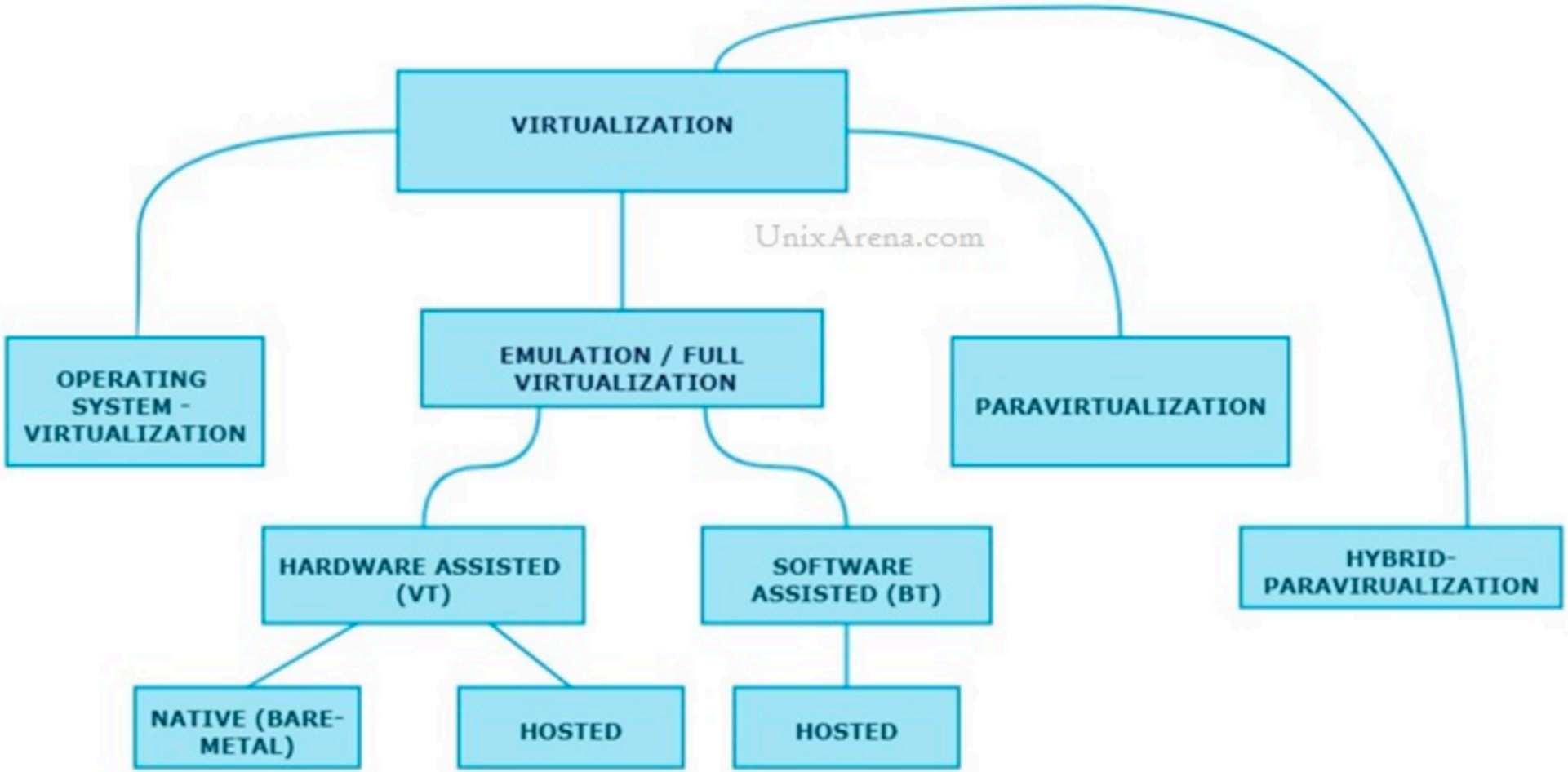
