

IBM System i™

Virtual Partition Manager *for IBM System i*

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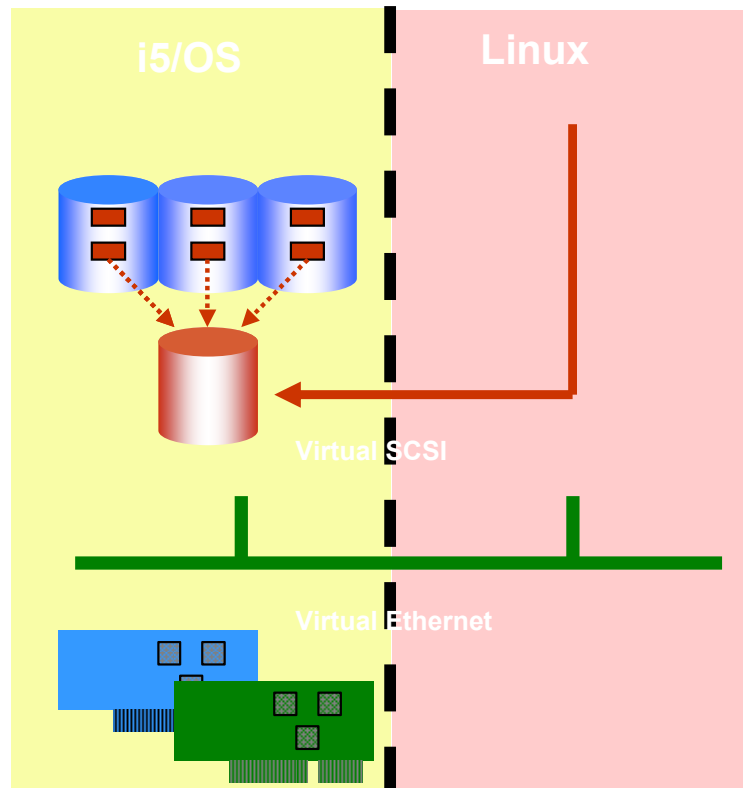
Nordic Technical Leader for System i5 AIX/Linux/Windows Integration

i want stress-free IT.

i want control.

*i want an **i**.*

Virtual Partition Manager



- **V5R3 PTF MF34753 (or its supersede)**
- **Latest firmware level (SF230_113 or later)**

- **i5/OS V5R3+ tool to create simple Linux partitions**
 - Supported on System i5
 - HMC not required or present
- **Maximum of one i5/OS partition with up to 4 Linux partitions**
- **Linux partitions must use all virtual I/O**
 - Up to 4 Virtual Ethernets
- **Dynamic LPAR not supported**
 - Resource movement requires restart of Linux partitions
- **Uncapped partitions supported**
- **Processor resources can automatically move between partitions**

VPM and HMC Comparison

	VPM	HMC
OS Supported	i5/OS and Linux	i5/OS, Linux, and AIX 5L
Max# of Partitions	5 (1 i5/OS + 4 Linux)	254
Uncapped Partition Support	Yes	Yes
Dynamic Resource Movement	No	Yes
I/O Support for Linux	Virtual	Virtual and Direct
Max# of Virtual Ethernet	4	4096
Max Virtual Disk per Partition	64TB	64TB

Start Service Tools

Ensure you already have a service profile

```
A - MY520
File Edit View Communication Actions Window Help
MAIN OS/400 Main Menu System: Z2238P1
Select one of the following:
1. User tasks
2. Office tasks
3. General system tasks
4. Files, libraries, and folders
5. Programming
6. Communications
7. Define or change the system
8. Problem handling
9. Display a menu
10. Information Assistant options
11. iSeries Access tasks
90. Sign off
Selection or command
===> strsst
F3=Exit F4=Prompt F9=Retrieve F12=Cancel F13=Information Assistant
F23=Set initial menu
MA a 20/013
```

Enter Service Profile and Password

A - MY520

File Edit View Communication Actions Window Help

Start Service Tools (STRSST) Sign On

SYSTEM: Z2238P1

Type choice, press Enter.

