



Mark tape devices unavailable

z/OS® core components

Device allocation

@business on demand software

© 2008 IBM Corporation

This presentation describes the V1R10 support that lets system programmers control availability of tape devices.

Agenda

Mark tape devices unavailable to the system

- Problem statement and solution
- How to mark devices unavailable/ available
- How to display the new unavailable state
- What new messages are added for diagnosis
- Benefits
- Publications

This presentation discusses the problem, the solution, the benefits and other important details of marking tape devices unavailable.

The problem

- When eligible devices are offline, the system can bring them online and allocate to them. This might be undesirable when devices have to be kept offline, for example, during maintenance and service.
- System programmers need to be able to mark specific devices as 'not for use' by the system.

Here is the problem that needs to be solved.

When eligible devices are offline, the system can bring them online to satisfy a request. However, there are certain situations when devices need to be left offline. For example, the devices are being serviced, or maintenance is being applied to them, you do not want the devices to be used by the system.

By tweaking the parameter list on a dynamic allocation request, or setting the policy in ALLOCxx member, you can make the system use either all or no offline devices. There is no option that lets the system consider only some devices and leave some others offline.

System programmers need more than ALL or NONE options; they need to be able to control device availability in order to manage and maintain their devices. They should be able to tell the system which devices are not for use.

The problem

- The list of devices in message IEF877E needs to be simple.

Example:

```
IEF877E C02STRW1 NEEDS 1 UNIT(S)
```

```
FOR CREATE1 SEQ001
```

```
LIBRARY: CASH02 LIBRARY STATUS: ONLINE
```

```
07C0-07CF
```

```
1240-125F
```

```
2760-277F
```

```
..
```

The list may go on and on. It would be nice to reduce the number of devices and simplify the list.

Another problem involves the list of devices displayed in message IEF877E. When the system tries to bring eligible offline devices online, it lists them all in message IEF877E. With increasing numbers of devices in Tape libraries and esoterics, the list can grow quickly and cause confusion. It should be made manageable and simple.

The solution

- Provide simple VARY commands to mark offline tape devices as 'unavailable' and 'available'
- Make system components not use 'unavailable' tape devices
- Provide commands to display this new 'UNAVL' status of a device
- Provide necessary diagnostic help

The solution is to support new VARY commands to mark specific devices as unavailable / available and DISPLAY UNIT commands to show the unavailable status of the device.

To assure integrity and security, all the commands should be properly serialized. You do not want online devices to become unavailable, or unavailable devices to become allocated.

System components like Device Allocation and DDRSWAP should not be allowed to use tape devices that are marked unavailable.

All failure conditions should have appropriate messages and provide ample diagnostic data.

How to mark the devices “unavailable”

- Nothing special needed to install the new function.
- Use the new commands / IEEVARYD options to invoke it.

Syntax:

```
VARY dev,UNAVAIL
VARY devn-devm,UNAVAIL
VARY (devn,devm),UNAVAIL
```

Example:

```
V 5B4,UNAVAILABLE ,1
CNZ6000I DEVICE 05B4 IS NOW UNAVAILABLE
```

Issue VARY UNAVAIL to an online tape device

```
CNZ6001I DEVICE 05A0 NOT PROCESSED: DEVICE MUST BE OFFLINE
```

To mark offline tape devices as unavailable, use the new VARY UNAVAIL commands / IEEVARYD options. No special setup is needed for installing this new function.

UNAVAIL and UNAVAILABLE are synonymous. Similarly, AVAIL and UNAVAILABLE are both valid keywords.

Like VARY OFFLINE and VARY ONLINE commands, the VARY UNAVAIL command can be used for a single device, or a range of devices, or a comma separated list of devices.

When the device is marked unavailable with the VARY UNAVAIL command, message CNZ600I is issued.

Only offline, non-JES3, tape devices can be marked unavailable, so all other cases are treated as error scenarios. For example, VARY UNAVAILABLE to an online device is not processed and results in message CNZ6001I.

How to mark the devices “available”

- Unavailable tape devices need to be made available for use by the system.
- Use the new commands / IEEVARYD options/ VARY ONLINE to make them available.

Syntax:

```
VARY dev,AVAIL  
VARY devn-devm,AVAIL  
VARY (devn,devm),AVAIL
```

Example :

```
V 5B4,AVAILABLE  
CNZ6000I DEVICE 05B4 IS NOW AVAILABLE
```

To make unavailable tape devices available, use the VARY *dev*,AVAIL or VARY *dev*,ONLINE commands or the IEEVARYD support.

VARY *dev*,AVAILABLE will make the device available, but it will still be offline.

VARY *dev*,ONLINE will bring the device online and mark it available.

As seen above, the syntax for VARY AVAIL command is similar to that of VARY UNAVAIL command.

When the device is varied available, message CNZ600I is issued.

When the device is already available, VARY *dev*,AVAIL will fail with message CNZ6001I.

