### Virtual Serial Number (VSN) Update

Last updated March 15, 2024 Latest revisions in green text

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### Virtual Serial Number Announcement



The latest information will be published on <a href="IBM">IBM</a> i License Topics > "Virtual Serial Number"

Process document: how to order, assigning a VSN to a partition, Q&A, etc.

Original announcement from January 2022:

IBM enables ordering of virtual serial numbers on selected IBM Power technology-based servers for use with IBM i

IBM now offers a customer the ability to acquire a Virtual Serial Number (VSN) and assign it to a logical partition. IBM i software can then be ordered on or transferred to the VSN instead of being tied to a physical IBM Power machine's serial number. Having the IBM i entitlement, keys, and support entitlement on a VSN provides the flexibility to move the partition to a different Power machine.

Virtual Serial Numbers can be ordered in specific countries: refer to the announcement letters in each geography

U.S. Announcement 122-017

Europe Announcement ZG22-0022

Asia Pacific Announcement AG22-0017

Canada Announcement A22-0093

### Virtual Serial Number Announcement, cont.



### IT Jungle:

https://www.itjungle.com/2022/01/31/the-ibm-i-cloud-just-got-more-frictionless-with-virtual-serial-numbers

### Physical Hardware Serial Number vs. Virtual Serial Number



#### **Hardware Serial #**

Partition 1	Partition 2	Partition 3
Serial = 78-12345	Serial = 78-12345	Serial = 78-12345

Hardware Serial = 78-12345

# Virtual Serial Number (VSN) For example, on 9009-22G S/N 78-12345 > order FC #EVSN

Partition 1 4850-VSN P10	Partition 2	Partition 3	
Serial =V0-11111	Serial = V0-22222	Serial = V0-33333	
	001101 = 10 22222	001101	

Hardware Serial = 78-12345

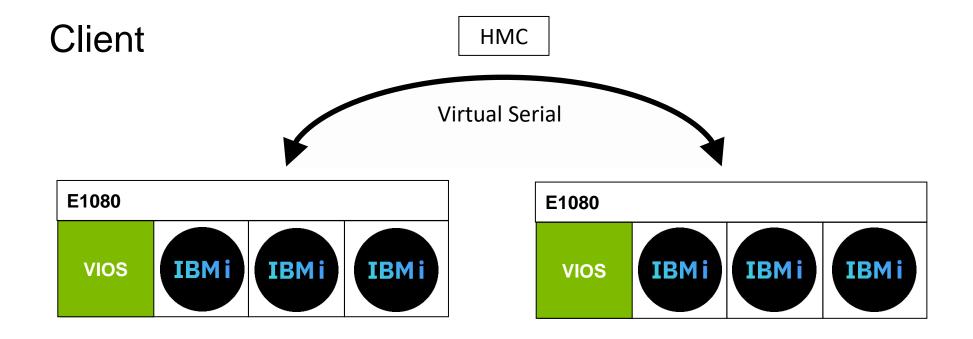
All partitions use the hardware serial number of the physical server

With a VSN, each partition can have its own serial number that is not tied to the hardware serial number. You can also have a combination of VSN and hardware serial number partitions. The hardware serial number is still there and is used to identify the physical box and is the default in a partition if a VSN is not used.

### VSN Phase 1: Order/Transfer Within a Customer Enterprise



Virtual Serial Number partitions can be moved across systems where the HMC can see both servers or has network connectivity to another HMC that can see the other server. This is the same limitation as LPM.



VSNs are now supported in Power Enterprise Pools (PEP) 2.0 environments starting in 4Q2023

<u>Anouncement October 24, 2023</u>

### **VSN** Requirements



- Power9 or Power10 server which supports IBM i
  - Refer to <u>System to IBM i mapping</u>
  - Power9 machines require FW950 or later
- HMC Version 9.2.950 (or later)
- IBM i 7.5, 7.4, 7.3, 7.2
  - IBM i 7.5 has VSN support in the base. For IBM i 7.4 and earlier, here are the minimum IBM i TR level/PTFs.