Service tools user ID. . . . ADAVE

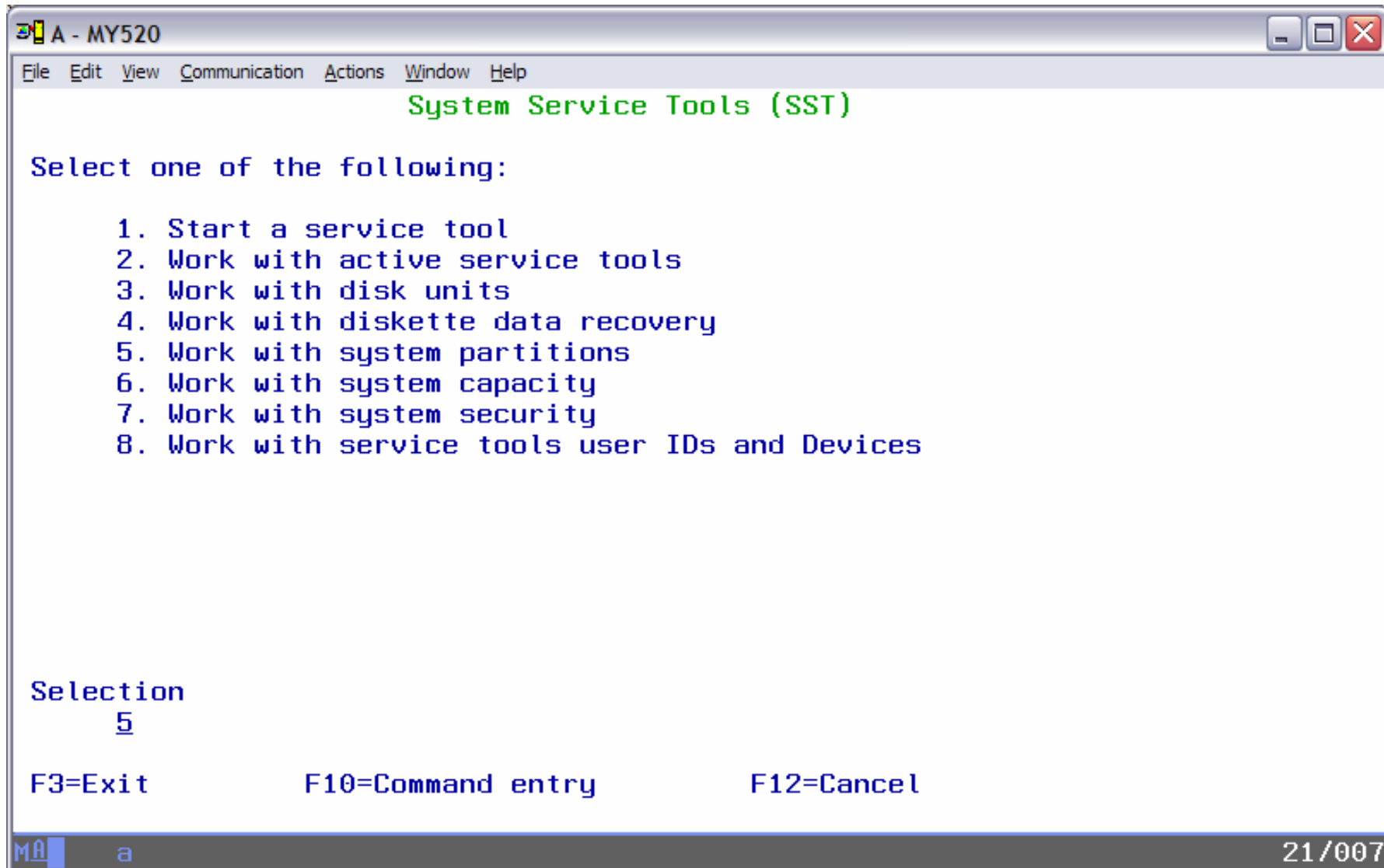
Service tools password . . . █

Note: The password is case-sensitive.

