

MS SERVER 2016 I/O MANAGEMENT AND DISK SCHEDULING

Operating system
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INTRODUCTION:-

Windows Server 2016 is the forthcoming successor to Microsoft's [Windows Server 2012](#) server operating system . Windows Server 2016 offers enhancements in the areas of virtualization, software-defined storage and networking, security, and management. Windows Server 2016 Maximum Supported Memory and VM Limits. Windows Server 2016 Minimum Requirements:-

- 1.4 GHz 64-bit processor
- 512 MB RAM
- 32 GB disk space
- Gigabit (10/100/1000baseT) Ethernet adapter

Microsoft has revealed two versions of Windows Server 2016:-

- Windows Server 2016 Datacenter Edition – Highly virtualized private and hybrid cloud environments.
- Windows Server 2016 Standard Edition – Non-virtualized or lightly virtualized environments.

INTRODUCTION:-

RAM Requirements:-

- 512 MB of RAM or greater
- ECC (Error Correcting Code) type or similar technology

Disk Space Requirements:-

- 32GB or greater

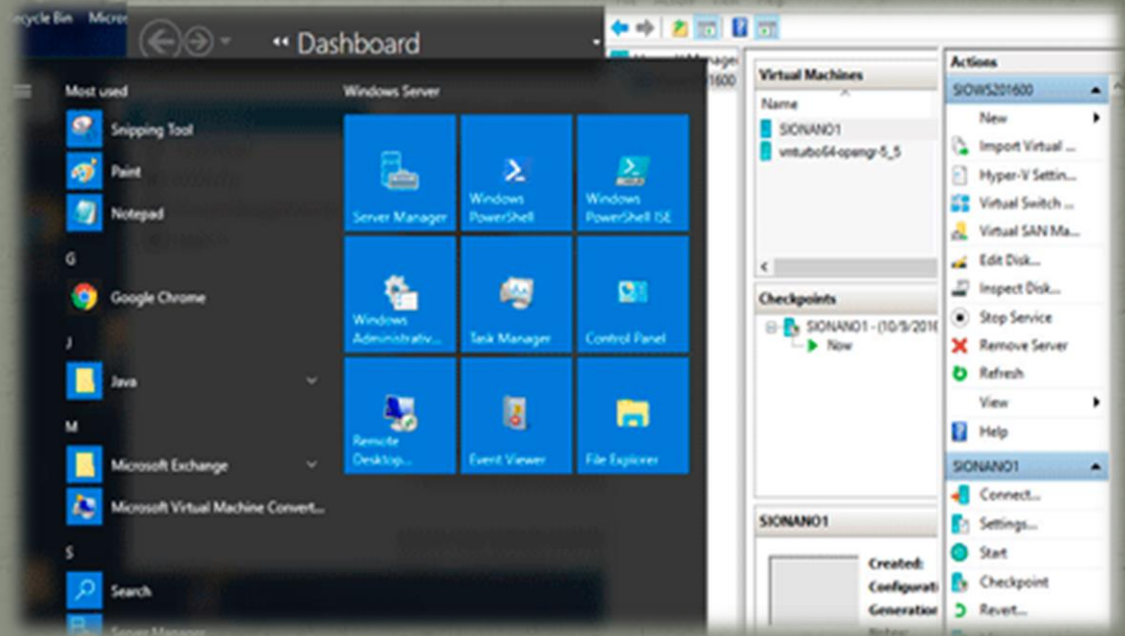
Network Requirements:-

- Ethernet adapter with at least gigabit throughput
- compliant with PCI-E architecture
- Support for Pre-boot Execution Environment (PXE)

NEW IN MS SERVER 2016:-

- Windows Power Shell .
- Internet Information Services (IIS) 10.0.
- Hyper-V Virtual Machine Manager.

- Nano Server.



- Windows Server 2016 TP5 Features.

Windows Power Shell :-

Windows Power Shell 5.0 includes significant new features, including support for developing with classes and new security features that extend its use, improve its usability, and allow you to control and manage Windows-based environments more easily and comprehensively.