IBM i 7.4 TR3	IBM i 7.3 TR9	IBM i 7.2
MF67721	MF67723	MF67853
MF67863	MF67862	MF67861
MF68035	MF68042	MF67871
SI74470	SI74682	SI74687

### **VSN General Process Flow**



- Order #EVSN feature code through an IBM seller (IBM Business Partner, IBM Digital Seller, IBM Power Seller)
- 2. Use Entitled Systems Support (ESS) Power Capacity on Demand option to generate the VSN and COD activation code (new April 2023)
- 3. Install the COD activation code on an IBM Power server
- 4. Order new/transfer IBM i operating system licenses/entitlements for a VSN through an IBM seller and transfer any additional software using the ESS Inventory Migration option

https://www.ibm.com/docs/en/entitled-systems-support?topic=demand-virtual-serial-number-overview

## VSN Ordering – e-Config



- How do I order a VSN?
  - You can acquire a VSN(s) by placing an order for feature #EVSN. This is available
    on new machine orders or as an upgrade on existing machines.
  - Within e-Config, from the "Codes" section and "Order Codes" area enter the desired quantity for feature #EVSN

Order Codes	Proposed
(2145)-Primary OS - IBM i	1 🗘
(EB3V)-IBM i 7.1 Activation for E980	0 🗘
(EB74)-IBM i 7.4 Indicator	1 🗘
(ER1A)-Specify Reserve 4 EIA Rack Space for PCIe3 Expansion Drawer	0 🗘
(ESCO)-S&H - No Charge	1 🗘
(ESC9)-S&H	o 🗘
(EVSN)-Enable Virtual Serial Number	1 🗘

- What is the cost of a single VSN?
  - \$100 EVSN Enable Virtual Serial Number 1 100.00
- What if I no longer need my VSN(s)? Can I return them? Will I get a refund?
  - Once purchased a VSN remains with the customer. There is no way to return a VSN to IBM or get a refund.

### **VSN** Ordering



- What is 4850-VSN?
  - At the time when a VSN is reserved, an IBM inventory record is created for each VSN, similar to physical machine inventory records. The IBM Virtual Server Serial (4850-VSN) is a new machine type and model created specifically for VSNs. The 4850-VSN is associated with each VSN in IBM's inventory records. The 4850-VSN and its associated features are not orderable in e-Config, but they are automatically assigned to the VSN record. When a VSN record is retrieved from IBM Inventory Services, the 4850-VSN is associated with the record.

	Machine	Model	Feature
Description	type	number	number
IBM Virtual Server Serial	4850	VSN	
P05 for IBM i SW Tier	4850	VSN	EVS1
P10 for IBM i SW Tier	4850	VSN	EVS2
P20 for IBM i SW Tier	4850	VSN	EVS3
P30 for IBM i SW Tier	4850	VSN	EVS4
Processor Core Value	4850	VSN	EVS5
Processor Activation Value	4850	VSN	EVS6

## VSN Steps (Modified Process April 2023)



#### **Steps to acquire VSNs:**

- 1. Order #EVSN feature on the eligible Power machine. Specify the desired quantity.
- 2. Once the order is fulfilled, go to <a href="Entitled Systems Support">Entitled Systems Support</a> (ESS) and leverage the new self-serve VSN capability to create VSNs and their associated Capacity on Demand activation codes.
  - The default Customer Number ("C/N") for the VSN is the same C/N as the physical hardware
  - To assign the VSN to a different C/N instead of the default, specify the C/N to which to assign to a VSN ("install at" C/N)
  - E.g. order 5 VSNs: assign 4 VSNs to the default C/N, and assign 1 VSN to the C/N which is assigned to the Eastern US division of the company C/N 8920442446

Result: the client gets a CoD for 5 VSNs to install on their machine. 5 VSNs are added to inventory records with assigned C/Ns.

- 3. Customer installs the CoD code on their Power machine.
- 4. The customer either...
  - buys IBM i and LPPs on their assigned VSN, or
  - transfers IBM i (via IBM i Entitlement Transfer offering for \$6,000/core (USD list price)) and/or LPPs to their assigned VSN Result: customer has software and support entitlement on the VSN
- 5. Client creates/edits a partition and assigns the client's VSN to the partition

→ Important: Once the VSN is added to inventory, the Customer Number on the VSN cannot be changed.

