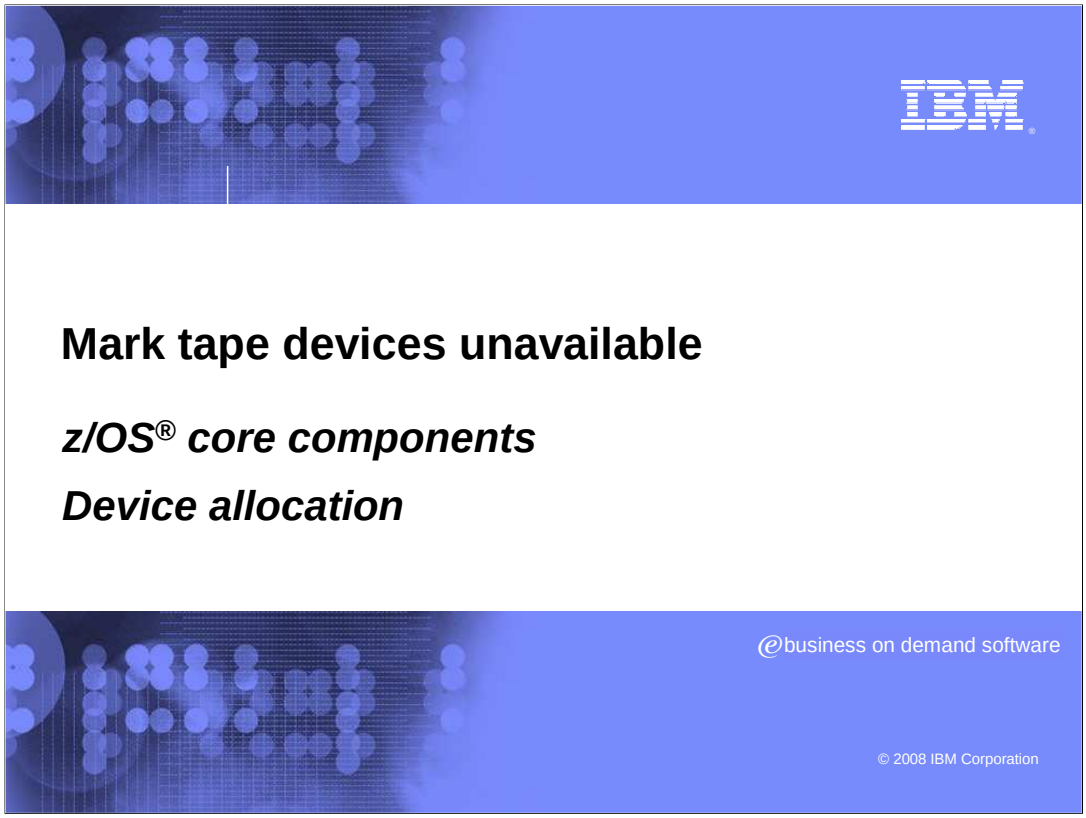


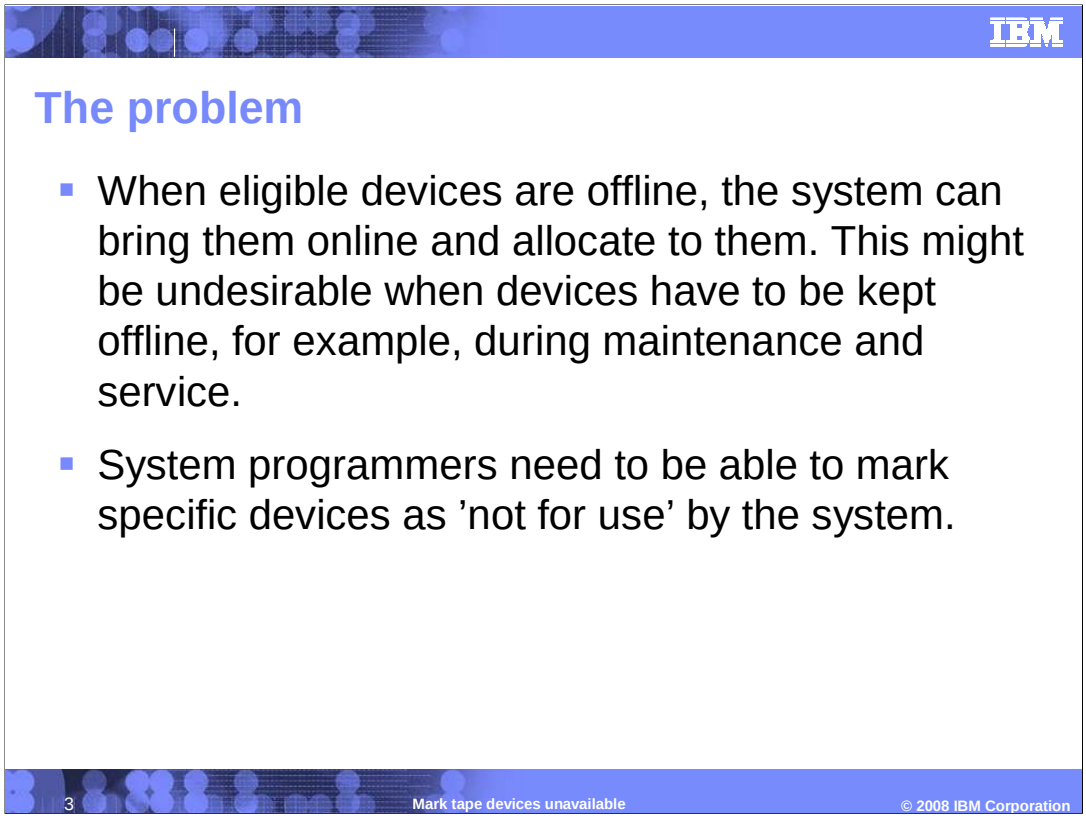
This presentation describes the V1R10 support that lets system programmers control availability of tape devices.