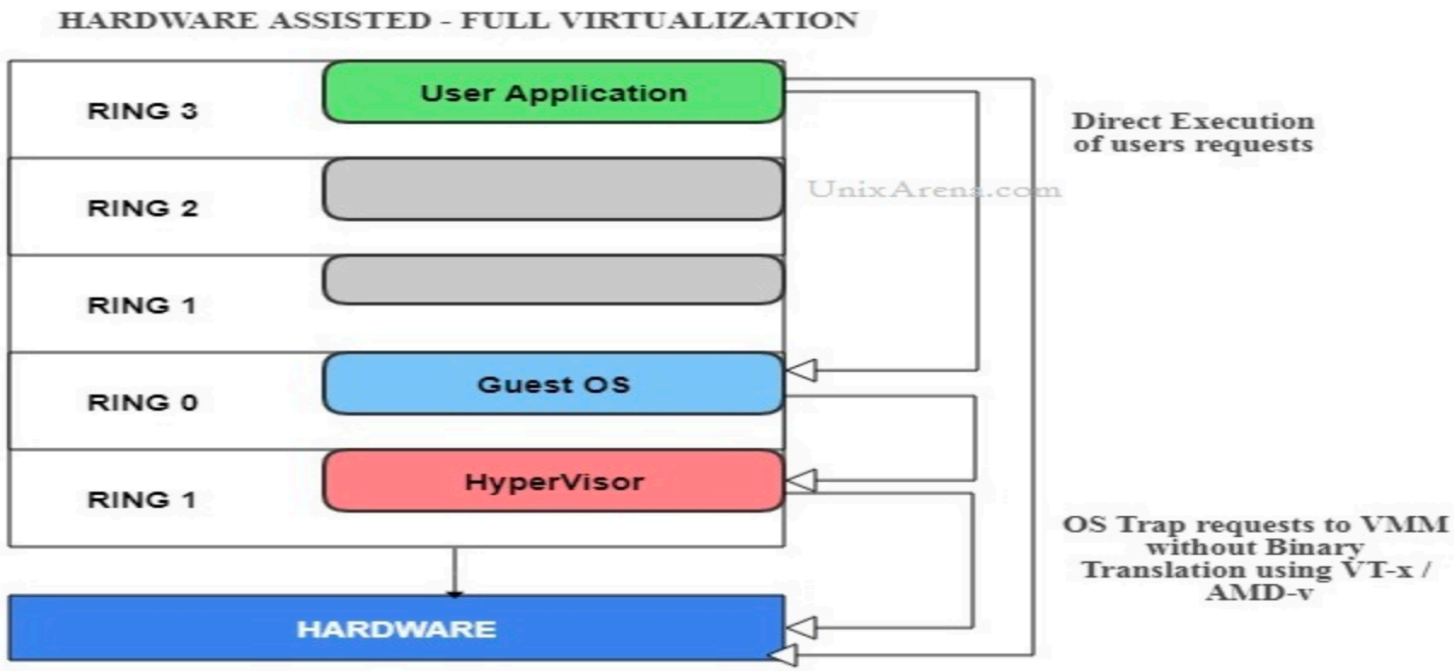
VIRTUALIZATION