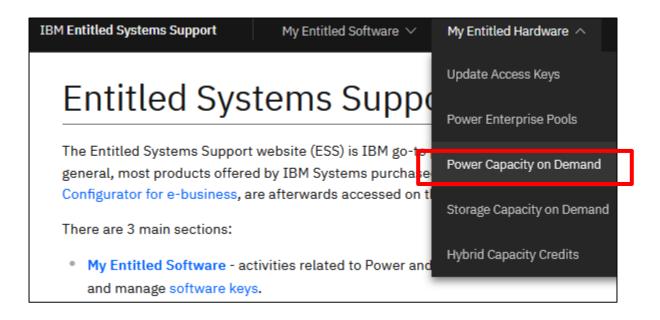
# VSN Fulfillment Entitled Systems Support (ESS) (New April 2023)

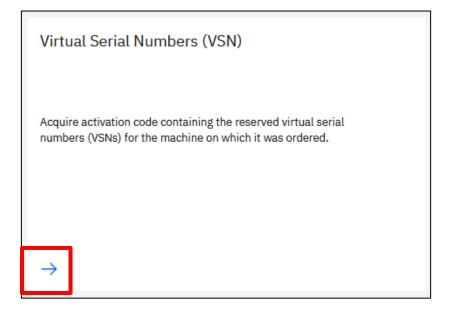


What do I do after I order the VSN feature?

In April, 2023, IBM added new self-serve VSN capability to create VSNs and their associated Capacity on Demand activation codes digitally on the <a href="Entitled Systems">Entitled Systems</a> <a href="Support">Support</a> (ESS) website.

This is from a new VSN option under the "Power Capacity on Demand" application.





# VSN Fulfillment ESS (New April 2023)



My entitled hardware / Power Capacity on Demand /

#### Virtual Serial Numbers (VSN)

Acquire activation code containing the reserved virtual numbers (VSNs) for the machine on which it was ordered.



#### Overview

Virtualize your server Enabled VSN on eligible Power9 and Power10 machines can be assigned to logical partition also called Virtual Machine (VM). IBM i software can then be ordered on or transferred to the VSN instead of being tied to a physical IBM Power

machine's serial number. Having the IBM i entitlement, keys, and support entitlement on a VSN provides the flexibility to

move the partition to a different Power machine.

Benefits of logical partitioning When you create logical partitions on your server, you can consolidate servers, share system resources, create mixed

environments, and run integrated clusters.

Request the activation code and

install it

Installing the activation code makes the reserved virtual serial numbers available on the machine. You can then assign a virtual serial number to a partition. The VSN is used for licensing and for tracking the usage of the logical partition. The virtual serial number has seven digits and it is a unique string.

To enter a CoD code on a server, you must use the HMC Capacity on Demand -> CoD functions -> Enter CoD Code task.

**EVSN** feature

To be able to generate VSNs, an order for EVSN feature needs to be placed and installed on the physical machine with the desired quantity.

