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IBM i Frequently Asked Questions pertaining HA/DR licensing for the CBU, Designated Backup Machine, BRMS BR2, Db2 Mirror, PowerHA SystemMirror for IBM i and Enterprise Pools 2.0

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The purpose of this document is to cover frequently asked questions and, in this iteration, to include questions related to IBM i subscription bundles--IBM i P30 Enterprise Edition and IBM i P20 Standard Edition--and relevant Power Enterprise Pools topics.

To learn more about CBU and how it works in general, see [IBM Power Systems: Capacity Backup](#).

Topics:

- Registration
- Temporary Keys
- Temporary Transfers with CBU
- IBM i Subscription Bundles and CBU
- Db2 Mirror for i
- BRMS and PowerHA SystemMirror for i and CBU
- Out-of-compliance messages
- Power Enterprise Pools 2.0 (PEP 2.0)
- Power Virtual Server
- Additional Topics

**Registration**

Q: Can I convert an existing machine into a CBU?

A: No. The only way to attain CBU status is upon the purchase of a new system. Econfig will enable you to select either the “0444” specify feature for scale-out boxes, or the “4891” specify feature for the P30 class systems.

Q: What if the registration is not completed?

A: The order will not be fulfilled. If your selection is not registerable, it is probably not a supported combination.

Q: Can I register an existing CBU to a new primary system?

A: Yes, you can as long as it is your original CBU and it is a supported combination. Example, an old P10 tier Power8 CBU can be re-registered to a new P10 Tier Power11 production.

Q: Can we reverse the roles of my Primary and CBU via a record change process?

A: No. The only legitimate role change operation is when the workload is moved to and from the CBU. This is the purpose of the CBU offering, enabling role swap operations for the purpose of HA or DR operations.

Q: Can I change my CBU back into a primary box?

A: If this machine is no longer going to function as CBU, you can submit an RPOMES order to remove the CBU feature 0444 from the HW.

Q: Can I register an IBM i Solution Edition box as a CBU?

A: No. The CBU and Solution Edition are mutually exclusive offerings.

Q: Can the CBU be registered if it's in another country than the primary system?

A: The CBU registration process is indifferent as to the geographic location of the primary/CBU pairs, the only requirement is that both the production(primary) and CBU must be owned by the same enterprise. Questions regarding the operations of a production/CBU spanning country boundaries should be directed toward country level regulation authorities.

Q: How many primary systems can I backup with my CBU?

A: One dedicated IBM i system or dedicated partition may be paired to a dedicated Virtual CBU ("vCBU") partition for the purpose of role swap operations. Each primary-CBU pairing will be licensed as though they were both stand-alone boxes.

Q: How many CBUs can I register to a primary?

A: There is no limit, a typical configuration with PowerHA clustering is to have one CBU for HA in the datacenter and one for DR at the remote location. You will register each CBU against one given primary system: tell us in the comment section that you will be registering more than one CBU to this primary. Each CBU must be registerable as though it were a stand-alone server being registered to the given primary.

Q: Are there any additional compliance conditions associated with multiple primary and/or multiple CBU topologies?

A: For implementations using logical replication tools, the assigned processing units and assigned virtual processors for a vCBU partition must be set to the minimum entitled cores required to sustain the replication prior to workload failover. Place these cores in a shared/capped processor pool. Resize the shared processor pool prior to the CBU prior to failover to the maximum processing units. After the failover has completed, resize the source partition down to the minimum required to sustain replication and cap that partition. All of this can be avoided by using Enterprise Pools.

## **Temporary Keys**

Q: For which Licensed Program Products can I get temporary keys for the CBU?

A: You can get temporary keys for the IBM i non-OS LPPs which are delivered as part of the IBM i keyed programs.

Q: How do I get temporary keys?

A: The latest copy of the key request form is on [IBM i License Topics](#). The direct link is [Request Temporary Keys for a Backup Machine](#).

### **Temporary Transfers with CBU**

Q: Is SWMA transferable to the CBU?