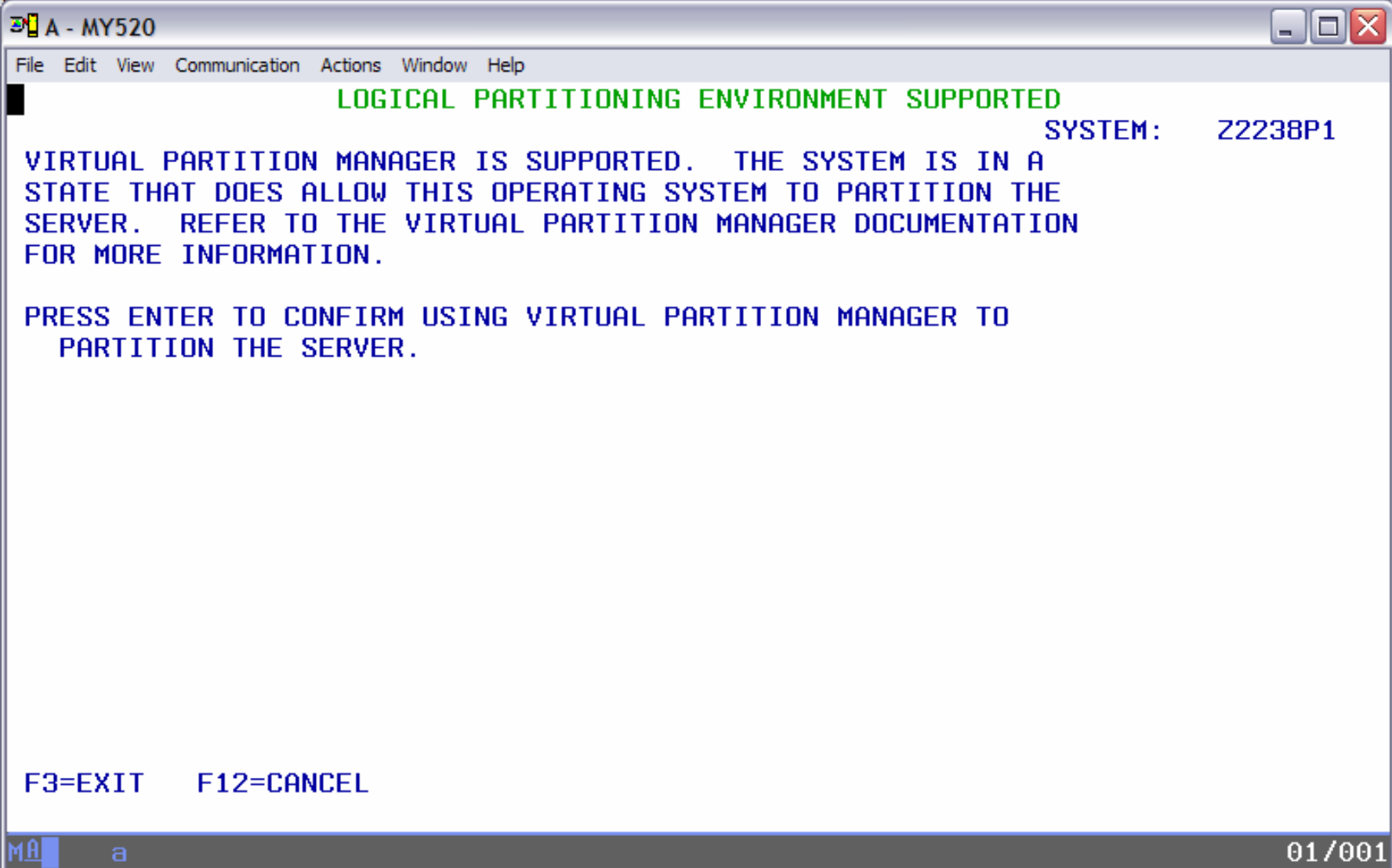
F3=Exit F9=Change Password F12=Cancel

MA a 08/041

Select Work with system partitions



Message Pointing to Documentation



A screenshot of an IBM System i terminal window. The window title is 'A - MY520'. The menu bar includes 'File', 'Edit', 'View', 'Communication', 'Actions', 'Window', and 'Help'. The main text area displays the following message:

```
LOGICAL PARTITIONING ENVIRONMENT SUPPORTED
SYSTEM:      Z2238P1
VIRTUAL PARTITION MANAGER IS SUPPORTED.  THE SYSTEM IS IN A
STATE THAT DOES ALLOW THIS OPERATING SYSTEM TO PARTITION THE
SERVER.  REFER TO THE VIRTUAL PARTITION MANAGER DOCUMENTATION
FOR MORE INFORMATION.

PRESS ENTER TO CONFIRM USING VIRTUAL PARTITION MANAGER TO
PARTITION THE SERVER.
```

At the bottom left, it shows 'F3=EXIT' and 'F12=CANCEL'. At the bottom right, it shows '01/001'. The bottom status bar contains 'MA a' on the left and '01/001' on the right.

