Name: Rohit - P. Yakkundi

SRN: PES2UG23CS819

Section: Gi

Date 21-2-25 page

	2 Full Visitabilization Francis Astroctupes
11	In cloud computing, visitualization allows multiple. (VMs) to nun
	on a Bingle physical machine by abothaching hardward resource.
The state of the s	es compa example also pall visitualization coefficient took
	Two main types: Full visitualization & Poura visitualization.
0.1	"In these with kelone, the hyper has completely wheteverts.
4594	Full viortualization: - It. Completely abstracts the hardware, allowing
Ha be	multiple os to sun on the same Systen.
	The hypervisor creator a complete virtual raplica of
	the physical hardwarp was to hardwarp.
10	Para - Vintualization :- Para - vintualization requirer modifications -
	to the guest OS to communicate
	Efficiently with hypervison.
the weet	up and of head how is not the origin of the design will all the
	working: moread of emilating the full hardware exposes an
	interface that the guart OS can use distatly, reducing -
0 91911	it overhead, metric to always patrices to hadred
36.	Ey's- Xen, V.Mware, Esx (Older versions)
	" " it shows he mayout a structure ashino to bear.
	Camponison:
	Full-virtualization Poura-virtualization
	Os modification Not required Required
0.5	Performance Lower Lower Higher
h <sub>int</sub>	Mardune Emilation Yes Partial
	Leo Lation stoong Moderate.
	LI Mr. west for Moon Township : Since He OS IS were
	The of the Prince was about the forth of the
	- dented of such a size of the such as the

2	Full viertualization Example Anditecture?
0.40	Elist (MV) My Many water water water water water was the Commerce of the state of t
. Danie	· VMware Esxi, Microsoft Hyper-V, and KVM (Kernel - baged - VM)
	are common examples of full visitualization conthitectures,
NO.	fustbodely oran & whostother Hut & sout class out
	In these wichitecture, the hyperisor completely abstracts the
inakla	undorlying howdware, allowing unmodified guest operating
with al	Sychem to sun in von without auxores of being visitualized.
	The hypervisia carector a complete violated soutica of
	7- Para - visitualization Example Anchitecture:
other to	Xen (Para-virtualizadion male) is a well-known example of
	para - Visitualization.
	CHECKABLY WIND MAGARINESS.
•	In this approach, the guart as is modified to be aware that
i N.	it is sunning in a wishalized envisonment
	interface that the guest OS can me statell.
	Instead of exacting privileged instructions directly, the guest as
	makes explicit hypercalls to the hypervisor, reducing the
	need of complex instruction trapping and emulation.
	COMPANDY S
•	Changes/Modifications in Pavia - Vintualization =
	15 Modification Not sugared Required
1	Gruest Os modification: The guest of must be modified to
	include hypercally instead of executing privileged epu instanction
	linedly. Thospion propris nothaloss
	No neal for Binary Translation: Since the Os is aware of
	lightralization, the hypervisor doesn't need to use binary
	townsladion to handle sensitive instruction

3. Efficient /o Handling: The Os vises dignet hypercalls for 1/0 operations, reducing the overhead compared to device emulation in full-viatualization WSL 1 (windows Subsystem for Linux 1) · Not a Visitual Machine nor a traditional container; · WSL I teamster. Linux system calls into window NT 120001 calls using a compatibility layer. 3) USO Hardwage Virth Eddon - WILZ geller on Hoper - U. WSI 2 (windows Subiquer for Linux 2) · Uses a lighturight Visitual Machine (UM) - Rung a real linux Kernel inside a Hyper-V-based VM · Un like tooditional UM; WIL 2 is optimized by fast boot tindic and lover resource usage, but 17:11 a UM at its cox. 4) complete as Isolation — The Linux Kennel in walls bu BILL WE training system separate for windows with Conclusion? · WIL 1 is not a vm/container it uses system call trianslation. · WSL 2 is a VM, thought it is lightweight of optimized how perfromance

4	WSL 2 : Full visitualization on para = untralization;
33	with at majora ballows the relation of the of
	will 2 uses Full visitalization
	Justi Rication:
	(t good on stryedor obser) I per
1)	Runs an Unmolfied disux Kennel - unklike pera-virtualization, WSL2
1	doesn't modify the heims kernel.
	could us o compatibility layer
2)	Uses Hardware Virtulization - WSZ 2 relies on Myper - V full QS
	emulation, greateled than modifying the guest of for direct
	interaction they restand this of the till a sive
3	- Run as Start Lary Kennel : 45ide a Hyper V bad is
الا	No Hypercalls - para-virtualization requires hypercally instead of
U at	privileged instruction but wil a dorrals imodify Linux for to
	a able of lade The land of the state of the
4)	complete 05 Isolation - The Linux Korsel in not 2 own aga
	Relly virtualized system, separate form windows unlike pora-
	vintudized system.
0.3	Letter the fi entition) Mu - for it I sew =
	translation of the second seco
	e con o go on thought it is light thought of optimize
+	Mr. F. Granner
-	
- 11	

57	Advantage
	Advantager of wil 2 over violal Box
1)	Better Performed 1410 a
	Better Performance - WSL 2 riving a lightweight VIM with fauster life 1/0 and lower resource or wage
	Source Grage
2)	Seamless Windows Integration - Direct sile showing of execution of
	linux contand without extra setup.
V-79	tower Resource Consumption - Uses Less CPU & RAM Compared to Visitual Rox which see lodicate all
	Latterinity of public this
5)	1 as no Boot time - Start almost instanty in tells up
Manufacture of the latest and the la	To have to have
5)	1 storay & septiment flowers of which
J	Compost - Support - Support dinner
	and windows Ternihal without extra configuration
	Conclusion:
- 314 2.1	WS22 is facted, more efficient, and better integrated with
- 25°	with windowy Campared tot virtual-Box.

6	
	publicly available.
at a	NIV algorithms of more & some of the Cotton
	Discussion : 5010 - 50 Testases and but of all stand
(5.42)	· open Source - Microsoft hay made the will himx Kernel
	Source code available of on Githol under The
	6Ph2 license.
100.0	3) LOWER RECOVER (CONSUMPTION - USE LOVE CPU & RAM.
1,000	· Customes Optimizations - The Revnel is modified for Hyper-V
	compatibility, including optimizations for
	por formance, menory maragement of syroun calls
	book of report of the took 22MI
	o Continuous Updates - Micdosaft maintaine & updates this Keonel
^	o Continuous Updates - Micoosoft maining & updates for including
11 111	and user can build their our custon
	Version if medled;
1	
	Conclusion :-
w bit	wsl'g's linux Kernel is open-source and available
	100 000 000 000 000 000 000 000 000 000
	on hithub. , ensure transparency and mounts commenter
8	

(Date \_\_\_\_\_Page\_\_\_)

7) WSZ2 and IKVM both use hardware-assisted viatualization, but they differ in purpose and implement. WIL 2 nun a lightweight Hyper-V-based Vitual Machine to Provide a Linux environment within windows Opetimized for seamles integration and low resource usage, It does not offer sull UM management capabilities like foraditional hypervisors . In Contorast, KVM (Kerner - bagad Vistel Michine) is a full-flodged him hyperisor, converting the Linux Keynel into a Type-1 hypervicor, allowing multiple fully isolated VM's to non with new-native performance.