Click here to find out more

#### Actions

#### Generate new VSNs

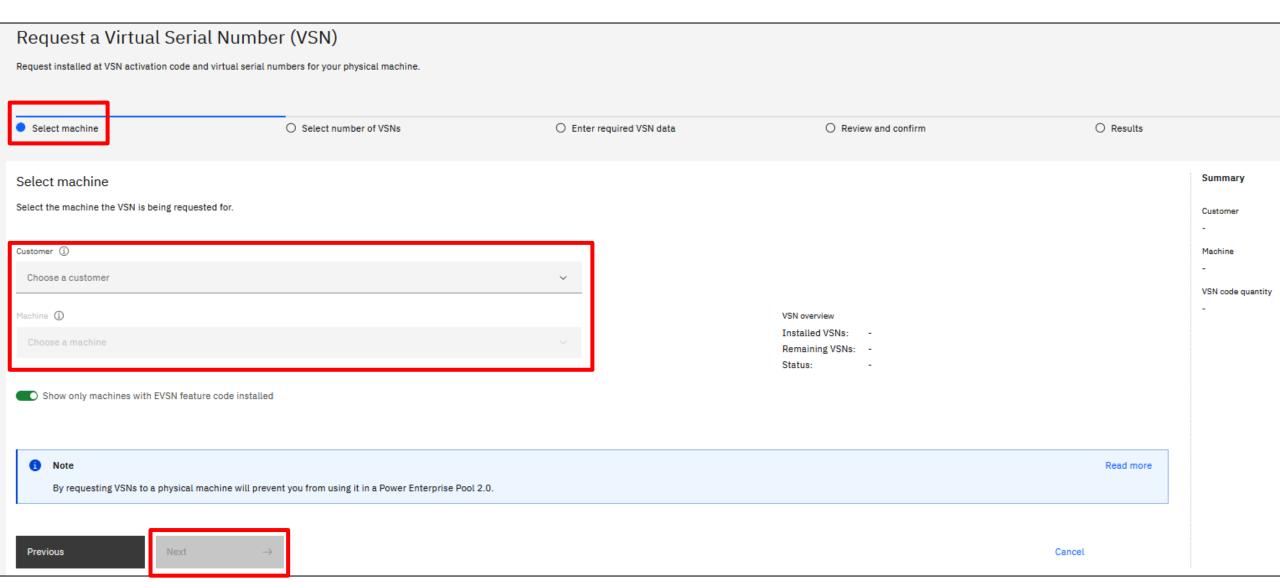
Request installed at VSN activation code and virtual serial numbers for your physical machine.

#### Machine overview and VSN codes history

Preview all generated VSNs in your inventory machines and their history data, as well as request new VSNs.

# VSN Fulfillment ESS (New April 2023)

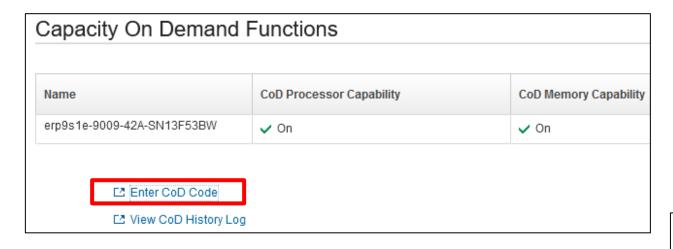


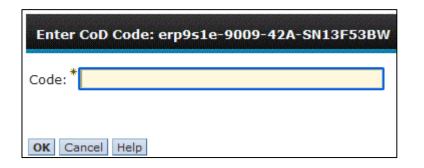


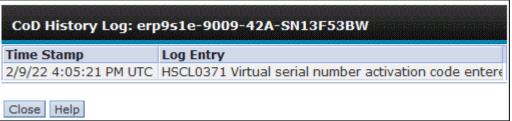
### VSN - HMC/CoD



- After receiving the CoD code for the Power machine on which feature #EVSN order was placed, it needs to be installed.
- The CoD code contains the reserved VSN(s) and installing the CoD code makes the reserved VSN(s) available on the machine.
- To enter a CoD code on a server, use an HMC and the Capacity on Demand>>>CoD functions>>>Enter CoD Code task.

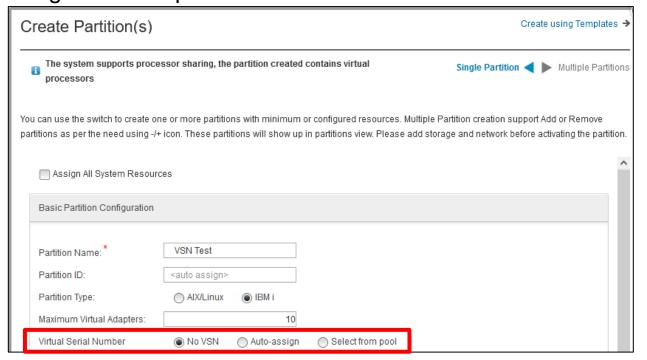


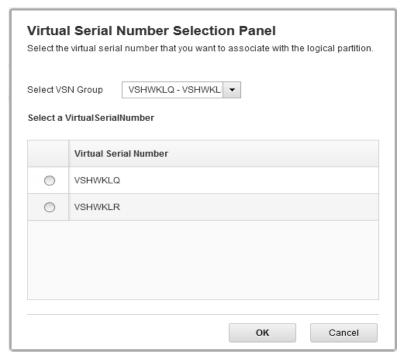






- When creating a new partition (or modifying an existing one), the options are:
  - No VSN: Select No VSN if you do not want to assign a VSN to the partition (the default)
  - Auto-assign: Select Auto-assign if you want the system to automatically assign a VSN to the partition
  - Select from pool: Choose the Select from pool option if you want to manually assign a VSN to a
    partition. Click Select VSN to open the VSN window. The window lists the VSNs that can be
    assigned to the partition.