Work with Partition Configuration

```
A - MY520
File Edit View Communication Actions Window Help
Work with System Partitions
System: Z2238P1
Attention: Incorrect use of this utility can cause damage
to data in this system. See service documentation.

Number of partitions . . . . . : 1
Partition manager release . . . . . :

Partition identifier . . . . . : 1
Partition name . . . . . : 10-0066A *

Select one of the following:

1. Display partition information
2. Work with partition status
3. Work with partition configuration
4. Recover configuration data
5. Create a new partition

Selection
  3

F3=Exit  F12=Cancel
MA a 21/007
```


Select Option to Remove Resources from i5/OS

```

A - MY520
File Edit View Communication Actions Window Help
                WORK WITH PARTITION CONFIGURATION
                                SYSTEM:  Z2238P1
AVAILABLE PROCESSOR UNITS . . . . . :  0.00
AVAILABLE MEMORY (MB) . . . . . :  0
MEMORY REGION SIZE (MB) . . . . . :  32

TYPE OPTION, PRESS ENTER.
  1=DISPLAY  2=CHANGE  9=DELETE

OPT  PARTITION  -----PROCESSOR-----  MEMORY  VIRTUAL
  2   ID  NAME  TOTAL  UNITS  UNCAP  WEIGHT  (MB)  WLM  1  2  3  4  ID
  2   1  10-0066A   2    2.00   2    NONE  7744   2   2  2  2  2

F3=EXIT  F5=REFRESH  F11=WORK WITH PARTITION STATUS  F12=CANCEL

MA  a  13/003
  
```

Change Partition Configuration

MA - MY520

File Edit View Communication Actions Window Help

CHANGE PARTITION CONFIGURATION

SYSTEM: Z2238P1

TYPE CHANGES, PRESS ENTER.

PARTITION IDENTIFIER AND NAME 1 10-0066A

NUMBER OF AVAILABLE SYSTEM PROCESSORS : 0

NUMBER OF PARTITION PROCESSORS 2

MINIMUM / MAXIMUM NUMBER OF PROCESSORS 1 / 2

USE SHARED PROCESSOR POOL 1 1=YES, 2=NO

SIZE OF AVAILABLE MEMORY (MB) : 0

SIZE OF PARTITION MEMORY (MB) 7744

MINIMUM / MAXIMUM SIZE OF MEMORY (MB) 160 / 8192

ENABLE WORKLOAD MANAGEMENT 2 1=YES, 2=NO

VIRTUAL ETHERNET IDENTIFIERS (1=YES, 2=NO)

1	2	3	4
<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>

F3=EXIT F12=CANCEL

MA a 12/052

Change from Dedicated to Shared

MA - MY520

File Edit View Communication Actions Window Help

CHANGE PARTITION CONFIGURATION

SYSTEM: Z2238P1

TYPE CHANGES, PRESS ENTER.

PARTITION IDENTIFIER AND NAME	1	<u>10-0066A</u>	
NUMBER OF AVAILABLE SYSTEM PROCESSORS :	0		
NUMBER OF PARTITION PROCESSORS	<u>2</u>		
MINIMUM / MAXIMUM NUMBER OF PROCESSORS	<u>1</u> / <u>2</u>		
USE SHARED PROCESSOR POOL	<u>1</u>	1=YES, 2=NO	
SHARED PROCESSOR POOL UNITS	<u>█</u>	: <u> </u>	
MINIMUM / MAXIMUM PROCESSOR POOL UNITS	<u> </u>	: <u> </u> / <u> </u> . <u> </u>	
UNCAPPED PROCESSING	<u>1</u>	1=YES, 2=NO	
UNCAPPED PROCESSING WEIGHT	<u>128</u>	0, 64, 128, 255	
SIZE OF AVAILABLE MEMORY (MB)	0		
SIZE OF PARTITION MEMORY (MB)	<u>7744</u>		
MINIMUM / MAXIMUM SIZE OF MEMORY (MB)	<u>160</u>	/ <u>8192</u>	
ENABLE WORKLOAD MANAGEMENT	<u>2</u>	1=YES, 2=NO	
VIRTUAL ETHERNET IDENTIFIERS (1=YES, 2=NO)			
1	2	3	4
<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>

F3=EXIT F12=CANCEL

ENTER VALUE FOR SHARED PROCESSOR POOL UNITS.

