



Building an LPAR

Presented by

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Why is he talking so fast

- Normally I'd do this in $\frac{1}{2}$ a day
- Today I'm going to try for $\frac{1}{2}$ an hour
- I will pause for questions, so get the ready



What is an LPAR

- **LPAR = Logical Partion**
- **Part of PowerVM**
- **Allocates specific resources to an LPAR**
- **It means you can have a new server without buying a new server!**



What's he talking about now?



The purpose of this session is

- To let you know what's possible
- To let you know what you need
- To let you know how much it costs
- **NOTE: Today I am focusing on i hosting i**

Why would you want another LPAR?



Test / Development environment

Reduce risk, GDPR compliance

Try out new tools or functions

Saves cluttering up your production system

Test PTF installs or IBM i upgrades

The more you test, the better you sleep

Integration with web servers or web services

Limited Network, limited users & limited data

Start your design with a secure system



What do a need to build an LPAR?

IBM i 6.1 or newer

You can host newer IBM i on older LPAR

Spare Processor resource

Not normally a problem as you can share

Spare Main Storage Memory (RAM)

If you can spare 4GB, you can run the basics

Spare Disk space on host LPAR

If you can spare 100GB, you can run the basics

Spare Network Port on host LPAR

You can share network with host
Ideally separate NIC port for security

What don't you need?

You don't need an HMC

But it makes life much easier if you have one

You don't need an extra IBM i License

You don't need to pay extra SWMA or HWMA

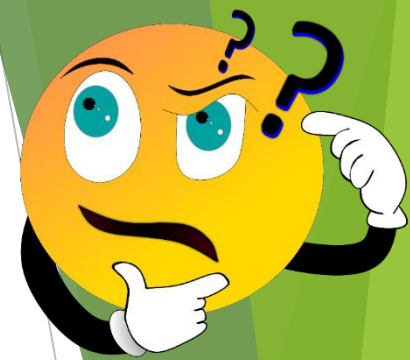


Time to get on with it



Image courtesy of pixabay.com

What did we do?



- Create Client LPAR definition on HMC
- Change LPAR profiles to use desired resources
- Create NWSD on Host LPAR
- Create virtual storage on Host LPAR
- Link virtual storage to NWSD and vary on
- Allocate D mode virtual install image
- Activate LPAR to boot from install image
- Install your LIC (Licensed Internal Code)
- Configure your LIC
- Install your IBM i client OS from install image

Questions?



Image courtesy of pixabay.com

Questions I've been asked



- **Why don't I need another IBM i license?**
Because you can share 1 core between LPARs
- **Why don't I need to pay more SWMA?**
Because IBM charges by the core
- **Can I run by client LPARs without my Host LPAR?**
No
- **Does this affect by host LPAR's performance?**
Disk i/o of client runs on host, so in theory yes
- **How do I backup the guest LPAR?**
You share the tape drive, vary off on host, vary on on client

Questions I've been asked



- **Does this affect backup on host LPAR?**
You have the option to backup client LPAR virtual disks
- **How can I share the network card?**
IBM i Bridged ethernet
- **How many client LPARs can I have**
How much RAM and disk can you spare on host?
- **Can I clone or snapshot and guest LPAR?**
Yes but client LPAR has to be down
- **How many virtual disks do I need?**
Technically just 1, OK with 4, ideally 6 or more

Questions I've been asked



- **How many virtual disks do I need?**
Technically just 1, OK with 4, ideally 6 or more
- **Is there a minimum disk size?**
On Load Source yes 35GB usage, recommend min 40GB
- **Can I share Optical drives?**
Yes both virtual and physical
- **Can I limit which tape and Optical drives I share?**
Yes, you can use either an Allow or Restrict list
- **Where can I get more information?**

<https://www.ibm.com/support/pages/create-client-partition-i-aix-or-linux-hosted-ibmi-server-partition-using-enhanced-signon-0>

Create Client LPAR definition on HMC

Create Partition(s)



The system supports processor sharing, the partition created contains virtual processors

You can use the switch to create one or more partitions with minimum or configured resources. as per the need using +/- icon. These partitions will show up in partitions view. Please add stor:

Assign All System Resources

Basic Partition Configuration

Partition Name: *

Partition ID:

Partition Type:



AIX/Linux



IBM i

Maximum Virtual Adapters:

Configure Client & Host LPAR profiles

Logical Partition Profile Properties: GLocks-p @ GLocks @ RIT-9009-41A-SN7804D60 - GLocks

General Processors Memory I/O **Virtual Adapters** Power Controlling Settings Tagged I/O OptiConnect

Actions ▾

Virtual resources allow for the sharing of physical hardware between logical partitions. The current virtual adapter settings are listed below.