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.

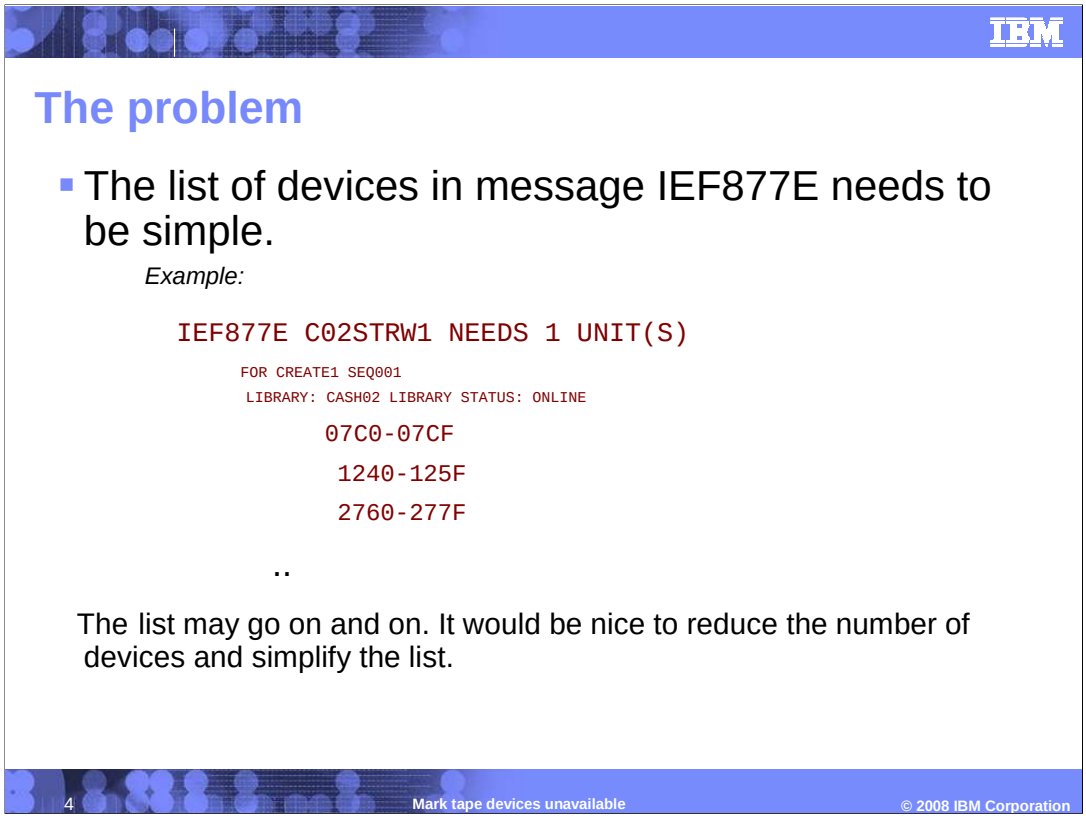


Here is the problem that needs to be solved.