MA a 11/052

Memory Assignment Error

```

A - MY520
File Edit View Communication Actions Window Help
CHANGE PARTITION CONFIGURATION
SYSTEM: Z2238P1
TYPE CHANGES, PRESS ENTER.

PARTITION IDENTIFIER AND NAME . . . . . 1 10-0066A

NUMBER OF AVAILABLE SYSTEM PROCESSORS . . . . : 0
NUMBER OF PARTITION PROCESSORS . . . . . 2
MINIMUM / MAXIMUM NUMBER OF PROCESSORS . . . . 1 / 2
USE SHARED PROCESSOR POOL . . . . . 1 1=YES, 2=NO
  SHARED PROCESSOR POOL UNITS . . . . . 1 . 00
  MINIMUM / MAXIMUM PROCESSOR POOL UNITS . . . . 0 . 20 / 2 . 00
  UNCAPPED PROCESSING . . . . . 1 1=YES, 2=NO
    UNCAPPED PROCESSING WEIGHT . . . . . 128 0, 64, 128, 255
SIZE OF AVAILABLE MEMORY (MB) . . . . . 0
SIZE OF PARTITION MEMORY (MB) . . . . . 6700
MINIMUM / MAXIMUM SIZE OF MEMORY (MB) . . . . 160 / 8192
ENABLE WORKLOAD MANAGEMENT . . . . . 2 1=YES, 2=NO
VIRTUAL ETHERNET IDENTIFIERS (1=YES, 2=NO)
  1 2 3 4
  2 2 2 2

F3=EXIT F12=CANCEL
SIZE OF MEMORY ENTERED IS NOT VALID.
MA a 16/052

```

Correct Memory Assignment (32Mb multiples)

```

A - MY520
File Edit View Communication Actions Window Help
CHANGE PARTITION CONFIGURATION
SYSTEM: Z2238P1
TYPE CHANGES, PRESS ENTER.

PARTITION IDENTIFIER AND NAME . . . . . 1 10-0066A

NUMBER OF AVAILABLE SYSTEM PROCESSORS . . . . : 0
NUMBER OF PARTITION PROCESSORS . . . . . 2
MINIMUM / MAXIMUM NUMBER OF PROCESSORS . . . . 1 / 2
USE SHARED PROCESSOR POOL . . . . . 1 1=YES, 2=NO
  SHARED PROCESSOR POOL UNITS . . . . . 1 . 00
  MINIMUM / MAXIMUM PROCESSOR POOL UNITS . . . . 0 . 20 / 2 . 00
  UNCAPPED PROCESSING . . . . . 1 1=YES, 2=NO
    UNCAPPED PROCESSING WEIGHT . . . . . 128 0, 64, 128, 255
SIZE OF AVAILABLE MEMORY (MB) . . . . . 0
SIZE OF PARTITION MEMORY (MB) . . . . . 6720
MINIMUM / MAXIMUM SIZE OF MEMORY (MB) . . . . 160 / 8192
ENABLE WORKLOAD MANAGEMENT . . . . . 2 1=YES, 2=NO
VIRTUAL ETHERNET IDENTIFIERS (1=YES, 2=NO)
  1 2 3 4
  1 2 2 2

F3=EXIT F12=CANCEL
SIZE OF MEMORY ENTERED IS NOT VALID.
MA a 16/057

```

Confirm Changed Partition Resources

```

A - MY520
File Edit View Communication Actions Window Help
CONFIRM CHANGED PARTITION
SYSTEM: Z2238P1
VERIFY INFORMATION, PRESS ENTER.

PARTITION IDENTIFIER AND NAME . . . . . : 1 10-0066A
NUMBER OF PARTITION PROCESSORS . . . . . : 2
MINIMUM / MAXIMUM NUMBER OF PROCESSORS . . . : 1 / 2
USE SHARED PROCESSOR POOL . . . . . : YES
  SHARED PROCESSOR POOL UNITS . . . . . : 1.00
  MINIMUM / MAXIMUM PROCESSOR POOL UNITS . . : 0.20 / 2.00
  UNCAPPED PROCESSING . . . . . : YES
    UNCAPPED PROCESSING WEIGHT . . . . . : MED
SIZE OF PARTITION MEMORY (MB) . . . . . : 6720
MINIMUM / MAXIMUM SIZE OF MEMORY (MB) . . . : 160 / 8192
ENABLE WORKLOAD MANAGEMENT . . . . . : NO

VIRTUAL ETHERNET IDENTIFIERS (1=YES, 2=NO)
  1 2 3 4
  1 2 2 2

F12=CANCEL
MA a 01/001