Maximum virtual adapters :

Number of virtual adapters : 4

Select	Type	Adapter ID	Server/Client Partition	Partner Adapter	Required
<input type="checkbox"/>	Server Serial	0	Any Partition	Any Partition Slot	Yes
<input type="checkbox"/>	Server Serial	1	Any Partition	Any Partition Slot	Yes
<input type="checkbox"/>	Ethernet	2	N/A	N/A	No
<input type="checkbox"/>	Client SCSI	4	Scott74(1)	4	Yes

Logical Partition Profile Properties: Scott74-p @ Scott74 @ RIT-9009-41A-SN7804D60 - Scott74

General Processors Memory I/O **Virtual Adapters** Power Controlling Settings Tagged I/O OptiConnect

Actions ▾

Virtual resources allow for the sharing of physical hardware between logical partitions. The current virtual adapter settings are listed below.

Maximum virtual adapters :

Number of virtual adapters : 10

Select	Type	Adapter ID	Server/Client Partition	Partner Adapter	Required
<input type="checkbox"/>	Server Serial	0	Any Partition	Any Partition Slot	Yes
<input type="checkbox"/>	Server Serial	1	Any Partition	Any Partition Slot	Yes
<input type="checkbox"/>	Ethernet	2	N/A	N/A	No
<input type="checkbox"/>	Server SCSI	3	BabyBear(2)	3	No
<input type="checkbox"/>	Server SCSI	4	GLocks(3)	4	No
<input type="checkbox"/>	Server SCSI	5	(4)	5	No
<input type="checkbox"/>	Server SCSI	6	(5)	6	No
<input type="checkbox"/>	Server SCSI	7	(6)	7	No
<input type="checkbox"/>	Server SCSI	8	(7)	8	No
<input type="checkbox"/>	Ethernet	9	N/A	N/A	No

Total: 10 Filtered: 10 Selected: 0

Create NWSD on Host LPAR

```
                Create Network Server Desc (CRTNWSD)

Type choices, press Enter.

Network server description . . . . . > GLOCKS          Name
Resource name . . . . . > CTL04              Name, *NONE, *AUTO
Network server type:
  Server connection . . . . . > *GUEST          *IXSVR, *ISCSI, *GUEST...
  Server operating system . . . . . > *OPSYS          *WIN32, *AIXPPC, *AUX...
Online at IPL . . . . . > *YES            *YES, *NO
Vary on wait . . . . . > *NOWAIT         *NOWAIT, 1-15 minutes
Shutdown timeout . . . . . > *TYPE           2-45 minutes
Partition . . . . . > *NONE

Partition number . . . . . > 3              1-65535, *NONE
Code page . . . . . > #LNCVER        #LNCVER, 437, 850, 852, 857, 9
```

Create virtual storage on Host LPAR

```
                Create NWS Storage Space (CRTNWSSTG)
Type choices, press Enter.
Network server storage space . . . > GLOCKS01      Name
Size . . . . . > 50000          *CALC, 1-1024000 megabytes
From storage space . . . . . > *NONE          Name, *NONE
Format . . . . . > *OPEN         *NTFS, *OPEN, *REFS...
Auxiliary storage pool ID . . . > 1             1-255
ASP device . . . . . > DD001         Name
Text 'description' . . . . . > 'GLOCKS DTsks DD001'
_____
```

Link virtual storage to NWSD

Add Server Storage Link (ADDNWSSTGL)

Type choices, press Enter.

```
Network server storage space . . . > GLOCKS01      Name
Network server description . . . > GLOCKS         Name
Dynamic storage link . . . . . *NO             *NO, *YES
Access . . . . . *UPDATE         *UPDATE, *READ, *SHRUPD
Drive sequence number . . . . . *CALC          1-64, *CALC, *QR
Storage path number . . . . . *DFTSTGPTH      1-4, *DFTSTGPTH, *MLTPTHGRP
```

Add Server Storage Link (ADDNWSSTGL)

Type choices, press Enter.

```
Network server storage space . . . > GLOCKS02      Name
Network server description . . . > GLOCKS         Name
Dynamic storage link . . . . . *NO             *NO, *YES
Access . . . . . *UPDATE         *UPDATE, *READ, *SHRUPD
Drive sequence number . . . . . *CALC          1-64, *CALC, *QR
Storage path number . . . . . *DFTSTGPTH      1-4, *DFTSTGPTH, *MLTPTHGRP
```

Work with Network Server Storage Spaces

System: SCOTT74

Type options, press Enter.