How to make devices unavailable and available

- New IEEVARYD options allow offline tape devices to be marked unavailable and available.

To mark the device unavailable with IEEVARYD, indicate in the VDEV block

VDEV_UNAVAIL = ON VDEV_ON = ON

To make the device available

VDEV_UNAVAIL = ON VDEV_OFF = ON

The IEEVARYD service supports marking a device available or unavailable. It has the same restrictions as the VARY command (for example, only offline tape devices are accepted.) The new options allow offline tape devices to be marked unavailable and available.

To mark the offline device unavailable, set both the VDEV_UNAVAIL and VDEV_ON flags to ON, which makes the device UNAVAIL,ON.

To mark the device available, set both the VDEV_UNAVAIL and VDEV_OFF flags to ON, which makes the device UNAVAIL,OFF.

This is similar to 'autoswitch', where you mark a device AS,ON (to be autoswitchable) or AS,OFF (to be dedicated.)

How to display the new status of the device

- New DISPLAY commands list tape devices that are marked unavailable

Syntax:

```
D U,TAPE,UNAVAIL,dev,number
```

```
D U,,UNAVAIL,dev
```

Example:

```
D U , ,UNAVAILABLE ,5A0 ,4  
IEE457I 17.21.58 UNIT STATUS  
UNIT TYPE UNIT TYPE UNIT TYPE UNIT TYPE  
05A0 348S 05A1 348S 05A2 3480 05A3 3480
```

```
D U,DASD,UNAVAIL  
IEE456I INCORRECT DEVICE TYPE. ONLY TAPE IS VALID FOR  
UNAVAILABLE.
```

As you can see here from the syntax and output, the new D U,TAPE,UNAVAIL command displays the unavailable devices. This command is similar to the D U,TAPE,AUTOSWITCH and the D U,,OFFLINE commands. Like the D U,,AS command, it is applicable to only tape devices and has the same syntax. Like the D U,,OFFLINE command, it will output the unavailable devices and their device types.

How to display the new status of the device

- Updates to the existing D U command show the new UNAVL status of the device

Syntax:

```
D U,,,dev
```

```
D U,,,dev,number
```

Example:

```
D U,,,5B2,1
```

```
IEE457I 17.23.12 UNIT STATUS
```

```
UNIT TYPE STATUS          VOLSER      VOLSTATE
```

```
05B2 3490 F-UNAVL
```

```
/REMOV
```

To display the status of the device, use the D U,,,dev command. This command's processing is updated to show the new UNAVL status of the device. All the existing combinations of the DISPLAY UNIT command are supported. The IEE457I message will now display F-UNAVL status for an offline, unavailable tape device.

New messages

- Message CNZ6000I is issued when the device is successfully varied unavailable or unavailable.

```
CNZ6000I DEVICE 05B0 IS NOW AVAILABLE
```

```
CNZ6000I DEVICE 05B0 IS NOW UNAVAILABLE
```

- Message CNZ6001I is issued when the VARY UNAVAIL or VARY AVAIL command is not processed.

```
CNZ6001I DEVICE 05B0 NOT PROCESSED: DEVICE IS ALREADY AVAILABLE
```

As shown here, the VARY AVAIL and VARY UNAVAIL commands have new messages. When an available device is varied unavailable or an unavailable device is varied available, message CNZ6000I is issued.

You cannot VARY an available device to the AVAIL state, or an unavailable device to the UNAVAIL state - the system treats this as an error (unlike other VARY commands, which indicate that the command was successful even though the device state did not change.) For example, when the device is not offline or is not a tape device or is a JES3 device, VARY UNAVAIL command will fail with message CNZ6001I. Similarly, when the device is already available, VARY AVAIL command will fail with CNZ6001I.

For a VARY UNAVAIL only, the existing CNZ0010A/CNZ0012D resource contention messages may be issued if SYSIEFSD.Q4 cannot be obtained.

New messages

- Message IEF022I is issued when the device specified on a request is marked unavailable.

Example:

```
IEF022I ALCUNAVL STEP1 DD1 ALLOCATION FAILED- DEVICE 05B0 IS MARKED  
UNAVAILABLE FOR ALLOCATION
```

- Message IEF023I is issued when not even a single eligible tape library has enough available devices to satisfy a request

Example:

```
IEF023I ME12592J STEP1 DD1 ALLOCATION FAILED - NOT ENOUGH ELIGIBLE  
LIBRARY DEVICES
```

Because UNAVAILABLE devices are 'not for use' by the system, allocation requests involving such devices will lead to new failure messages.

When the specific unit requested is marked unavailable, Allocation to that device will fail with message IEF022I. This corresponds to dynaloc reason code '4FE'x and message IKJ56231I.

When the request is for tape-library devices but not even a single eligible tape library has enough available devices to satisfy the request, Allocation will fail with message IEF023I. This corresponds to dynaloc error code '2D9'x and message IKJ56231I.

What if devices become unavailable later?

