

SNS COLLEGE OF ENGINEERING

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Accredited by NAAC-UGC with 'A' Grade

Approved by AICTE, Recognized by UGC & Affiliated to Anna University

Department of Information Technology

Implementation levels of realization

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Application level

JVM / .NET CLR / Panot

Library (user-level API) level

WINE/ WABI/ LxRun / Visual MainWin / vCUDA

Operating system level

Jail / Virtual Environment / Ensim's VPS / FVM

Hardware abstraction layer (HAL) level

VMware / Virtual PC / Denali / Xen / L4 /
Plex 86 / User mode Linux / Cooperative Linux

Instruction set architecture (ISA) level

Bochs / Crusoe / QEMU / BIRD / Dynamo

zation works through an ISA emulation. This is helpful for legacy code which was originally written for different hardware.

Software that might need additional layers to run can now run with some tweaking, even on x64 machines. ISA help is provided in a hypervisor or a virtual machine.

Emulation, though, requires an interpreter. This interpreter takes source code and converts it to a hardware readable format.

Hardware Abstraction Layer (HAL)

perform virtualization at the hardware level. It uses hardware virtualization technology to allow multiple operating systems to function on the same hardware.

It provides a layer of abstraction between the operating system and the hardware, allowing the operating system to manage the hardware resources.

It handles the virtualization of each hardware component such as I/O devices, memory, etc.

Multiple users can use the same hardware with numerous operating systems at the same time.

ng system level, the virtualization model creates a
pplications and the OS.

lated container on the physical server and operat
re and software. Each of these containers function

mber of users is high, and no one is willing to shar
zation comes in handy.

Library Level

are lengthy. Which is why applications opt for API

s provided by systems are rather well documented
on is preferred in such scenarios.

ng virtualization is made possible by API hooks. T
munication link from the system to the application

Level virtualization comes handy when you wish to
It does not virtualize an entire platform or environ
ng system, applications work as one process. Hence
ess-level virtualization.

useful when running virtual machines with high-l
cation sits on top of the virtualization layer, which
ogram.