Internet Information Services (IIS) 10.0:-

- New features provided by the IIS 10.0 web server in Windows Server 2016 include:

Support for HTTP/2 protocol in the Networking stack and integrated with IIS 10.0, allowing IIS 10.0 websites to automatically serve HTTP/2 requests for supported configurations. This allows numerous enhancements over HTTP/1.1 such as more efficient reuse of connections and decreased latency, improving load times for web pages.

Hyper-V Virtual Machine Manager:-

Windows Server 2016 provides a new Hyper-V-based Shielded Virtual Machine to protect any Generation 2 virtual machine from a compromised fabric. Hyper-V Virtual Machine Manager can now view the fabrics upon which a shielded virtual is authorized to run, providing a way for the fabric administrator to open a shielded virtual machine's key protector (KP) and view the fabrics it is permitted to run on.

Nano Server:-

Nano Server is the new headless deployment option for Windows Server 2016. As a deeply refactored version of Windows Server, it's designed to give you the lightest and fastest server OS configuration with fewer patch and update events, faster restarts, better resource utilization and tighter security.

Windows Server 2016 TP5 Features:-

TP5 is considered to be “feature-complete” and contains very few feature changes from what was in Windows Server 2016 TP4. Some of the changes from TP4 to TP5 include:

- Improvements to security features such as shielded virtual machines.
- Nano Server deployment mode.
- Increased support for mixed environments.
- Operations Manager updates.
- Configuration Manager updates.