A: No, in fact, if you would like IBM support as well as the ability to do upgrades, you need the SWMA on the entitlements that you purchased for the CBU to be current.

Q: What does temporary mean when used in the context of transferring optional IBM i user entitlements or optional IBM i processor entitlements?

A: Temporary means that the transferred entitlements “belong” to the primary system. If the primary system goes away, all optional transferred IBM i user entitlements, Enterprise Entitlements and IBM i license entitlements remain with the primary system. When you initially configure your licensing topology, all transferable entitlements will be configured on the primary system. In effect you are entitled to run your production workload either on the primary partition or on the corresponding CBU partition but not concurrently.

Q: Can an end customer use the Designated Backup Machine?

A: Yes, it's a great way to provide a very low-cost DR solution with Full System Replication, see the detail in the MPS section.

### **Managed Service Providers (MSPs)**

Q: Can an MSP host my DR with their CBU?

A: Not unless the MSP owns both the production system and the CBU. The CBU must be owned by the same enterprise. You might consider the designated backup machine approach for this type of scenario where the MSP is hosting the DR box. This option is particularly attractive when using storage-based replication in an active/inactive (cold backup) configuration. It provides the capability for N+0 licensing where there are no IBM i licenses on the DR box.

Q: How does the designated backup machine (DBM) get licensed?

A: When using logical replication tools, the DBM is configured such that the hosting partition CPWs are restricted to be less than the hosted servers CPW and all the processor cores licenses with IBM i. Workload running on the DBM will be licensed with IBM i. There is no temporary transfer of IBM i entitlements as is the case with the CBU terms. This enables MSPs to oversubscribe the CPWs.

When using active/inactive (cold backup) the total CPWs as well must be restricted however no IBM i licenses are required. This makes the DBM option attractive for DR hosting MSPs and their clients. Note that if you need to stay on the DBM longer than 70 days, you will need at least one IBM i license on the system. Also, for software tiers P20 and P30, you will need on Enterprise Enablement on the DBM. You need the minimum user entitlements for software tiers P05 and P10.. When using P20 or P30 production to a P10 DBM, you will need the maximum user entitlements on the DBM. Note that the DBM can be used by end customers as well.

Q: As an MSP, we are hosting multiple customers on the same set of servers. How do we license the CBU frame?

A: Since each hosted customer has their own production LPAR, they will also have their own CBU LPAR. As mentioned earlier, these CBU LPARs are called vCBUs for virtual CBUs. The production and vCBU will be licensed in the same manner as if they were stand-alone pairs.

Q: When hosting multiple tenants, are unlimited user entitlements required on the CBU?

A: Yes

### **IBM i Subscription Bundles and CBU**

Q: How do the IBM i subscription bundles work with CBU?

A: Subscription bundles offer simpler ways to acquire IBM i and related capabilities. If you run subscription bundles on your production environments, you must buy the same bundle with a minimum of 1 core for CBU, to keep both production and CBU environments homogenous.

Q: How does Db2 Mirror for i work when entitled with a bundle work with CBU?

A: Refer to the “Db2 Mirror for i” section.

Q: Can I temporarily transfer all my IBM i subscription bundle entitlements to the CBU?

A: You can transfer n-1 entitlements to the CBU, since there is a minimum of one core on the CBU. You also need a minimum of one on the production environment, and therefore you can only transfer up to n-1. Where n is the number of licensed processor cores on the production LPAR which is temporarily transferable.

Note the minimum of one is not an absolute. If there is resident workload on the primary and/or CBU which is not temporarily transferred, those processor cores must be licensed permanently.

- For example, replication workload requires IBM i processor entitlements (and 5250 Enterprise Enablement activations or IBM i user entitlements) to support that operation at peak workload on both the primary and CBU or VCBU.

### **Db2 Mirror for i**

Q: How would I use the CBU with Db2 Mirror implementations?

