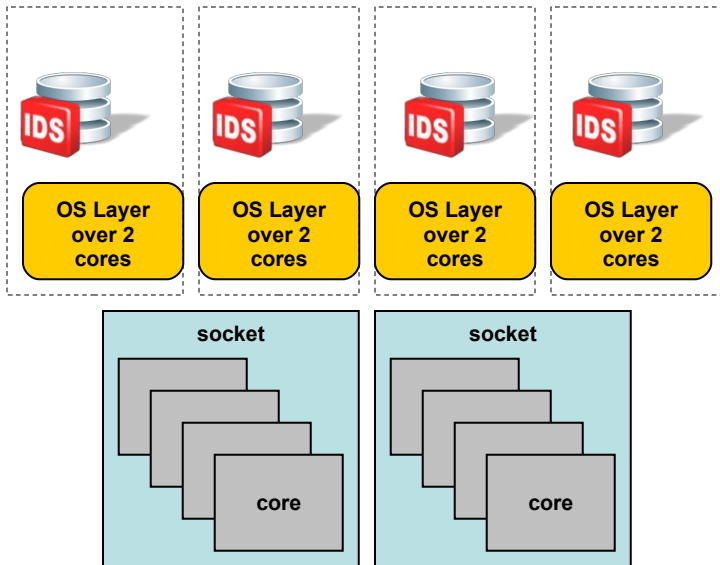
One physical server with 32 processor cores partitioned into 2 virtual servers with 16 processor cores each



In order to install copies of DB2 Express on two partitions or virtual server running on Windows and Linux x64 platforms, you require two LU Virtual Server licenses. The number of cores per partition or virtual server doesn't matter as DB2 Express will automatically not use more than 8 cores in total per virtual server on Windows and Linux x64 platforms. However, you could not install DB2 Express on Solaris x64 unless you limited the virtual servers to only 8 processor cores each.

Example 1.4: Using Informix Innovator-C with many virtual servers

One physical server with 8 processor cores partitioned into 4 virtual servers with 2 processor cores each



If your physical server with 8 processor cores is partitioned into 4 virtual servers using 2 processor cores each, and you install a copy of Informix Innovator-C on each of the 4 virtual servers, then you must license for four LU Virtual Server licenses. If the Program is licensed using LU Virtual Server the total number of LU Virtual Server licenses required is not limited by the physical capacity of the machine.

2. LU Socket Sub-capacity Licensing

A Limited Use Socket is an electronic circuitry that accepts a processor chip. A server is a physical computer that is comprised of processing units, memory, and input/output capabilities and that executes requested procedures, commands, or applications for one or more users or client devices. Where racks, blade enclosures, or other similar equipment is being employed, each separable physical device (e.g., a blade or a rack-mounted device) that has the required components is considered itself a separate server. A virtual server is created by partitioning the resources available to a physical server using an eligible virtualization technology (see http://public.dhe.ibm.com/software/passportadvantage/Sub-capacity/Eligible_Virtualization_Technology.pdf). A processor chip is electronic circuitry containing one or more processor cores that plugs into a socket. A processor core is a functional unit within a computing device that interprets and executes program instructions, and consists of at least an instruction control unit and one or more arithmetic or logic units. You must: (1) acquire one LU Socket entitlement for each full or partial socket on the physical or virtual server on which the Program is installed as described below; and (2) for each instance of the Program comply with the resource use restrictions.

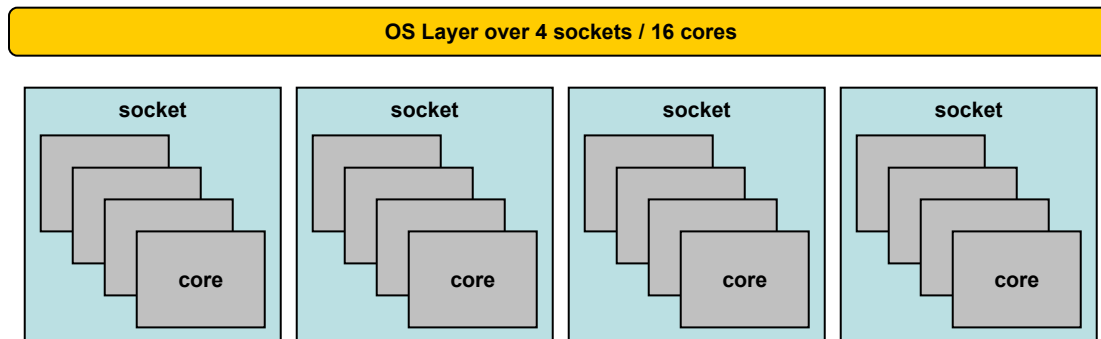
The process for determining the number of required LU Socket licenses is:

1. For each physical server or, where partitioned, virtual server that will have the Program installed, sum the number of processor cores available to the Program.
2. Sum the results of step 1 for all virtual servers on a single physical server.
3. Divide the result of step 2 by the number of processor cores per socket on the physical server.
4. Round up the result of step 3 to the nearest whole number.
5. The lesser of the result of step 4 and the number of active sockets on the physical server is the required LU Socket entitlement.

Note: In order to help you comply with the processor core resource usage restrictions, DB2 Workgroup will not use more than 16 cores per physical server or, where partitioned virtual server, on Windows and Linux x64 platforms.

Example 2.1: Limited Use Socket on a physical server

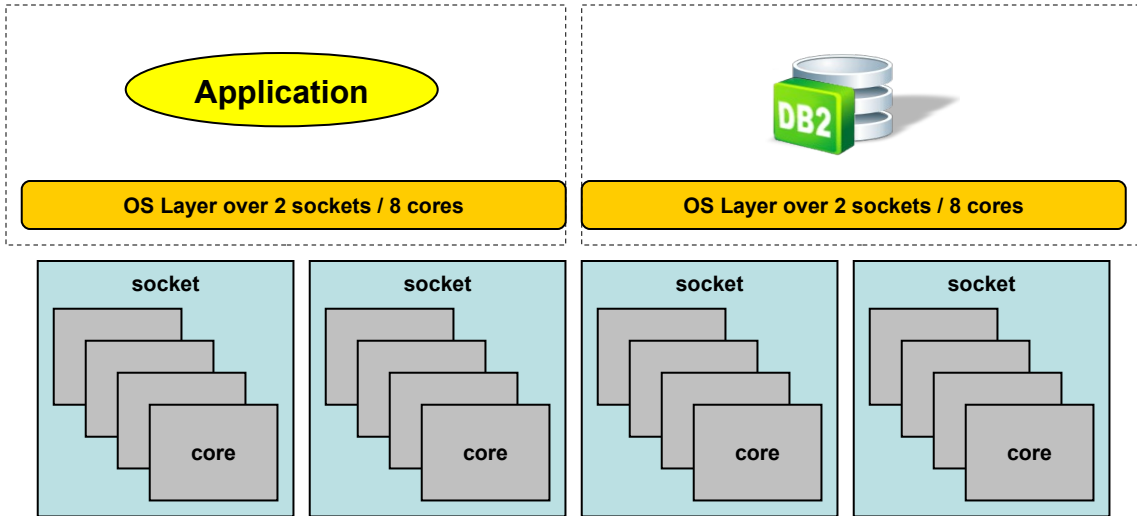
One un-partitioned physical server with 4 sockets, each containing 4 processor cores.



If you install a single copy of DB2 Workgroup Edition on an un-partitioned physical server with 4 sockets, each containing 4 processor cores, you require one LU Socket license per socket for a total of 4 LU Socket licenses for the Server.