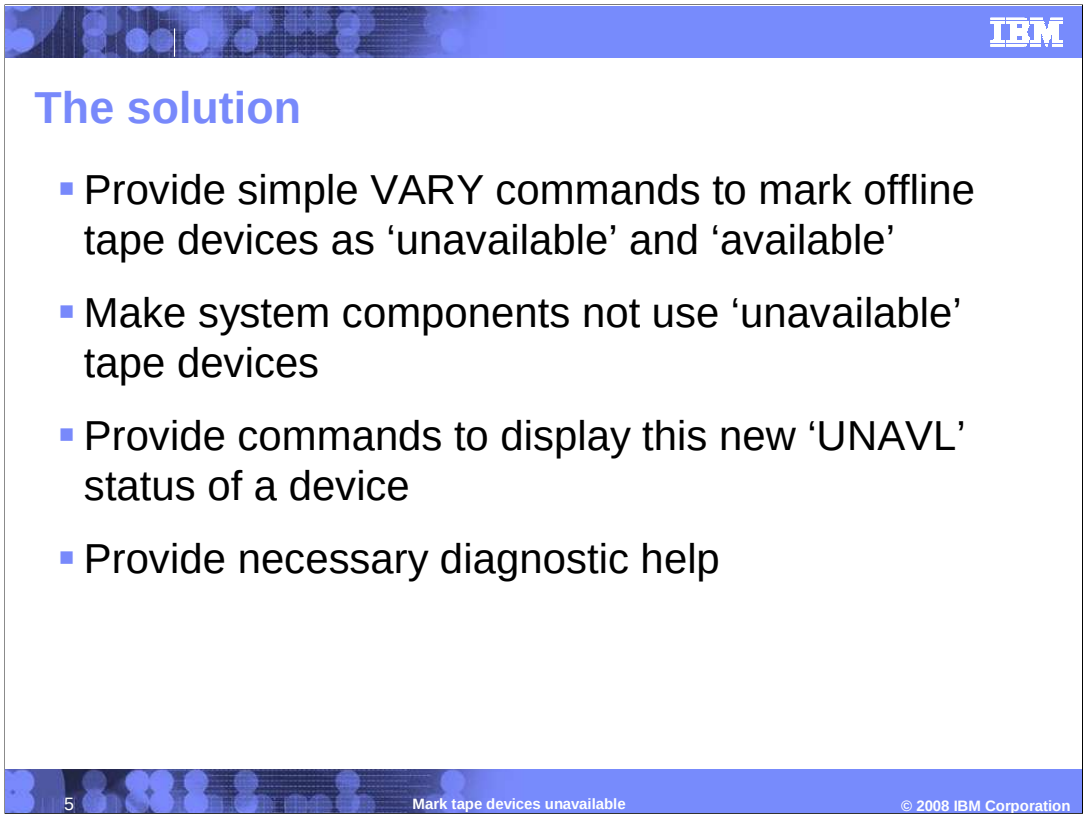
When eligible devices are offline, the system can bring them online to satisfy a request. However, there are certain situations when devices need to be left offline. For example, the devices are being serviced, or maintenance is being applied to them, you do not want the devices to be used by the system.

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.



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.