A: First note that whether configured active/passive or active/active, the Db2 Mirror replication is always active/active therefore N+N licensing for IBM i and for Db2 Mirror. In the datacenter, one of the servers can be a CBU thereby enabling PowerHA to be licensed as N+1. PowerHA is used to manage the IFS HA operations in conjunction with the Db2 Mirror operations. The other half of the Db2 Mirror implementation is the disaster recovery site. If PowerHA and storage replication are being used, the DR systems are inactive, only the storage is active. The configuration at the DR site is likely to be identical to the configuration at the production site and both systems at the DR site can be CBUs therefore requiring only one IBM i and one Db2 Mirror and one PowerHA on each. In this part of the cluster configuration PowerHA serves as the orchestrator to enable the switch from the production site to the DR site where the Db2 Mirror pairs are IPL'd from storage. If logical replication is being used the replication workload on the CBU frame(s) must be fully licensed to peak workload utilization.

Q: I am not using Db2 Mirror although it is in the bundle, how do I license?

A: Since you are not using Db2 Mirror, you can forgo the N+N licensing requirement. If you are using Full System Replication, one IBM i license and one PowerHA are installed on the controlling partition on the CBU for redundancy (ie..if the production system goes down, so the controller on that system). The key center will issue the two-year temp keys for the LPPs that you need to run production on the CBU. If you are using the traditional PowerHA SystemMirror clustering, where the CBU(s) in the cluster have active IBM i and PowerHA LPARs, you will need to configure each independently switchable LPAR with a minimum core configuration to accommodate a fractional IBM i license. For example, suppose you have 4 independently switchable LPARs, in simple two system PowerHA cluster. Configure the CBU frame with 4 vCBUs (virtual CBUs) each with .25 IBM i and PowerHA. Prior to failover of a particular LPAR, expand the .25 to however many cores are supporting the production workload. In addition, you will need as many PowerHA (and BRMS) temp keys as are present on the production(primary) system. If you are using a logical replication tool the CBU must be configured in such a manner that there are no out of compliance messages prior to attempting a failover operation. If you are audited, the auditor can ask you to run everything on the production system to validate that there are not out of compliance messages on the CBU.

### **BRMS BR2 licensing**

Q: What are the general terms for licensing BMRS BR2

A: BR2 licenses are placed in each LPAR that is being backed up regardless of the location where the actual save operation is being performed and the licenses count for BR2 will always = the IBM i license count in the given LPAR being backed up. In addition, the LPAR or LPARs where the actual backup procedure is executed, such as an LPAR on a CBU, there will be the same licensing configuration where the BR2 count = the IBM i count.

Q: How do I license PowerHA and BRMS in non-Enterprise Pools deployments?

A: PowerHA features hardware-based HA/DR which in the case of storage consumes no processing overhead, and in the case of Geographic Mirroring consumes less than 10% overhead. This is where the notion of N+1 licensing comes in. You do need a minimum of one IBM i and PowerHA on the secondary nodes in the cluster for heartbeat communications. If you are supporting multiple independently switchable cluster nodes in a non-multi-tenant hosting environment on the same set of physical frames, you can use fractional core allocation to minimize licensing on the CBU frames and then you also include the two-year temp keys to reserve the capacity and to maintain compliance. PowerHA and BRMS are hard compliant meaning that the license count = the number of active cores in the partition. In a PowerHA cluster, you will have PowerHA temporary keys on the CBU LPARs and BR2 temporary (temp) keys. The temp key count = key count on the production LPARs. For example, if I have 5 PowerHA keys on a production LPAR, I will have 1 PowerHA license and 5 PowerHA temp keys. Similarly, for BR2.

### **Out-of-compliance Messages**

Q: Can I ignore out-of-compliance messages?

A: Post fail-over, that is, prior to a failover operation, the CBU will be configured in such a manner that there are no out-of-compliance messages. With PowerHA deployments temp keys reserve the PowerHA cores and for the IBM i keys you can keys to suppress the out of compliance messages. If you are using logical replication, the CBU LPAR(s), will be configured via licensing the minimum configuration required to host the maximum replication workload. Prior to failover, expand the target LPAR via a DLPAR operation, failover, and then collapse the source LPAR down to the same required to host the maximum replication overhead as discussed previously. If you were audited, the auditing entity can ask you to demonstrate compliance by running production in the pre-failover state.