1=Create 2=Change 3=Copy 4=Delete 5=Display 6=Print 10=Add link
11=Remove link

Opt	Name	Server	Seq	Link Type	Access	Stg Path
<u>1</u>	<u>GLOCKS01</u>	GLOCKS	1	*DYN	*UPDATE	
<u>2</u>	<u>GLOCKS02</u>	GLOCKS	2	*DYN	*UPDATE	

Allocate D mode virtual install image

```
Work with Configuration Status                                SCOTT74
                                                           03/07/21 19:33:42 UTC
Position to . . . . . _____ Starting characters
Type options, press Enter
 1-Vary on   2-Vary off   5-Work with job   8-Work with description
 9-Display mode status 13-Work with APPN status...
Opt  Description      Status      -----Job-----
  _  TAP01            VARIED OFF
```

IBM System Storage™ TS2900 Tape Autoloader
Welcome rowton

Monitor System
[System Summary](#)
[Library Map](#)

Manage Library
▶ **Move Cartridges**
[Unload Drive](#)
[Clean Drive](#)
[Library State](#)
[Inventory](#)
[Unlock Magazine](#)

Configure Library
[User Access](#)
[Physical / Logical](#)
[Network](#)
[Encryption](#)
[Date and Time](#)
SMTD

Move Cartridges

◀ Front Rear ▶

Slots

Column 5	Column 4	Column 3	Column 2	Column 1
CLN001L1			HA0009L7	MOV010L6
				✓ Drive MOV006L6

Source
Source slot:

Destination
Destination slot:

Move

Vary on NWSD

```
Work with Configuration Status                                SCOTT74
                                                           03/07/21 19:24:14 UTC
Position to . . . . . _____ Starting characters
Type options, press Enter.
 1=Vary on   2=Vary off   5=Work with job   8=Work with description
 9=Display mode status 13=Work with APPN status...

Opt  Description      Status      ----- Job-----
_   GLOCKS            ACTIVE
```

Activate LPAR with new profile

Activate [GLocks]

Activation

Network Settings

Choose Activation Options

Use this to activate or network boot an IBMi logical partition. You can also specify the advanced settings to activate a logical partition.

Operation Type [?](#) Network Boot Activate(D: IPL from alternative load source (CD or tape))

Partition Configuration [?](#) ▼

▶ Advanced Settings

Install your Licensed Internal Code

```
Install Licensed Internal Code                               System:  C7004D60
Select one of the following:
1. Install Licensed Internal Code
2. Work with Dedicated Service Tools (DST)
3. Define alternate installation device

Selection
  1
```

```
Select Load Source Device
Type 1 to select, press Enter.

Opt  Serial Number      Type  Model   Sys  Sys  I/O   I/O
     YRAKAZ9CHKAZ       6B22  050    255  4    0     0    1    0
     YDMEH3YCL5CN       6B22  050    255  4    0     0    0    0
```

```
Install Licensed Internal Code - Status
Install of the Licensed Internal Code in progress.

Percent complete  |-----| 50%
Elapsed time in minutes . . . . . : 0.5
```

```
Disk Configuration Attention Report
Type option, press Enter.
5=Display Detailed Report

Press F10 to accept all the following problems and continue.
The system will attempt to correct them.

Opt  Problem
  -   New disk configuration
```

Install your IBM i OS

```
                                IPL or Install the System                                System:  C7004D60
Select one of the following:
1. Perform an IPL
2. Install the operating system
3. Use Dedicated Service Tools (DST)
4. Perform automatic installation of the operating system
5. Save Licensed Internal Code

Selection
  2
```

```
                                Install Device Type Selection                                System:  C7004D60
Select the installation device type:
1. Tape
2. Optical
3. Virtual device - preselected image catalog
4. Current alternate selected device
5. Network device
6. Optical Container
```

```
                                Select a Language Group                                System:  C7004D60
Note: The language feature shown is the language feature
installed on the system.
Type choice, press Enter.
Language feature . . . . . 2924
```



Thank you