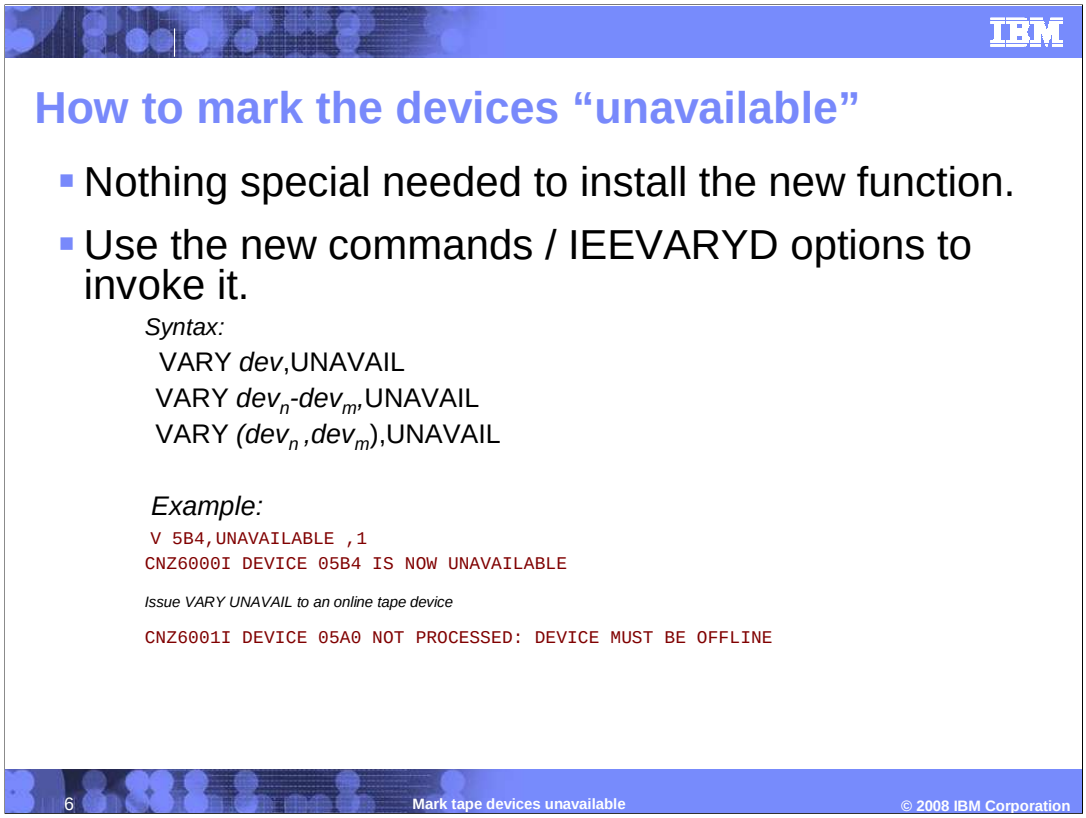


The solution is to support new VARY commands to mark specific devices as unavailable / available and DISPLAY UNIT commands to show the unavailable status of the device.

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.



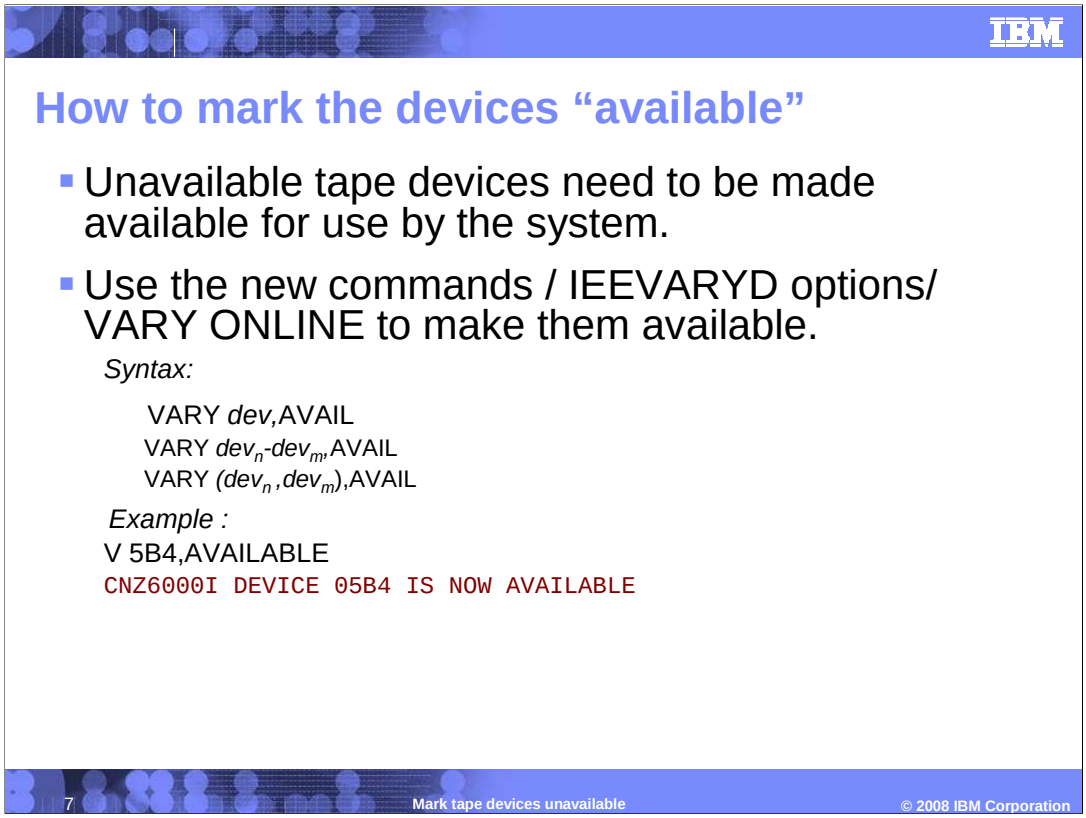
To mark offline tape devices as unavailable, use the new VARY UNAVAIL commands / IEEVARYD options. No special setup is needed for installing this new function.

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.



