Term	Description
Vital product data (VPD)	Information that uniquely defines system, hardware, software, and microcode elements of a processing system.

8.1.3 Concurrent and nondisruptive upgrades

Depending on the effect on the system and application availability, upgrades can be classified in the following manner:

- Concurrent

  In general, *concurrency* addresses the continuity of operations of the *hardware* during an upgrade; for example, whether a system (hardware) must be turned off during the upgrade. For more information, see 8.2, “Concurrent upgrades” on page 338.

- Non-concurrent

  This type of upgrade requires turning off the hardware that is being upgraded. Examples include memory upgrades to a z15 T01 max 34.

- Nondisruptive

  Nondisruptive upgrades do not require the software or operating system to be restarted for the upgrade to take effect.

- Disruptive

  An upgrade is considered *disruptive* when resources that are modified or added to an operating system image require that the operating system be restarted to configure the newly added resources.

A Concurrent upgrade might be disruptive to operating systems or programs that do not support the upgrades while being nondisruptive to others. For more information, see 8.10, “Planning for nondisruptive upgrades” on page 374.

8.1.4 Permanent upgrades

Permanent upgrades can be obtained by using the following processes:

- Ordered through an IBM marketing representative
- Initiated by the client with the CIU on the IBM Resource Link

Tip: The use of the CIU facility for a system requires that the online CoD buying feature (FC 9900) is installed on the system. The CIU facility is enabled through the permanent upgrade authorization feature code (FC 9898).

Permanent upgrades that are ordered through an IBM representative

Through a permanent upgrade, you can accomplish the following tasks:

- Add processor drawers
- Add Peripheral Component Interconnect Express (PCIe) drawers and features
- Add model capacity
- Add specialty engines
- Add memory
- Activate unassigned model capacity or IFLs
- Deactivate activated model capacity or IFLs
- Activate channels
- Activate cryptographic engines