```

Updated Partition Configuration Status

```

MA - MY520
File Edit View Communication Actions Window Help
                WORK WITH PARTITION CONFIGURATION
                SYSTEM:  Z2238P1

AVAILABLE PROCESSOR UNITS . . . . . :   1.00
AVAILABLE MEMORY (MB) . . . . . :  1024
MEMORY REGION SIZE (MB) . . . . . :   32

TYPE OPTION, PRESS ENTER.
  1=DISPLAY  2=CHANGE  9=DELETE

OPT  PARTITION  -----PROCESSOR-----  MEMORY  VIRTUAL
     ID  NAME    TOTAL  UNITS  UNCAP  WEIGHT  (MB)  WLM  ETHERNET  ID
  █   1  10-0066A    2    1.00    1    MED    6720    2    1  2  2  2  <

< INDICATES PARTITION IPL MAY BE REQUIRED.
F3=EXIT  F5=REFRESH          F10=DISPLAY CHANGE STATUS
F11=WORK WITH PARTITION STATUS  F12=CANCEL
PARTITION 1  CHANGE WAS SUCCESSFUL.
MA  a  13/003
  
```


Back to Systems Partitions Menu

```
MA - MY520
File Edit View Communication Actions Window Help
                          Work with System Partitions
                          System:  Z2238P1
Attention: Incorrect use of this utility can cause damage
to data in this system. See service documentation.

Number of partitions . . . . . : 1
Partition manager release . . . . . :

Partition identifier . . . . . : 1
Partition name . . . . . : 10-0066A *

Select one of the following:

1. Display partition information
2. Work with partition status
3. Work with partition configuration
4. Recover configuration data
5. Create a new partition

Selection
-

F3=Exit  F10=IPL system to activate changes  F12=Cancel
System IPL may be required to activate changes.
MA a 21/007
```

Create a New Partition

```

A - MY520
File Edit View Communication Actions Window Help
CREATE NEW PARTITION
SYSTEM: Z2238P1
COMPLETE BLANKS, PRESS ENTER.

PARTITION IDENTIFIER AND NAME . . . . . 2 Linux1
NUMBER OF AVAILABLE SYSTEM PROCESSORS . . . : 1
NUMBER OF PARTITION PROCESSORS . . . . . 1
MINIMUM / MAXIMUM NUMBER OF PROCESSORS . . . 1 / 1
USE SHARED PROCESSOR POOL . . . . . 1 1=YES, 2=NO
  SHARED PROCESSOR POOL UNITS . . . . . 10
  MINIMUM / MAXIMUM PROCESSOR POOL UNITS . . . 10 / 1 . 00
  UNCAPPED PROCESSING . . . . . 1 1=YES, 2=NO
    UNCAPPED PROCESSING WEIGHT . . . . . 128 0, 64, 128, 255
SIZE OF AVAILABLE MEMORY (MB) . . . . . 1024
SIZE OF PARTITION MEMORY (MB) . . . . . 256
MINIMUM / MAXIMUM SIZE OF MEMORY (MB) . . . 128 / 512
ENABLE WORKLOAD MANAGEMENT . . . . . 2 1=YES, 2=NO
VIRTUAL ETHERNET IDENTIFIERS (1=YES, 2=NO)
  1 2 3 4
  1 2 2 2

F3=EXIT F12=CANCEL
MA a 21/010