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

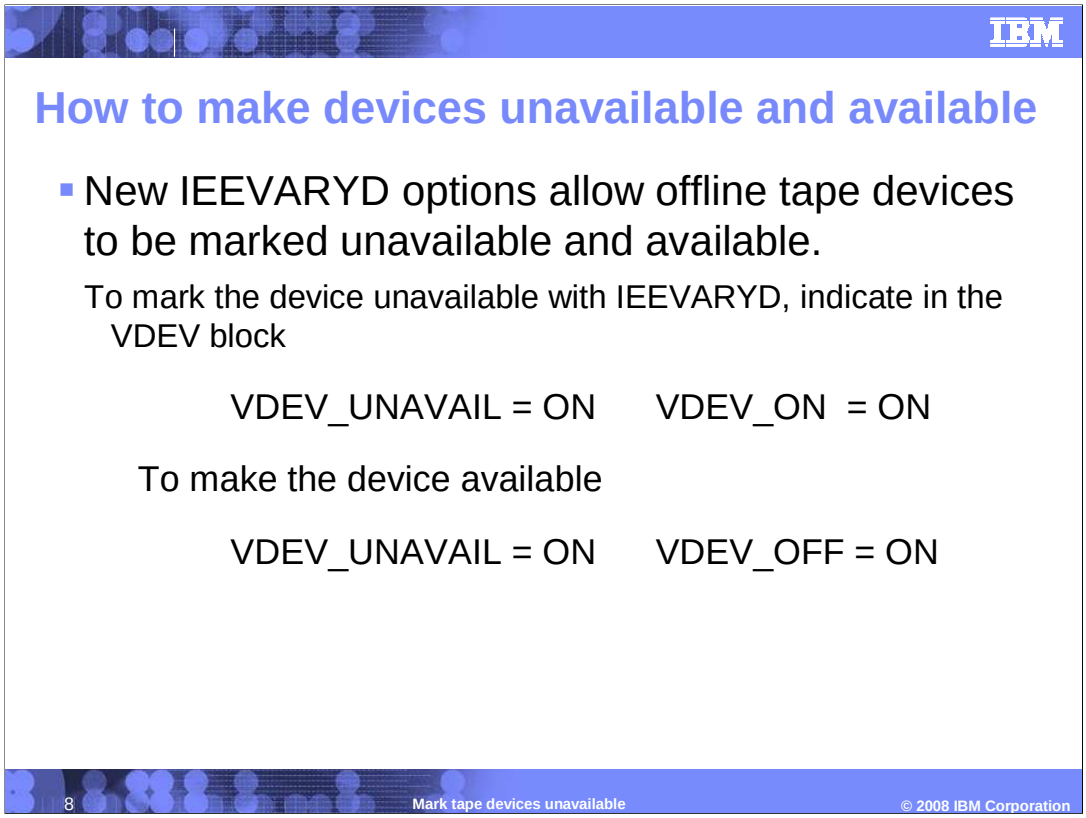
VARY *dev,*AVAILABLE will make the device available, but it will still be offline.

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.