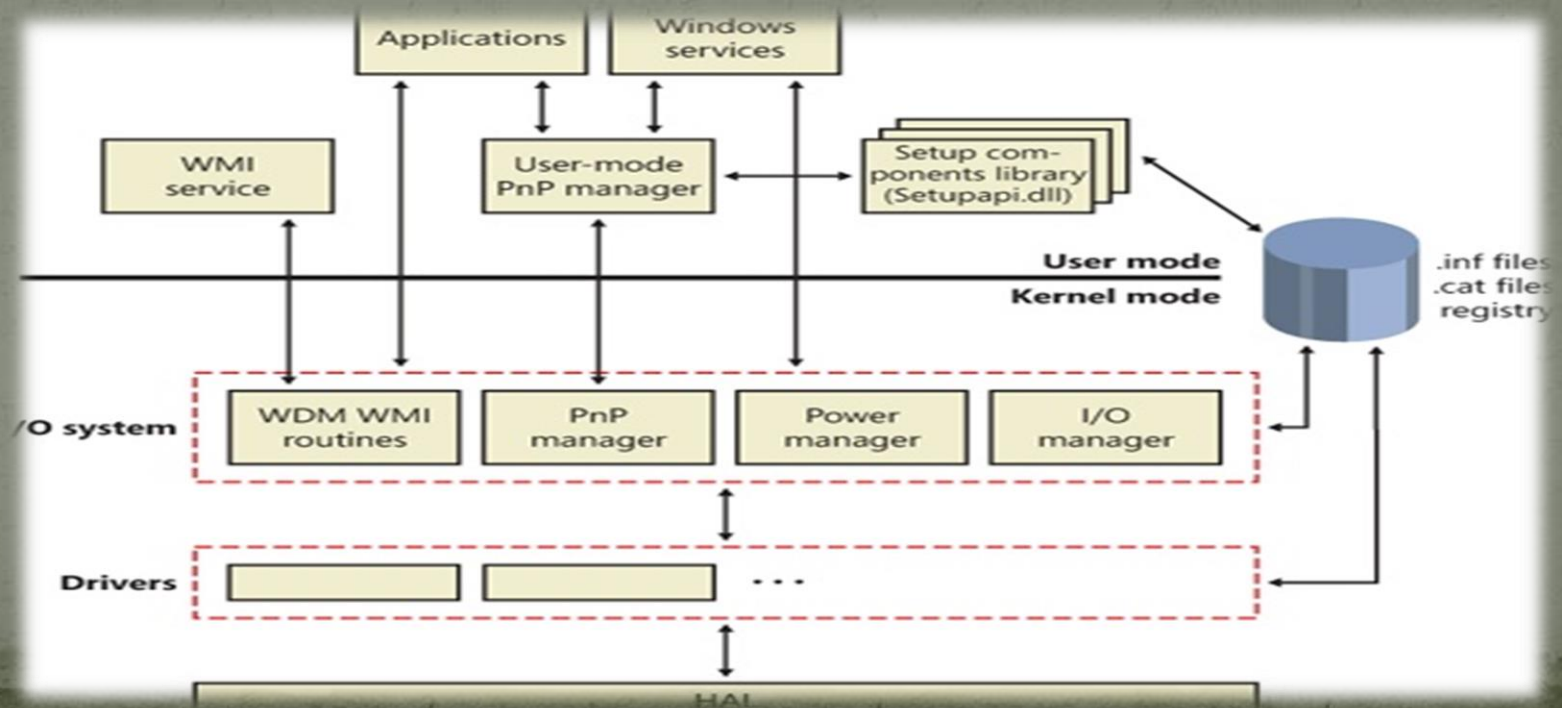
- I/O MANAGEMENT AND DISK SCHEDULING:-

- MULTIPATH I/O:-

windows server is use multipath I/O the multipath I/O provides a means to establish multiple path between a server and its disk storage. the first step in this process is to create the multiple paths between the storage and the server or servers depending on the type of disk storage setup you are using . for example on a server with one RAID array establishing multiple paths would be connecting two cables and adapter cards between RAID array and the server for a san creating multiple paths might involve establishing two or more network paths through two or more network switches or routers to the SAN.

I/O MANAGEMENT AND DISK SCHEDULING:-

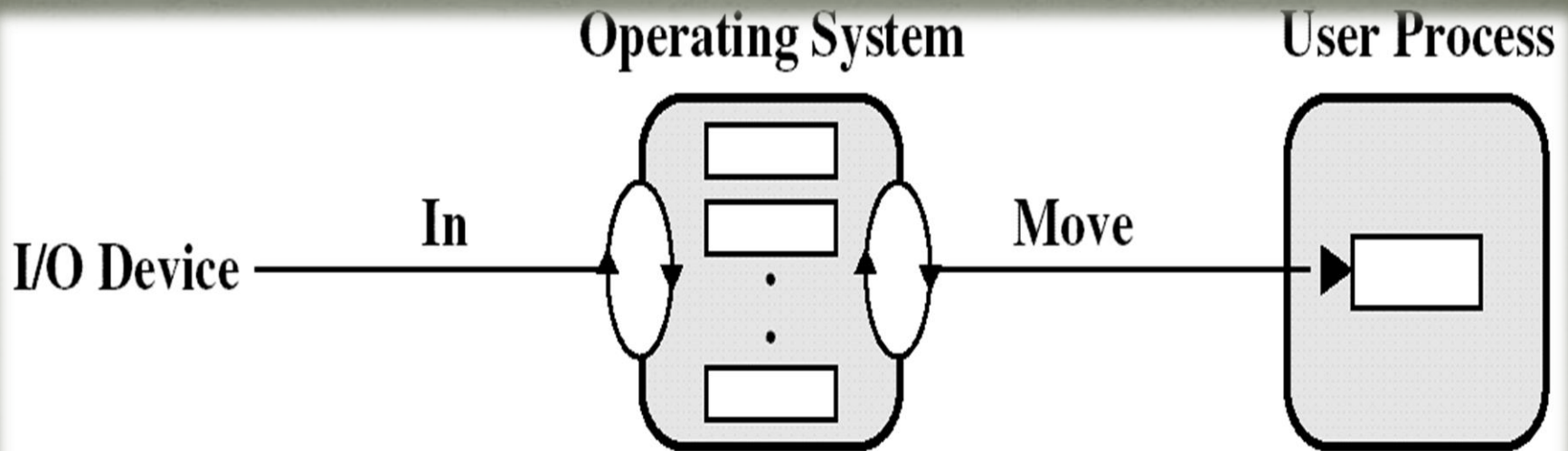
- **The I/O Manager:** The I/O manager is the core of the I/O system because it defines the orderly framework, or model, within which I/O requests are delivered to device drivers.
- The I/O manager creates an IRP in memory to represent an I/O operation.
- the I/O manager supplies code that is common to different drivers and that the drivers can call to carry out their I/O processing.
- The I/O manager also provides flexible I/O services that allow environment subsystems.



