



Operating Systems

Lesson 7



Plan

- Shared Code
- What is DLL
- Advantages of using DLL
- Binding
- Sample



Code Sharing

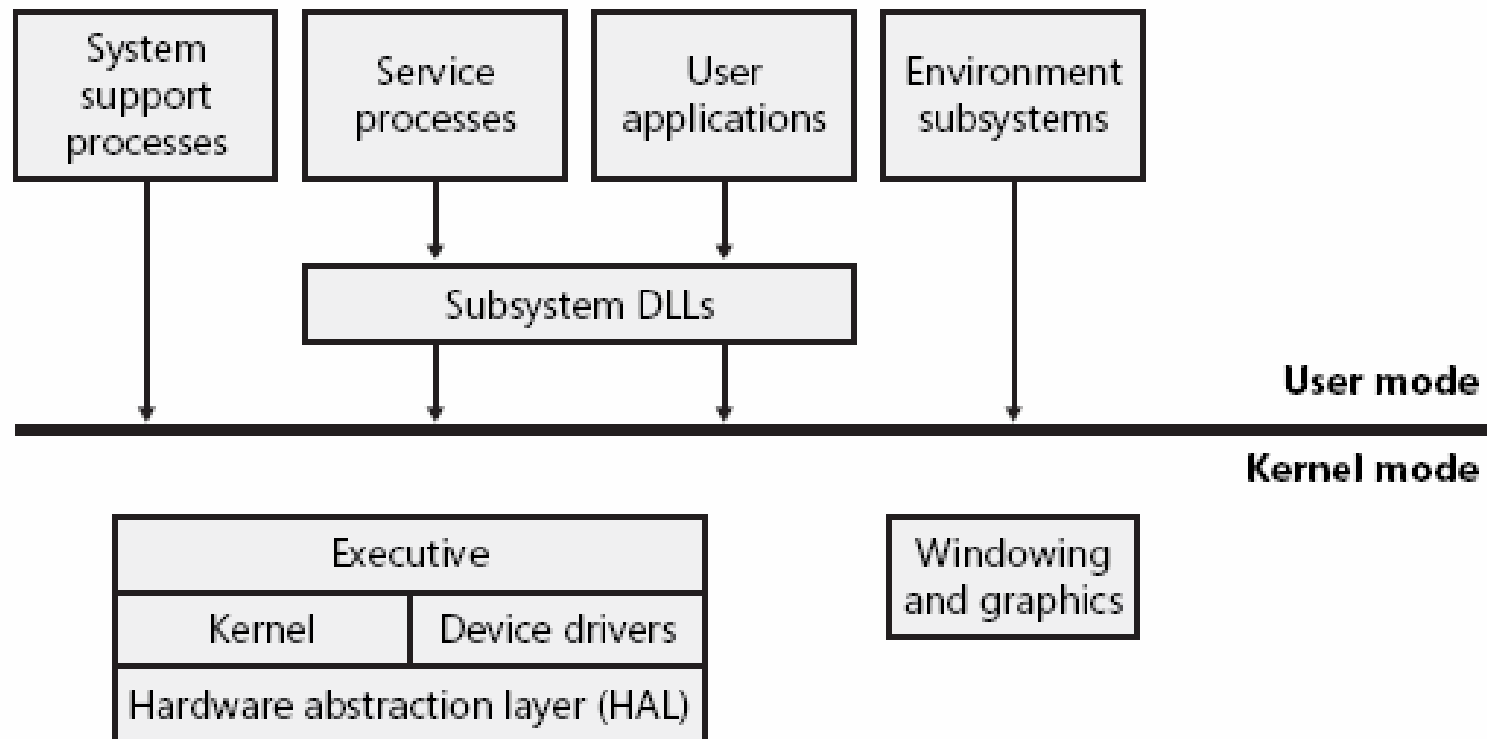
- Multiple processes can share data
 - Shared memory using MMF
- Multiple processes can share code
 - Dynamically Linked Libraries (DLLs)



Dynamic Link Library (DLL)

- A set of callable subroutines linked as a binary image that can be dynamically loaded by applications that use them.
- Modular Functionality
 - Process Status API (psapi.dll)
 - System DLL's (kernel32.dll, user32.dll)
 - C Runtime
 - Networking (winsock32.dll)

System DLLs





Advantages of using DLL

- **Conserve memory**
 - Multiple processes share a single copy of the DLL in physical memory
 - reduce swapping
- **Less overall executable footprint**
 - Reduce install package size
- **Easy update**
 - DLL change does not incur application rebuild
 - After market support



Method for using DLLs

- run-time dynamic linking (explicit)
 - Decide at run-time which library and functions from it to use
 - LoadLibrary() / FreeLibrary()
 - Flexible but more coding
- load-time dynamic linking (implicit)
 - Link an import library
 - At startup the system loads the DLLs specified by the program
 - Easy to code but less flexibility

Import libraries (.lib)

- Import libraries contain information about exports in other programs
- Supplies the system with the information needed to load the DLL and locate the exported DLL functions when the application is loaded