- Offline tape devices can become unavailable after they are added to the list and but before the System brings them online
 - ▶ If so, fail the request with IEF031I.

```
IEF104I ALCUNAVL - UNIT 05B0 NOT BROUGHT ONLINE
IEE763I NAME= IEFAB4ON CODE= 0
IEF031I DEVICE CANNOT BE USED
IEE764I END OF IEF104I      RELATED MESSAGES
$HASP395 ALCUNAVL ENDED
```

Due to timing and resource serialization, it is possible for an offline device to be available when the system adds it to the list of devices in message IEF877E, but become unavailable later when the system starts to bring it online. In such a case, Allocation fails the request with an existing message IEF031I and IEF104I.

The benefits

- System programmers have new *easy to use* tools to make tape devices unavailable and available
- System components will not use 'unavailable' tape devices
- Function applicable to library and non-library tape devices

This slide shows the benefits of this new function.

With this support, any offline, non-JES3 tape device (library / non-library) can be marked unavailable by using the `VARY dev,UNAVAIL` command. The `VARY dev,AVAIL` command makes them available and offline. The `VARY dev,ONLINE` command makes them available and online if they can be varied online.

The system will not use devices marked unavailable, so offline tape devices that are marked unavailable will be left offline and unavailable.

Unavailable devices can be easily made available with the `VARY AVAIL` / `VARY ONLINE` commands and the `IEEVARYD` options.

System programmers have total control in making tape devices available and unavailable for use by the system.

Additional information

▪ Publications

- SA22-7627 MVS System Commands
- SA22- 7499 z/OS V1R10 Migration
- SA22-7610 MVS Authorized Assembler Services Reference
- SA22- 7634 z/OS V1R10 MVS System Messages, Vol 4 (CBD-DMO)
- SA22-7637 z/OS V1R10 MVS System Messages, Vol 7(IEB-IEE)
- SA22-7638 z/OS V1R10 MVS System Messages, Vol 8(IEF-IGD)
- SA22-7639 z/OS V1R10 MVS System Messages, Vol 9 (IGF-IWM)
- SA22-7608 z/OS MVS Authorized Assembler Services Guide

Feedback

Your feedback is valuable

You can help improve the quality of IBM Education Assistant content to better meet your needs by providing feedback.

- Did you find this module useful?
- Did it help you solve a problem or answer a question?
- Do you have suggestions for improvements?

Click to send e-mail feedback:

mailto:iea@us.ibm.com?subject=Feedback_about_V1R10-MakeDevicesUnavailable.ppt

This module is also available in PDF format at: <..\\V1R10-MakeDevicesUnavailable.pdf>

You can help improve the quality of IBM Education Assistant content by providing feedback.

Trademarks, copyrights, and disclaimers

The following terms are trademarks or registered trademarks of International Business Machines Corporation in the United States, other countries, or both:

IBM z/OS

A current list of other IBM trademarks is available on the Web at <http://www.ibm.com/legal/copytrade.shtml>

Product data has been reviewed for accuracy as of the date of initial publication. Product data is subject to change without notice. This document could include technical inaccuracies or typographical errors. IBM may make improvements or changes in the products or programs described herein at any time without notice. Any statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only. References in this document to IBM products, programs, or services does not imply that IBM intends to make such products, programs or services available in all countries in which IBM operates or does business. Any reference to an IBM Program Product in this document is not intended to state or imply that only that program product may be used. Any functionally equivalent program, that does not infringe IBM's intellectual property rights, may be used instead.

Information is provided "AS IS" without warranty of any kind. THE INFORMATION PROVIDED IN THIS DOCUMENT IS DISTRIBUTED "AS IS" WITHOUT ANY WARRANTY, EITHER EXPRESS OR IMPLIED. IBM EXPRESSLY DISCLAIMS ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NONINFRINGEMENT. IBM shall have no responsibility to update this information. IBM products are warranted, if at all, according to the terms and conditions of the agreements (for example, IBM Customer Agreement, Statement of Limited Warranty, International Program License Agreement, etc.) under which they are provided. Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products in connection with this publication and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products.

IBM makes no representations or warranties, express or implied, regarding non-IBM products and services.

The provision of the information contained herein is not intended to, and does not, grant any right or license under any IBM patents or copyrights. Inquiries regarding patent or copyright licenses should be made, in writing, to:

IBM Director of Licensing
IBM Corporation
North Castle Drive
Armonk, NY 10504-1785
U.S.A.

Performance is based on measurements and projections using standard IBM benchmarks in a controlled environment. All customer examples described are presented as illustrations of how those customers have used IBM products and the results they may have achieved. The actual throughput or performance that any user will experience will vary depending upon considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve throughput or performance improvements equivalent to the ratios stated here.

© Copyright International Business Machines Corporation 2008. All rights reserved.

Note to U.S. Government Users - Documentation related to restricted rights-Use, duplication or disclosure is subject to restrictions set forth in GSA ADP Schedule Contract and IBM Corp.