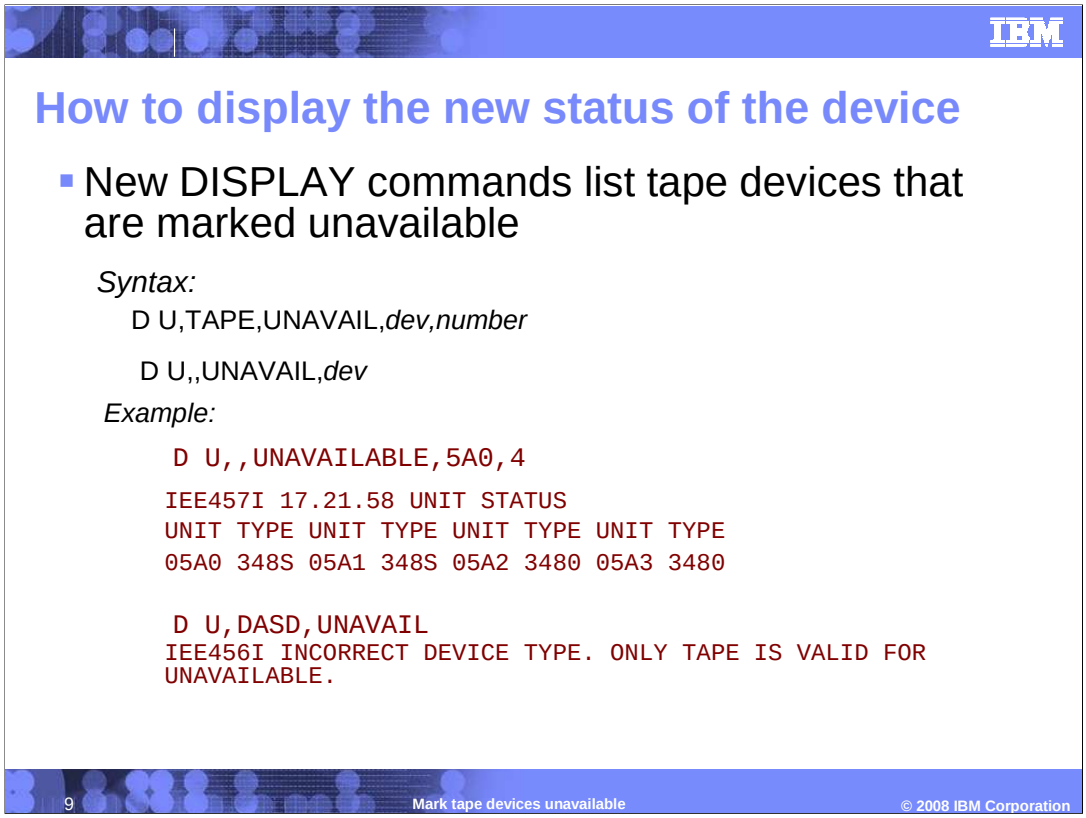


The IEEVARYD service supports marking a device available or unavailable. It has the same restrictions as the VARY command (for example, only offline tape devices are accepted.) The new options allow offline tape devices to be marked unavailable and available.

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.)



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:

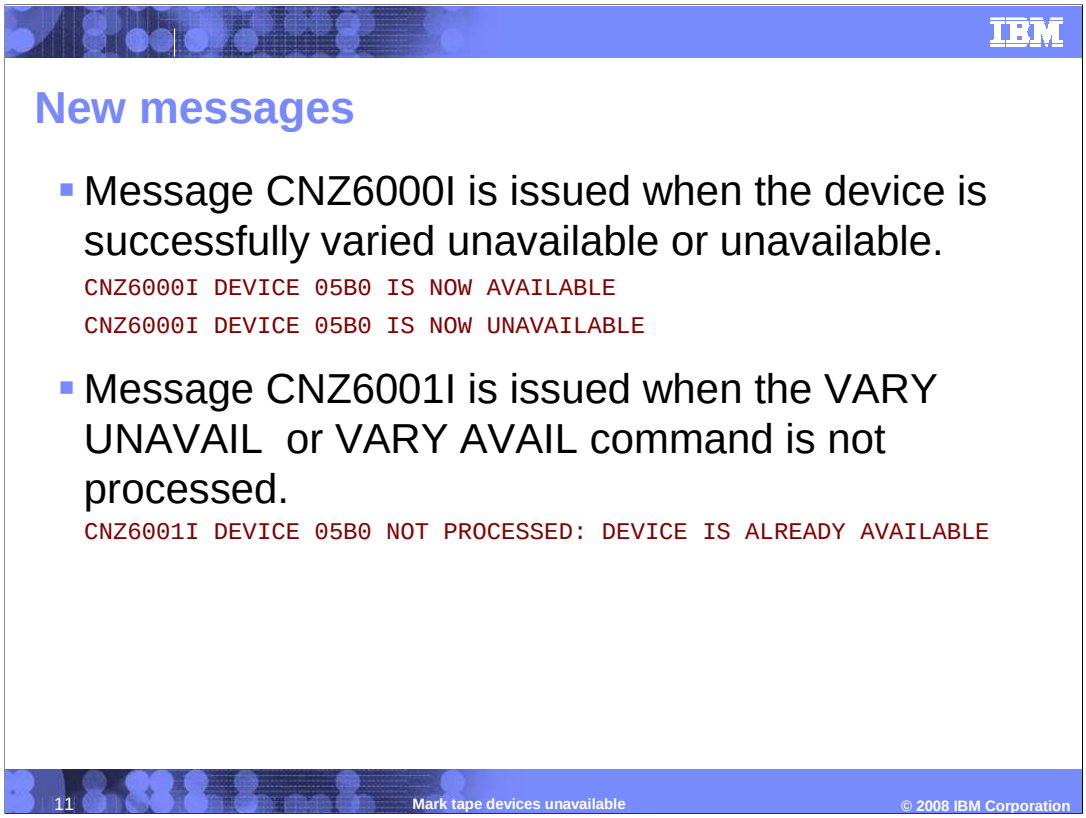
D U,,,*dev*

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
```

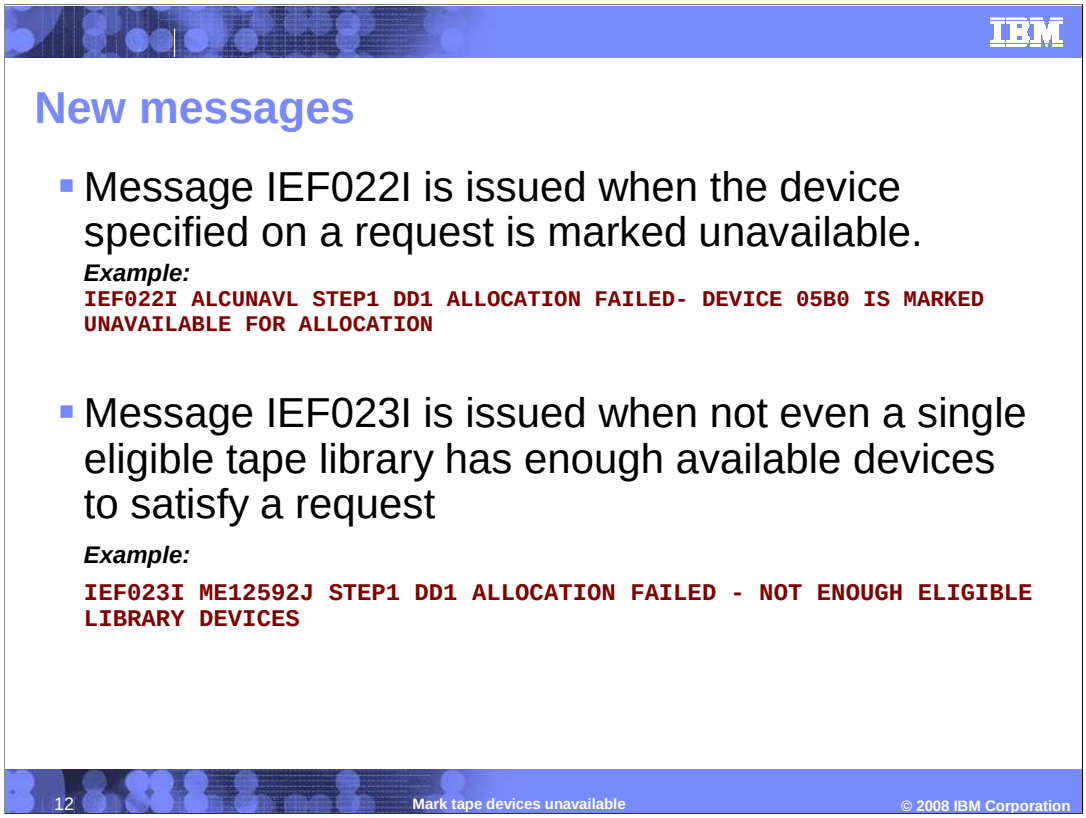

To display the status of the device, use the D U,,,*dev* command. This command's processing is updated to show the new UNAVL status of the device. All the existing combinations of the DISPLAY UNIT command are supported. The IEE457I message will now display F-UNAVL status for an offline, unavailable tape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



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.



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 dynalloc reason code ‘4FE’x and message IKJ56231I.