Types of virtualization

Hardware-Assisted – Full Virtualization (VT)

Hardware-assisted full virtualization eliminates the binary translation and it directly interrupts with hardware using the virtualization technology which has been integrated on X86 processors since 2005 (Intel VT-x and AMD-V). Guest OS's instructions might allow a virtual context execute privileged instructions directly on the processor, even though it is virtualized.



Hardware-assisted virtualization – Hypervisor

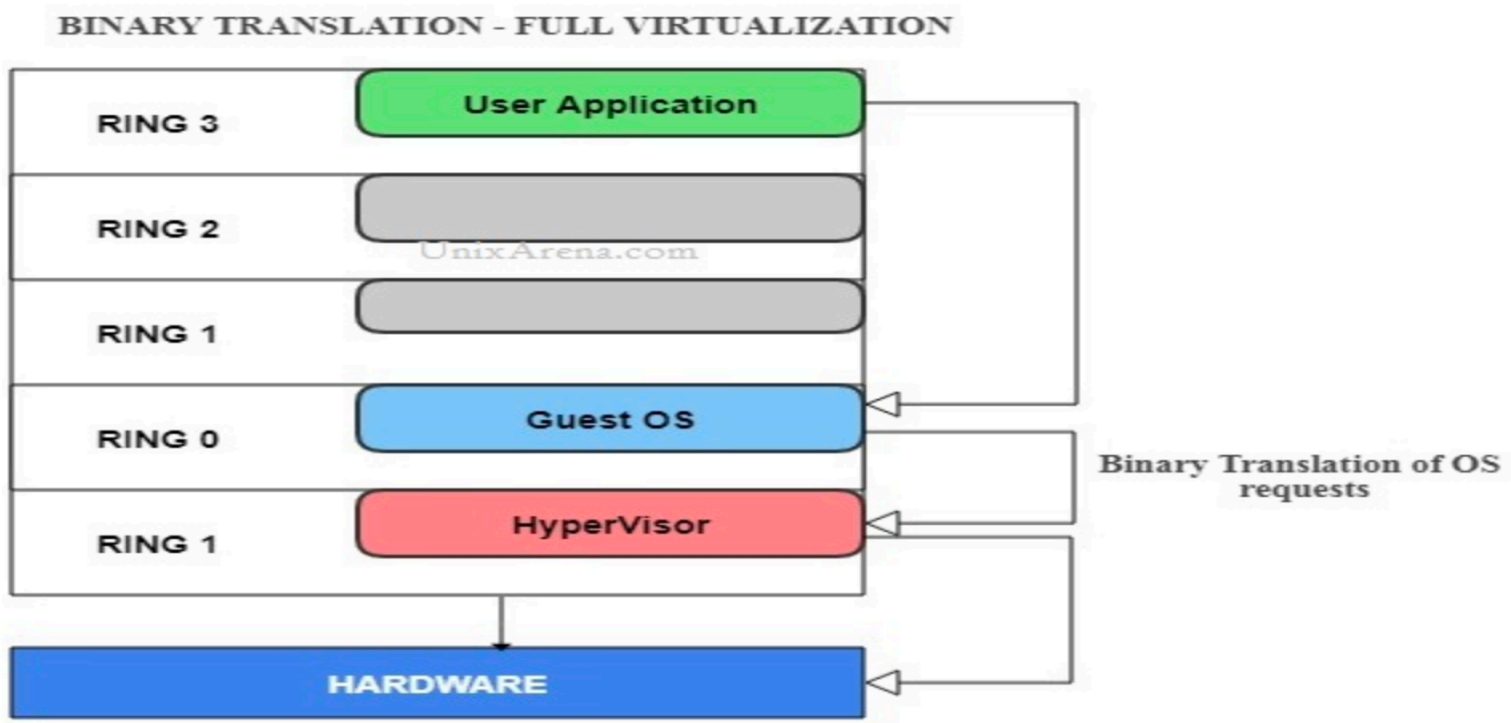
Here is the list of enterprise software which supports hardware-assisted – Full virtualization which falls under hypervisor type 1 (Bare metal)

- VMware ESXi /ESX
- KVM
- Hyper-V
- Xen

Software Assisted – Full Virtualization (BT – Binary Translation)

It completely relies on binary translation to trap and virtualize the execution of sensitive, non-virtualizable instructions sets. It emulates the hardware using the software instruction sets. Due to binary translation, it often criticized for performance issue. Here is the list of software which will fall under software assisted (BT).

- VMware workstation (32Bit guests)
- Virtual PC
- VirtualBox (32-bit guests)
- VMware Server



Binary Translation – Full Virtualization

Comparison Chart

BASIS FOR COMPARISON	FULL VIRTUALIZATION	PARAVIRTUALIZATION
Technique	Binary translation and direct execution	Hypercalls
Guest modification/Compatibility	Unmodified guest OS and excellent compatibility.	Guest OS codified to issue hypercalls so it.
Performance	Moderate	Good
Security	Less secure	More secure
Speed	Intermediate	Fast
Used by	VMware, Microsoft, Parallels	VMware, Xen
Guest OS hypervisor independent	Yes	Not completely dependent, both conditions are possible.
Characteristic	Software-based	Cooperative virtualization