I/O MANAGEMENT AND DISK SCHEDULING:-

Circular buffer:-

- Generalized scheme, such as in the producer-consumer problem
- Sometimes the I/O device can be faster, other times the user process can be faster
- Peak demands are smoothed out



Disk Scheduling Policies:-

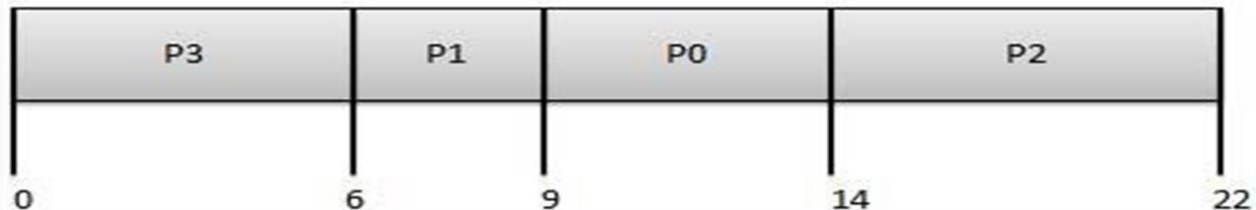
- Seek time :is the reason for differences in performance
 - Seek time \gg Rotational latency
- For a single disk there will be a number of I/O requests
- If requests are selected randomly, we will not get a good performance
 - we will assume that the requests for disk access of a number of user will be random
 - ↳ (but for a single user `locality of reference' will again hold)
- So it is important to devise better methods:
 - I/O system sorts the requests in some way.

DISK SCHEDULING:-

- Priority Scheduling : In this Each Process have Some Priorities Assign To them , Means each and Every Process will be Examined by using the Total Time Which will be Consumed by the Process.
- Priority scheduling is a non-preemptive algorithm and one of the most common scheduling algorithms in batch systems.
- Each process is assigned a priority. Process with highest priority is to be executed first and so on.
- Processes with same priority are executed on first come first served basis.

• Problems:-
Starvation.

Process	Arrival Time	Execute Time	Priority	Service Time
P0	0	5	1	9
P1	1	3	2	6
P2	2	8	1	14
P3	3	6	3	0



Multilevel Queue: The Multilevel Queue is used when there are multiple queues for the various different processes as we know that there are many different types of Works those are to be performed on the Computers at a Time.

- Multiple queues are maintained for processes with common characteristics.
- Each queue can have its own scheduling algorithms.
- Priorities are assigned to each queue.

For example, CPU-bound jobs can be scheduled in one queue and all I/O-bound jobs in another queue. The Process Scheduler then alternately selects jobs from each queue and assigns them to the CPU based on the algorithm assigned to the queue.

Abstract:-

- The ms server 2016 have a new features and more enhancement than that was in old server in the software sides by providing a new techniques that make a big affect when the user and developers trying to improving the server's efficiency.
- Each physical server will be required to be licensed for all physical cores .
- Each physical processor will be required to be licensed with a minimum of 8 physical cores.

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A hand is holding a clapperboard. The clapperboard has a black top bar with white chevron patterns. The main body of the clapperboard is black with the text 'THANK YOU FOR YOUR ATTENTION' written in white, bold, sans-serif capital letters. The background is a light, hazy studio setting with two studio lights on tripods visible in the distance. The entire image is framed by a dark, textured border.

THANK YOU
FOR YOUR
ATTENTION