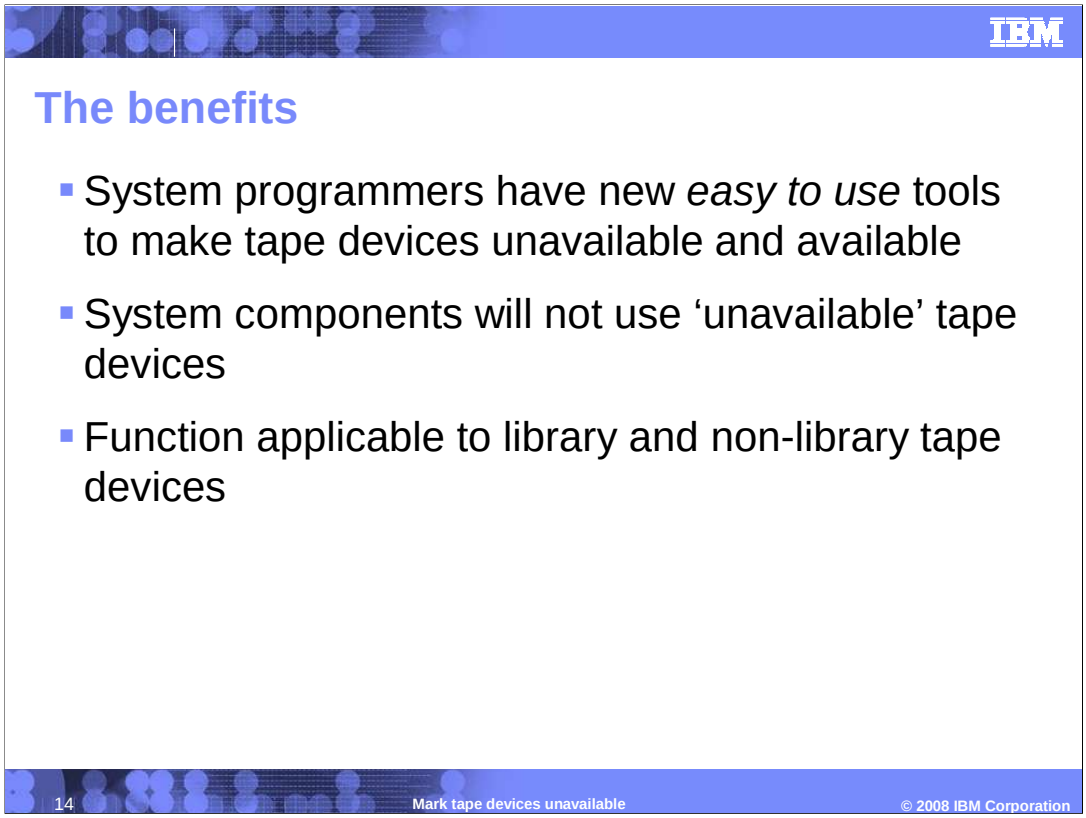
When the request is for tape-library devices but not even a single eligible tape library has enough available devices to satisfy the request, Allocation will fail with message IEF023I. This corresponds to dynalloc error code ‘2D9’x and message IKJ56231I.

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.



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

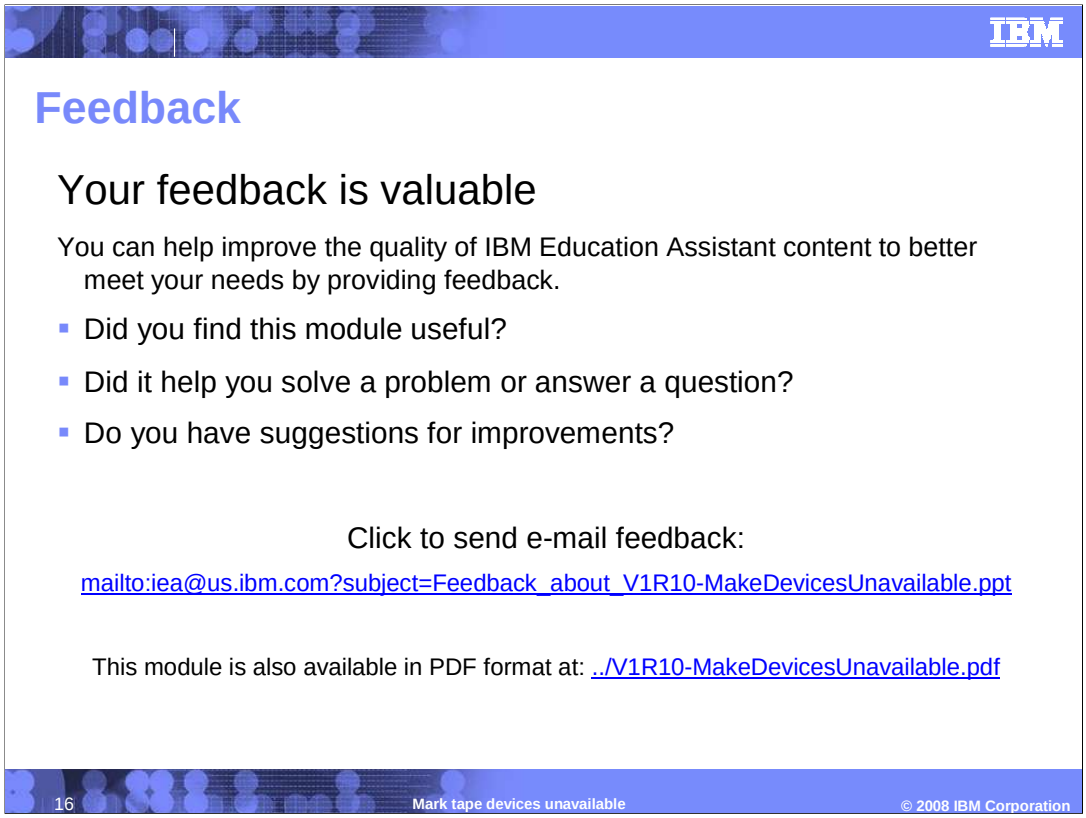
  SA22- 7634 z/OS V1R10 MVS System Messages, Vol 4 (CBD-DMO)

  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



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