- Can I change a partition with a VSN to no VSN? Or to a different VSN?
  - Yes. First the partition has to be in a "Not activated" state to modify the VSN.



- Each partition with a VSN requires that IBM i software be ordered or transferred to that VSN
- Start by retrieving the VSN from inventory records then
  - Order new IBM i portfolio software (operating system LPPs, etc) for the VSN or
  - Transfer IBM i (via the IBM i Entitlement Transfer Offering, \$6,000 USD list price per core) and LPPs to the VSN
- Suppose I have a VSN partition and use Live Partition Mobility to move the partition from one physical machine to another physical machine: do I have to pay the IBM i license transfer fee?
  - No. The IBM i license transfer fee is only to transfer IBM i entitlements
    (processor/user) to a VSN. That is a one-time charge. Once IBM i software is
    associated to a VSN (purchased or transferred), it can move around the customer
    enterprise where the HMC can see the servers.

## Transfer IBM i Software to a VSN - Example 1



#### **Example 1 - Before the transfer**

Hardware Serial = 78-12345 IBM i processor = 1 IBM i users = 10 BRMS (5770-BR1) Performance Tools (5770-PT1)

Donor Machine – S/N 78-12345

 All SW is entitled and keyed to the Serial Number 78-12345 Customer wants to transfer all SW to VSN V0-00005

Transfer order placed:

- Config the transfer of IBM i processor and users from 78-12345 to V0-00005 (same IBM i transfer steps as with system replacement)
- Transfer LPPs (BRMS and Performance Tools) either via ESS or on the IBM i transfer config

# Transfer IBM i Software to a VSN – Example 1



### **Example 1 - After the transfer**

Hardware Serial = 78-12345

IBM i processor = 1

IBM i users = 10

BRMS (5770-BR1)

Performance Tools (5770-PT1)

**VSN= V0-00005** 

IBM i processor = 1

IBM i users = 10

BRMS (5770-BR1)

Performance Tools (5770-PT1)

# Transfer IBM i Software to a VSN – Example 2



### **Example 2 - Before the transfer**

Hardware Serial = 78-12345 IBM i processor = 4 IBM i users = 10 BRMS (5770-BR1) Performance Tools (5770-PT1)

Donor Machine – S/N 78-12345

 All SW is entitled and keyed to the Serial Number 78-12345

#### On VSN V0-00005, customer...

- Needs to transfer 2 of the 4 IBM i processor entitlements from 78-12345 to the VSN
- Also needs 5 IBM i users, BRMS, and Performance Tools on the VSN

### Orders placed:

- Config the transfer of 2 IBM i processor entitlements from 78-12345 to V0-00005 (same IBM i transfer steps as with system replacement)
- Order new on V0-00005: 5 IBM i users, BRMS, and Performance Tools

### Transfer IBM i Software to a VSN – Example 2



#### **Example 2 - After the transfer**

Hardware Serial = 78-12345 IBM i processor = 2 (instead of 4) IBM i users = 10 BRMS (5770-BR1) Performance Tools (5770-PT1) VSN= V0-00005
IBM i processor = 2
IBM i users = 5
BRMS (5770-BR1)
Performance Tools (5770-PT1)