Example 2.2: Deploying Limited Use Sockets in a virtual environment

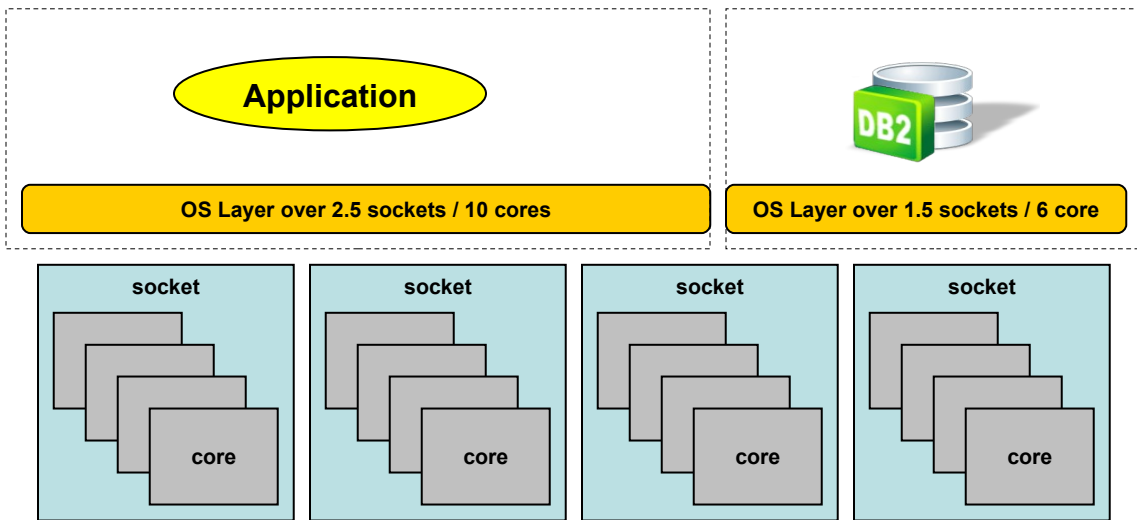
One physical server with 4 sockets, each containing 4 processor cores partitioned into 2 virtual servers with 2 sockets / 8 processor cores each



If the physical server with 4 sockets / 16 processor cores is partitioned into 2 virtual servers using 2 sockets / 8 processor cores each, and you install a copy of DB2 Workgroup on one of the two virtual servers, then you must purchase two LU Socket licenses.

Example 2.3: Deploying Limited Use Sockets with partial socket allocations

One physical server with 4 sockets, each containing 4 processor cores partitioned into 2 virtual servers with 2.5 sockets / 10 processor cores in one and 1.5 sockets / 6 processor cores in the other.

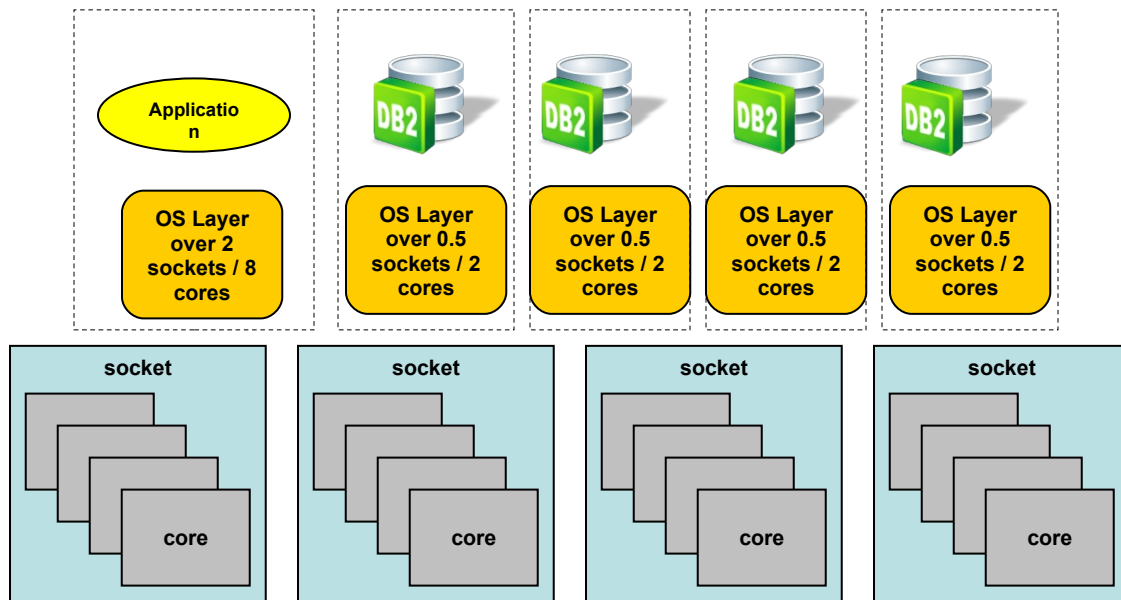


If the physical server with 16 processor cores is partitioned into 2 virtual servers using 2.5 sockets / 10 processor cores in one and 1.5 sockets / 6 processor cores in the other, with DB2 Workgroup running only in the smaller partition, you must purchase two LU Socket licenses since DB2 is using all or part of two sockets. To determine the total number of LU Sockets that must be licensed when partial sockets are allocated on a server the total number of partial sockets

is added up and then rounded up to a whole socket. In this example 1.5 sockets of DB2 is rounded up to two LU Socket entitlements being required.