```

Confirm New Partition Creation

```

A - MY520
File Edit View Communication Actions Window Help
CONFIRM NEW PARTITION
SYSTEM: Z2238P1
VERIFY INFORMATION, PRESS ENTER.

PARTITION IDENTIFIER AND NAME . . . . . : 2   LINUX1

NUMBER OF PARTITION PROCESSORS . . . . . : 1
MINIMUM / MAXIMUM NUMBER OF PROCESSORS . . . : 1 / 1
USE SHARED PROCESSOR POOL . . . . . : YES
  SHARED PROCESSOR POOL UNITS . . . . . : 0.10
  MINIMUM / MAXIMUM PROCESSOR POOL UNITS . . : 0.10 / 1.00
  UNCAPPED PROCESSING . . . . . : YES
    UNCAPPED PROCESSING WEIGHT . . . . . : MED
SIZE OF PARTITION MEMORY (MB) . . . . . : 256
MINIMUM / MAXIMUM SIZE OF MEMORY (MB) . . . : 128 / 512
ENABLE WORKLOAD MANAGEMENT . . . . . : NO

VIRTUAL ETHERNET IDENTIFIERS (1=YES, 2=NO)
  1  2  3  4
  1  2  2  2

F12=CANCEL
MA a 01/001

```

Partition Creation Successful

```
MA - MY520
File Edit View Communication Actions Window Help
                          Work with System Partitions
                          System:  Z2238P1
Attention:  Incorrect use of this utility can cause damage
to data in this system.  See service documentation.

Number of partitions . . . . . : 2
Partition manager release . . . . . :

Partition identifier . . . . . : 1
Partition name . . . . . : 10-0066A *

Select one of the following:

1. Display partition information
2. Work with partition status
3. Work with partition configuration
4. Recover configuration data
5. Create a new partition

Selection
-

F3=Exit  F10=IPL system to activate changes  F12=Cancel
PARTITION 2  CREATE WAS SUCCESSFUL.
MA a 21/007
```

Work With Partition Configuration Status

```

A - MY520
File Edit View Communication Actions Window Help
                WORK WITH PARTITION CONFIGURATION
                                SYSTEM:  Z2238P1

AVAILABLE PROCESSOR UNITS . . . . . :   0.90
AVAILABLE MEMORY (MB) . . . . . :   768
MEMORY REGION SIZE (MB) . . . . . :   32

TYPE OPTION, PRESS ENTER.
  1=DISPLAY  2=CHANGE  9=DELETE

      PARTITION      -----PROCESSOR-----
OPT  ID  NAME      TOTAL  UNITS  UNCAP  WEIGHT  MEMORY  WLM  VIRTUAL
      1  10-0066A    2     1.00   1     MED    6720   2    1  2  2  2  <
      2  LINUX1     1     0.10   1     MED    256    2    1  2  2  2

< INDICATES PARTITION IPL MAY BE REQUIRED.
F3=EXIT  F5=REFRESH  F10=DISPLAY CHANGE STATUS
F11=WORK WITH PARTITION STATUS  F12=CANCEL

MA a 13/003
  
```

Status after All Linux Partitions Defined

```

A - MY520
File Edit View Communication Actions Window Help
      WORK WITH PARTITION CONFIGURATION
      SYSTEM:      Z2238P1

AVAILABLE PROCESSOR UNITS . . . . . :    0.30
AVAILABLE MEMORY (MB) . . . . . :    96
MEMORY REGION SIZE (MB) . . . . . :    32

TYPE OPTION, PRESS ENTER.
  1=DISPLAY  2=CHANGE  9=DELETE

PARTITION
-----PROCESSOR-----
OPT  ID  NAME  TOTAL  UNITS  UNCAP  WEIGHT  MEMORY  WLM  VIRTUAL  ETHERNET  ID
-----
  1  10-0066A  2    1.00    1    MED    6720    2    1  2  2  2  <
  2  LINUX1    1    0.10    1    MED    256     2    1  2  2  2
  3  LINUX2    1    0.20    1    MED    256     2    1  2  2  2
  4  LINUX3    1    0.20    1    MED    256     2    1  2  2  2
  5  LINUX4    2    0.20    2    NONE    128     2    1  2  2  2

< INDICATES PARTITION IPL MAY BE REQUIRED.
F3=EXIT  F5=REFRESH  F10=DISPLAY CHANGE STATUS
F11=WORK WITH PARTITION STATUS  F12=CANCEL
  