### Managed Service Providers (MSPs)

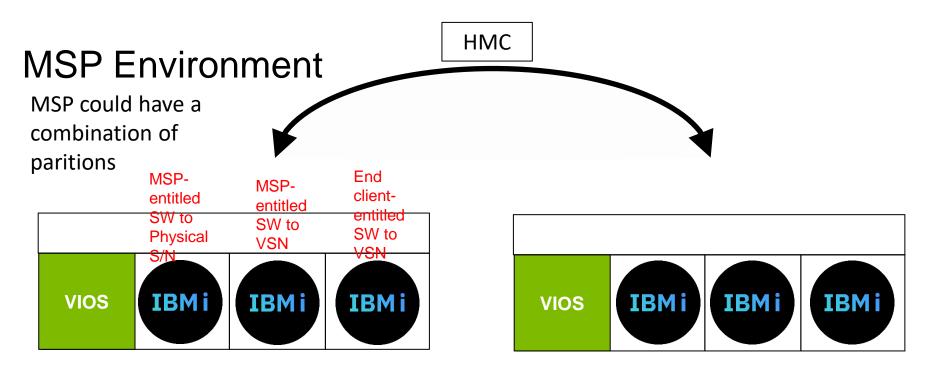


Steps to get clients enabled on MSP-owned hardware:

- 1. MSP orders EVSN feature for a quantity of VSNs for their machine.
  - MSP sends email request to the Key Center for their CoD code which will populate the VSNs:
    - The default Customer Number ("C/N") for the VSN is the same C/N as the physical HW
    - To assign the VSN to an end client C/N instead of the default, in the email specify the C/N to which to assign to VSNs ("install at" C/N)
- 2. For VSNs which are assigned to end client C/N, the end client:
  - Buys IBM i and LPPs on their assigned VSN, or
  - Transfers IBM i for the transfer price to their assigned VSN. LPPs should be transferred via ESS.

Result: client has software and support entitlement on the VSN

3. MSP creates a partition and assigns the client's VSN to the partition



### MSP Steps



If the MSP will keep the VSN in the MSP's Customer Number ("C/N"), then the MSP acquires software on the C/N using the standard methods by which they acquire software on physical Serial Numbers: order new IBM i entitlement, order the IBM i SP Monthly enrollment and usage, transfer IBM i and/or LPPs from an MSP owned physical or Virtual serial number.

#### If the MSP desires to have the VSN in the end client's C/N, here are steps for MSPs to get client-entitled VSNs on MSP-owned hardware:

- 1. MSP orders EVSN feature on their machine. Specify the desired quantity
- 2. Once the order is installed, send the email to the Key Center asking for the ordered quantity of VSNs:

Subject line of email: "request VSNs for S/N xxxx yy-yyyyyy for order zzzzzz"

(where "xxxx" is the four digit machine type (e.g., 9009, 9080, etc.), "yy-yyyyy" is the seven-digit machine serial number (78-12345), and "zzzzzz" is the plant order number )

- The default C/N for the VSN is the same C/N as the physical HW
- To assign the VSN to an end client C/N instead of the default, specify the C/N to which to assign to a VSN ("install at" C/N)
- E.g. order 5 VSNs: 4 of the VSNs will have the default C/N, 1 will have end client C/N 8920442444

"Subject: request VSNs for S/N 9009 78-12345 for order A2UEB7 Key Center,

For the 5 VSNs on order A2UEB7, please assign the Customer Numbers as follows:

1 VSN = Customer Number 8920442444

Remaining VSNs = default Customer Number"

Result: MSP gets a CoD for 5 VSNs to install on their machine. 5 VSNs are added to inventory records with assigned C/Ns.

- 3. MSP installs the CoD code on their Power machine.
- 4. MSP gives the end client the VSN which is assigned to the end client C/N.
- 5. The end client either...
  - buys IBM i and LPPs on their assigned VSN, or
  - transfers IBM i (via IBM i Entitlement Transfer offering for \$6,000/core (USD list price)) and/or LPPs to their assigned VSN Result: client has software and support entitlement on the VSN
- 6. MSP creates a partition and assigns the client's VSN to the partition