Example 2.4: Multiple virtual servers and Limited Use Socket

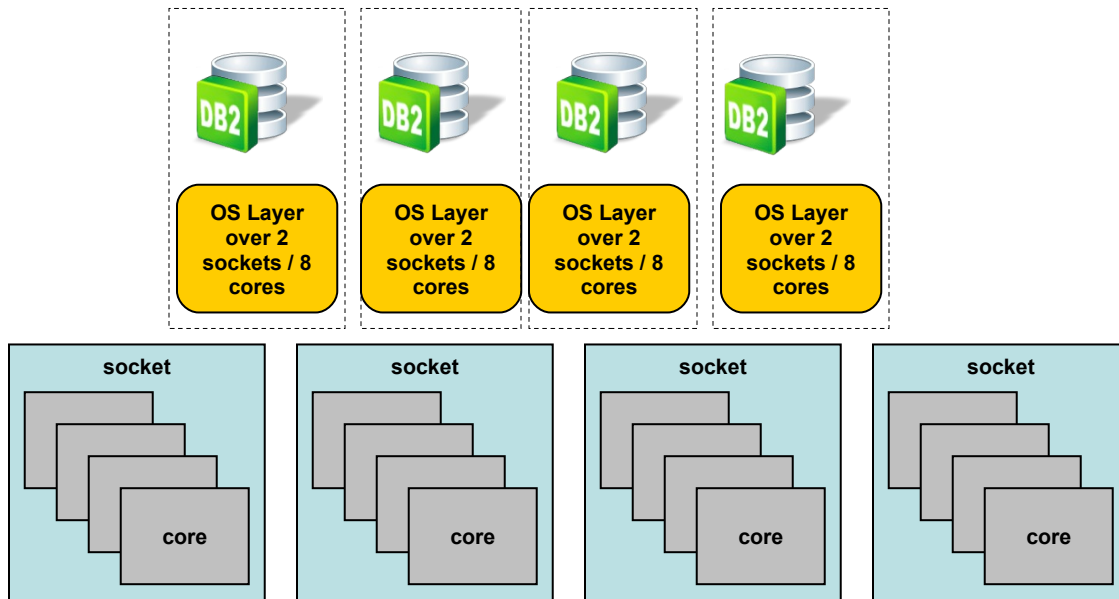
One physical server with 4 sockets, each containing 4 processor cores partitioned into 5 virtual servers with .5 sockets / 2 processor cores in each and one partition with 2 sockets / 8 cores allocated to it.



If the physical server with 4 sockets / 16 processor cores is partitioned into 4 virtual servers using 0.5 sockets / 2 processor cores each, and virtual server with 2 sockets/8 cores, and you install a copy of DB2 Workgroup on each of the four virtual servers with 0.5 sockets, then you must only purchase two LU Socket licenses. In this example the cores allocated to DB2 are totaled, 2+2+2+2=8, then divided by the number of cores per physical socket, 8/4=2, then rounded up to a whole number of sockets, which in this case is two.

Example 2.5: Limited Use Sockets on a server that has over allocated resources using virtualization

One physical server with 4 sockets, each containing 4 processor cores partitioned into 4 virtual servers with 2 sockets / 8 processor cores in each.



In this example, the number of sockets allocated to the virtual machines is greater than the total number of physical sockets on the machine. If the physical server with 4 sockets / 16 processor cores is partitioned into 4 virtual servers using 2 sockets / 8 processor cores each, and you install a copy of DB2 Workgroup on each of the four virtual servers with 2 sockets, then you must acquire four LU Socket licenses. In this example, the cores allocated to DB2 are totaled, $8+8+8+8=32$, then divided by the number of cores per physical socket, $32/4=8$, then rounded up to a whole number of sockets, which in this case is eight. However, the total physical capacity of the machine is only four sockets so the total required LU Socket licenses is lowered to four as the maximum required number of LU Socket licenses is capped at the physical capacity of the server.