```

Capped Partition

MA a 13/003

Restart System After All Partitions are Created

```
A - MY520
File Edit View Communication Actions Window Help

Work with System Partitions
System: Z2238P1

Attention: Incorrect use of this utility can cause damage
to data in this system. See service documentation.

Number of partitions . . . . . : 5
Partition manager release . . . . . :

Partition identifier . . . . . : 1
Partition name . . . . . : 10-0066A *

Select one of the following:

1. Display partition information
2. Work with partition status
3. Work with partition configuration
4. Recover configuration data
5. Create a new partition

Selection
-

F3=Exit F10=IPL system to activate changes F12=Cancel
System IPL may be required to activate changes.

MA a ↑ 21/007
```


Error Messages

Error Message During Partition Creation

```

A - MY520
File Edit View Communication Actions Window Help
CREATE NEW PARTITION
SYSTEM: Z2238P1
COMPLETE BLANKS, PRESS ENTER.

PARTITION IDENTIFIER AND NAME . . . . . 5 LINUX4
NUMBER OF AVAILABLE SYSTEM PROCESSORS . . . : 0
NUMBER OF PARTITION PROCESSORS . . . . . 2
MINIMUM / MAXIMUM NUMBER OF PROCESSORS . . . 1 / 2
USE SHARED PROCESSOR POOL . . . . . 1 1=YES, 2=NO
  SHARED PROCESSOR POOL UNITS . . . . . 0 20
  MINIMUM / MAXIMUM PROCESSOR POOL UNITS . . . 0 10 / 1 00
  UNCAPPED PROCESSING . . . . . 2 1=YES, 2=NO
    UNCAPPED PROCESSING WEIGHT . . . . . 0 0, 64, 128, 255
SIZE OF AVAILABLE MEMORY (MB) . . . . . 256
SIZE OF PARTITION MEMORY (MB) . . . . . 256
MINIMUM / MAXIMUM SIZE OF MEMORY (MB) . . . 128 / 512
ENABLE WORKLOAD MANAGEMENT . . . . . 2 1=YES, 2=NO
VIRTUAL ETHERNET IDENTIFIERS (1=YES, 2=NO)
  1 2 3 4
  1 2 2 2

F3=EXIT F12=CANCEL
INSUFFICIENT MEMORY FOR HYPERVISOR.
MA a 12/052

```

Error Message During Deletion of Partitions

```

A - MY520
File Edit View Communication Actions Window Help
                WORK WITH PARTITION CONFIGURATION
                SYSTEM:  Z2238P1

AVAILABLE PROCESSOR UNITS . . . . . :    0.30
AVAILABLE MEMORY (MB) . . . . . :    96
MEMORY REGION SIZE (MB) . . . . . :    32

TYPE OPTION, PRESS ENTER.
  1=DISPLAY  2=CHANGE  9=DELETE

OPT  PARTITION  -----PROCESSOR-----  MEMORY  VIRTUAL
-----  ID  NAME  TOTAL  UNITS  UNCAP  WEIGHT  (MB)  WLM  ETHERNET  ID
-----  -  -  -  -  -  -  -  -  -  -  -  -
  _    1  10-0066A    2    1.00    1    MED    6720    2    1  2  2  2  <
  9    2  LINUX1    1    0.10    1    MED    256    2    1  2  2  2
  9    3  LINUX2    1    0.20    1    MED    256    2    1  2  2  2
  9    4  LINUX3    1    0.20    1    MED    256    2    1  2  2  2
  9    5  LINUX4    2    0.20    2    NONE    128    2    1  2  2  2

< INDICATES PARTITION IPL MAY BE REQUIRED.
F3=EXIT  F5=REFRESH  F10=DISPLAY CHANGE STATUS
F11=WORK WITH PARTITION STATUS  F12=CANCEL
ONLY ONE PARTITION MAY BE SELECTED.

MA  a  15/003

```

For Further Information

- **Redpaper**
 - Planning
 - Getting Started
 - Preparing System
 - Creating LPAR using VPM
 - Establishing Network Connectivity for LPAR
 - Setting up i5/OS Virtual I/O Resources for Linux

Virtual Partition Manager A Guide to Planning and Implementation

Learn about the Virtual Partition Manager (VPM)

Review planning guidance for an eServer i5 server with VPM

Create partitions and allocate virtual resources with VPM



Amit Dave
Erwin Earley
Nick Harris
Fant Steele

ibm.com/redbooks

Redpaper

<http://www.redbooks.ibm.com/abstracts/redp4013.html>

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