### **VSN Considerations**

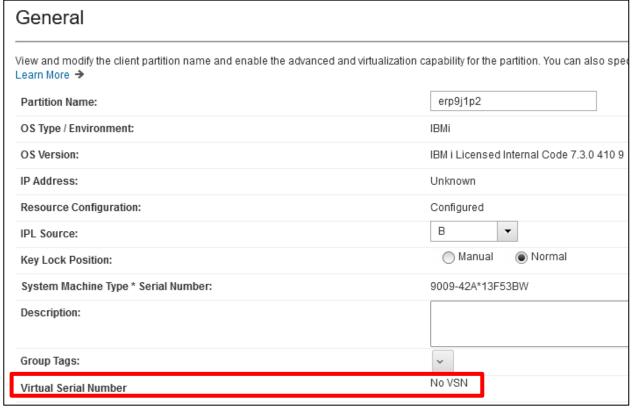


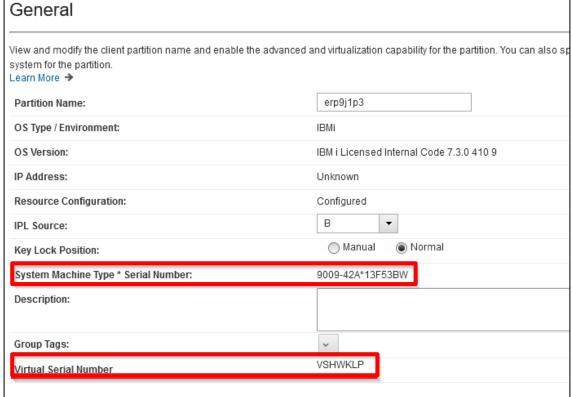
- Customers should be aware that a partition with a VSN only supports IBM i software in whole core boundaries (such as 1.0, 2.0, 3.0) since IBM i is licensed in whole core increments.
- Can I share a VSN between multiple partitions?
  - No. A VSN is unique to a partition. If you want multiple partitions to share the same serial number, you will have to use the base (physical) hardware serial number.
- For Licensed Program Products (LPPs for i) and IBM i optional features which are priced and entitled to the server: the entire entitlement is transferred to the VSN.
  - Example: You have a machine with 2 partitions assigned to the physical serial number, and 1
    partition assigned to a VSN. All partitions need BRMS. Therefore, you'll need one BRMS
    entitlement for the partitions based on physical serial number, and one BRMS entitlement for the
    VSN.
- VSNs are tied to the SW tier on which the VSN was ordered and created.
  - I order VSNs on a 9009-22G (S922) which is at a P10 software tier. My VSNs will inherit the P10 software tier. That P10 tier VSN can move to other P10 tier machines under the same HMC.



**Question:** How can I tell if a partition is using a physical serial number or VSN?

**Answer:** On an HMC for a given partition look at Properties>>>General Properties.



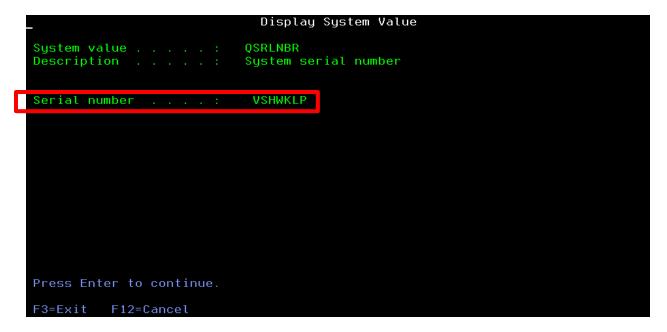




Question: How can I tell if a partition is using a physical serial number or VSN?

**Answer:** From IBM i: DSYSYSVAL QSRLNBR

Note: Not all serviceability screens will reflect the VSN

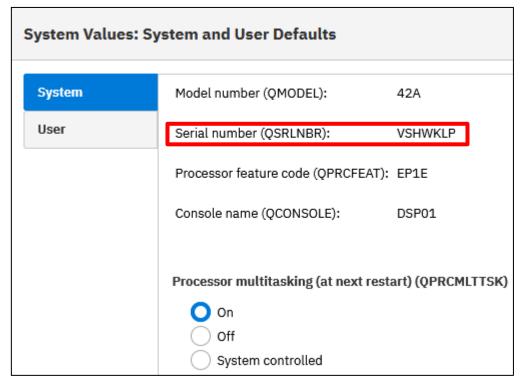




Question: How can I tell if a partition is using a physical serial number or VSN?