Q: How can I suppress the out of compliance messages?

A: If you are using PowerHA, we can detect that you are using PowerHA and out of compliance message suppression keys can be issued upon request. [<provide the link>](#)

### **Power Enterprise Pools 2.0 (PEP 2.0)**

Q: Should I use the CBU with Enterprise Pools?

A: In Pools 2.0, PowerHA for IBM i doesn't require temp keys, just like IBM i, PowerHA is monitored and metered. The CBU for IBM i and PowerHA isn't required in Enterprise Pools however there are other LPPs (BRMS Subscription (5770-BR2), Db2 Mirror, ..) that will need two-year temp key until/when they too are metered.

Q: How do I license BRMS Subscription (5770-BR2) in Enterprise Pools?

A: 5770-BR2 is licensed per processor core and is managed like PowerHA in a non-enterprise pool configuration. N+1 licensing for the secondary nodes and the same temp key requirements as for PowerHA on IBM i in non-Enterprise Pools deployments.

5770-BR2 in Enterprise Pools is not metered. Until BR2 is metered, you will only need to license the base pool such that the number of BR2 entitlements in the base pool equal the number of IBM i entitlements in the base pool.

Q: How do I license Db2 Mirror in Enterprise Pools?

A: Db2 Mirror is licensed per processor core and as described earlier is licensed N+N and is not currently metered. Until Db2 Mirror is metered, you will only need to license the base pool such that the number of Db2 Mirror entitlements = the number of IBM i entitlements in the base pool.

### **Power Virtual Server**

Q: Is the CBU available in Power Virtual Server?

A: No, CBU is strictly an on-premise non-cloud option, however, you can achieve near equivalency by using shared processor pools and fractional cores. Set the target partition cores at the minimum which in PowerVS is .25. As an example, suppose your production partition has four cores. Set up the secondary partition to  $.25 \times 4 = 1$  IBM i and 1 IBM i. Prior to failover, expand the target to 4 full cores, and then collapse the source partition to  $.25 \times 4 = 1$ .

### **Additional Topics**

Q: Can I use the additional processors on my CBU for running an AIX application?

A: If you have sufficient capacity for your i partitions, you may use other the processor cores for any purpose if you have purchased the processor activations and the commensurate entitlements.

Q: I would like to move half of the production partitions to the CBU, I have unlimited user entitlements on production and 10 on CBU is this, ok?

A: Yes, this is ok. In this case you will be temporarily moving LPAR workload from the primary system to the CBU. This also means that LPAR workload is removed from primary. The total active users between the primary and the CBU must remain constant. This may not be used to increase usable capacity on the primary system.

Q: I have an 1124 primary, and I would like to use an S1014 as a CBU box, the 1024 doesn't have user entitlements what do I do

A: You will need to purchase as many user entitlements on the CBU as you intend to use in the event of a failover

Q: Can the CBU ever function as a stand-alone production system?

A: The CBU is registered with a specific primary server and must remain so to remain a CBU unless it is re-registered to a new eligible primary in the same enterprise that purchased and registered the CBU. A box that is on the used market that was once a registered CBU is no longer recognized as a

CBU and cannot be registered. At this point it's just another box and is not eligible to act as a CBU that can run with entitlements temporarily transferred from a primary.

Q: What type of HA or DR solution can I use with my IBM CBU for i?

A: You may use any approach you choose including a cold/warm backup based on tape recovery.

Q: If I am using an active/inactive or cold backup solution for multiple primary systems, do I still need to have a VCBU for each partition?

A: Anytime you are hosting multiple tenants on the CBU, each tenant will have its own secondary LPAR which we call a vCBU (virtual CBU), in fact, with active/inactive technology such as full system replication where the secondary node in the configuration is inactive or cold, you can use the designated backup machine approach (non CBU). This also enables you to host clients in a different enterprise on your machines for DR purposes. Check out the "hot, warm, cold" backup paper in the IBM I license topics link.