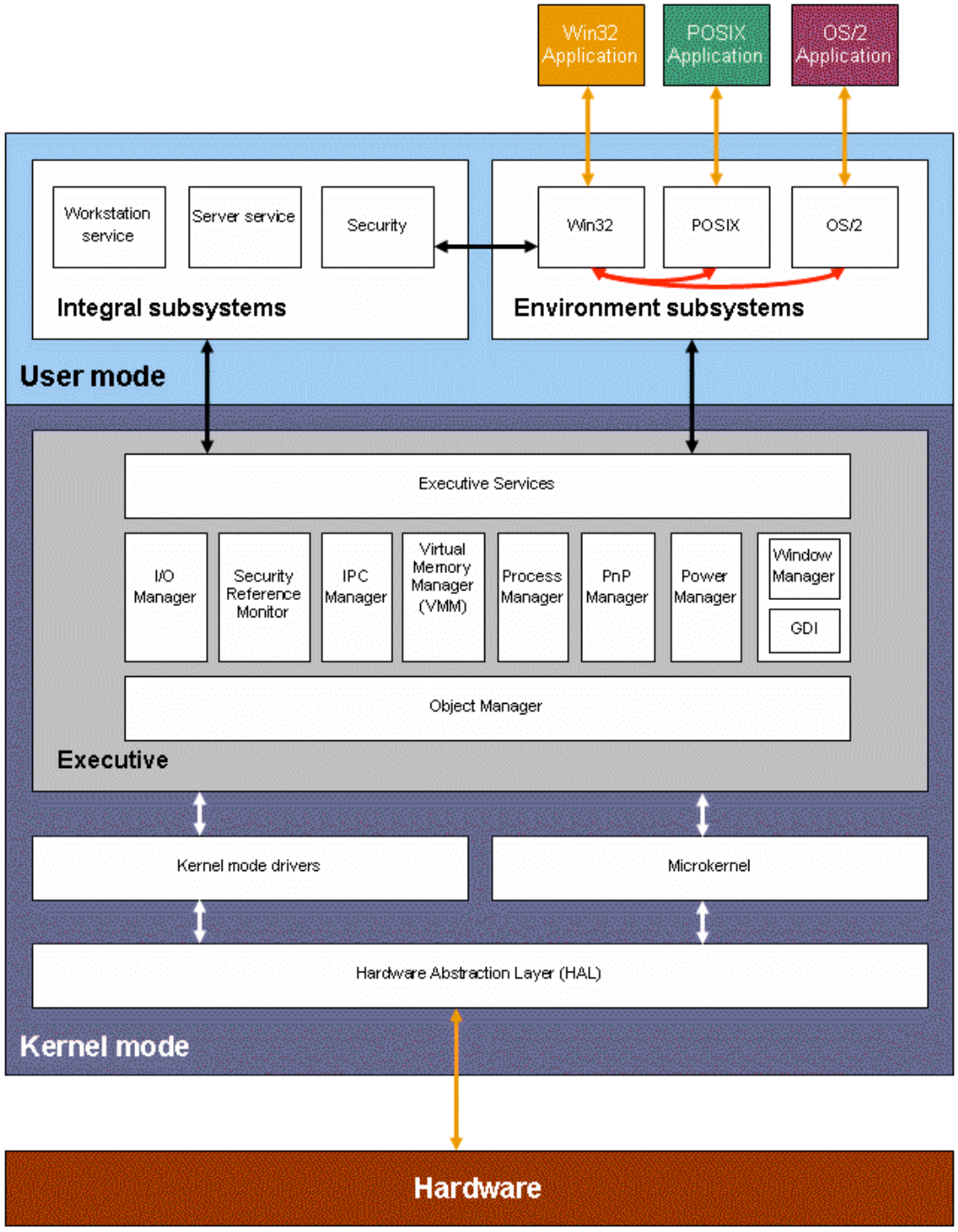
Windows XP

- Windows XP is the newer version of Windows NT
  - Built on top of a Hardware abstraction layer to ensure portability
  - Shares some roots with VMS via Dav Cutlet from DEC
  - Windows XP, XP Pro, Media Center, 64 bit, Tablet PC, server etc.
- Windows XP considers Media player, Internet Explorer to be part of the OS - legally contested as this has implications for the anti-trust lawsuits. Typical OS techniques are not challenged in courts
- Boots using a BIOS (future generations would use EFI)


Win32 Application
POSIX Application
OS/2 Application
Workstation service
Server service
Security
Integral subsystems
Win32
POSIX
OS/2
Environment subsystems
User mode
Executive Services
I/O Manager
Security Reference Monitor
IPC Manager
Virtual Memory Manager (VMM)
Process Manager
PnP Manager
Power Manager
Window Manager
GDI
Object Manager
Executive
Kernel mode drivers
Microkernel
Hardware Abstraction Layer (HAL)
Kernel mode
Hardware

Process scheduling

- Threads are scheduling using a priority-based preemptive scheduling using a dispatcher
- 32 priority levels
  - 1-15: Variable class
  - 16-31: Real time
  - 32: Dispatcher
  - Idle thread is executed if no other thread is ready
  - Interactive tasks can get upto 3 scheduling quantum over time sharing applications

Virtual memory

- Demand paging with clustering
  - On page fault, bring in a cluster of pages
  - Each process associated with minimum and maximum working set
  - Processes at maximum working set will run a local page replacement policy
  - If less then maximum, then OS will release a free page

File system of choice: NTFS

- Directories are implemented using a B+ tree
- Supports quotas
- Sparse files - if seek() and written, then areas that were never written return 0 and not take up any space
- Volume mount points - similar to unix mount. NTFS does not have to use A:, B:, etc.
- Directory junction, which is similar to directory symbolic links in UNIX
- Hard links to other files in the same volume
- Volume shadow copy to create COW backups of recent overwritten versions
- Transparent compession and encryption
- 64 bit clusters for volume size

Security

- User account based
- Subject used to track user priviledges and program access

- All system configuration kept in registry
  - Keeps last known safe state to other mechanisms to recover from corrupt registry