**Answer:** From IBM i: Navigator for i:

Configuration and Service>>>System Values>>>double-click on System and User
Defaults or right-click on System and User Defaults>>>click Properties>>>select the
System tab





**Question:** Is there a way to programmatically determine if a partition has a VSN or the base physical serial number?

#### **Answer:**

- From IBM i:
  - MI instruction Materialize Machine Attributes (MATMATR) option 0004 returns serial number. For a partition with a VSN, that is what will be returned. For a partition not using a VSN, the physical or hardware serial number will be returned. MATMATR option 0005 will always return the physical serial number. Option 0005 was recently added to IBM i 7.2 and later.

https://www.ibm.com/docs/en/i/7.4?topic=instructions-materialize-machine-attributes-matmatr
https://www.ibm.com/support/pages/apar/MA48573

- From an HMC:
  - Use the recently added Isvsn list virtual serial numbers command.
     <a href="https://www.ibm.com/docs/en/power10/000V-HMC?topic=commands-Isvsn">https://www.ibm.com/docs/en/power10/000V-HMC?topic=commands-Isvsn</a>



**Question:** Can I use a VSN with Power Enterprise Pools (PEP) 2.0?

**Answer:** No. If a system has partitions with a VSN assigned, the system cannot be added to an Enterprise Pool 2.0. Alternatively, if a system is already in an Enterprise Pool 2.0, then it cannot assign a VSN to a partition and cannot be a target to receive (via LPM or SRR) a VSN-enabled partition.

**Question:** Can I move a partition with a VSN from on-prem to IBM Power Virtual Server (PowerVS)?

**Answer:** No, not currently. Today partitions can only move within on-prem or within the management of the same HMC(s).

**Question:** Can I move a partition with a VSN from on-prem to a Managed Service Provider or Cloud Service Provider?

**Answer:** No, not currently. Today, partitions can only move within on-prem or within the management of the same HMC(s).



**Question:** How does a VSN affect ISV software licensing?

**Answer:** Independent Software Vendors (ISVs) have various licensing metrics that are not under the control or influence of IBM. For software licensed by something unique to physical hardware such as system serial number, processor feature, partition ID, and so on, upgrading/replacing a system or using LPM or adopting VSN will probably require an ISV licensing discussion for that ISV software. Once software is licensed (and is tied to a serial number) to a partition with a VSN, it should not have to be re-licensed since the VSN should remain constant unless changed by a customer.

**Question:** Does VSN affect products with sub-capacity pricing within a partition using IBM i workload groups?

**Answer:** No. Starting with IBM i 7.1, workload groups were added which provide the ability to restrict a workload to a specified maximum number of processor cores within the partition it is running in. Many products support this virtualization technology for sub-capacity licensing such as WebSphere MQ, and this is not affected by a partition using a VSN.

https://www.ibm.com/docs/en/i/7.4?topic=work-managing-workload-groups



**Question:** How does an order placer configure the IBM i transfer to the VSN? **Answer:** Note that in order to transfer IBM i portfolio software (IBM i OS and LPPs) from a physical Serial Number or from a VSN to another VSN, both donor and target must be in the same Enterprise.

For IBM i transfer: in e-config, use the path where you transfer IBM i entitlement to an existing machine (as opposed to the NEWSYS path): i.e. use the SW only Server path and take the check box for "Transfer software from installed system to an existing system".

**Question:** How are LPPs transferred to a VSN?

**Answer:** Note that in order to transfer IBM i portfolio software (IBM i OS and LPPs) from a physical Serial Number or from a VSN to another VSN, both donor and target must be in the same Enterprise.

Transfer the LPPs via the Entitled System Support (ESS) portal.



**Question:** If an MSP will use the IBM i Service Provider Monthly Offering on a VSN, how are enrollment orders placed, keys requested, usage tracked, etc?

**Answer:** The IBM i Service Provider Monthly works the same whether the offering is used on physical Serial Numbers or VSNs. Refer to the IBM i Service Provider Monthly materials on <u>IBM i License Topics</u> > search for "IBM i Service Provider Topics".

# Life Cycle of VSNs (Animation)



CoD key specifying 5
VSNs that start with 11111

VS11113 VS11114 VS11115

Pool of VSNs





Serial # = VS11111 Serial # = VS11112





CoD key specifying 5 VSNs that start with 22221

VS22221 VS22222 VS22223 VS22224 VS22225 VS11111

Pool of VSNs