Docker(Machine,Swarm)

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Docker is a container based technology which helps in the packaging and shipping of applications quickly and across networks. Docker is being well accepted and appreciated in the Agile Software Development workforce and among the DevOps because of their attributes of Continous Integeration and testing.To create a cluster of Docker Engines into a single docker virtual engine is used Docker-Swarm sed which is tested for more than 50,000 containers.

Keywords: Cloud, I524, Big Data, Virtualisation, Docker, Docker Swarm, Docker Machine , Virtual Machines, VMs, Containers,LInux Containers, lightweight containers,LXC

https://github.com/argetlam115/sp17-i524/blob/master/paper1/S17-IR-2021/report.pdf

This review document is provided for you to achieve your best. We have listed a number of obvious opportunities for improvement. When improving it, please keep this copy untouched and instead focus on improving report.tex. The review does not include all possible improvement suggestions and for each comment you may want to check if it applies elsewhere in the document.

Abstract: "being well accepted" is a subjective statement; either remove or provide evidence; no evidence for this in the paper

You need to make several revisions to the language, spelling (please use a spell-checker) and the way you use citations. In addition, you need to provide more evidence for some of the claims you make in the paper. Refer to the comments below. That being said, your paper approaches the task at the right level of detail and is helpful in learning about Docker, so well done for that.

Assessment: Some revisions suggested. Please address the review comments by end of March.

INTRODUCTION

[1]Docker is an open-source container based technology.

Citation

When you cite, the citations needs to go at the end of the sentences that uses the information.

It is an extension of Linux Containers (LXC):

Grammar

which is a unique kind of lightweight, application-centric virtualization that drastically

"drastically" is subjective unless it's backed up by a reference

reduces overhead and makes it easier to deploy software on servers. A container allows a developer to package up an application and all its part includig it's code,

Grammar

Please, be careful with "it's" versus "its"

stack it runs on, dependencies it is associated with,system tools and everything the application requirs

Spelling

to run within an isolated enviorment. This makes it easier for programmers and developers to run more apps on the same server and it even makes it easier to package and ship the apps very frequently. Docker has been able to popularize the container approach in part because it's improved the security and simplicity of container environments. Plus, interoperability is enhanced by its association with major companies – such as Google, Canonical, and Red Hat – on its open source element libcontainer.

HOW DOCKER DIFFERS FROM VMS

The virtualisation of application can be obtained with Hyervisors or Virtual Machine Manager(VMM) which makes it easy for applications to the run

Grammar

in isolation with one another while sharing the same underlying hardware articture. VM hypervisors, such as Hyper-V, KVM, and Xen, all are "based on emulating virtual hardware"

This doesn't need to be a quote. If you are quoting, you need to provide the reference from which the quote was taken.

which means they're fat in terms of system requirements.

"fat in terms of system requirements" is a colloquialism; please use a different phrase.

Instead of virtualizing hardware, containers rest on top of a single Linux instance.A full virtualized system gets its own set of resources allocated to it, and does a very minimal sharing of thoses resources. So,

"So" is too colloquial to use in a paper.

the developer gets more isolation but each Instance of the VM aslo has many "Junk VM files"

Where is this quote coming from?

, which is not useful to the developers as it gets "heavy".Since they only require to keep the virtal machine image and it can be kept small.Thus, the smaller the image is the less we need to store and the less you need to send around the network which makes them fairly

"fairly" is colloquial and not very descriptive; please avoid

lightwight in comparison to the Virtal Machines. Thus, we can run even use 1000s of containers on a same host OS.

Grammar

[2]

Citation

A full virtualized system usually takes time to start whereas the Docker contaier

Spelling

do

Grammar

take even less than seconds to up start and running with a lower overhead than the VMs. Containers are potentially much more efficient than VMs because they're able to share a single kernel and share application libraries. This can lead to substantially smaller RAM footprints even when compared to virtualisation systems that can make use of RAM overcommitment. Storage footprints can also be reduced where deployed containers share underlying image layers. IBM's Boden Russel has done

This is unfinished.

USES OF DOCKER

Docker for DevOps

Another major use of Docker is it's

Grammar

use in the DevOps community.

Clarify what DevOps is.

Docker is not there to replace other configuration management tools and instead can be incoprporated with other configuration management tools like Chef, Puppet, Salt or ansible. The other major benifit of using Docker, Dockerfiles, the registry amd

Spelling

the whole Docker ecosystem is that the teams don't have to learn domain specific language as these are easier to learn than the domain specific Ecosystems

What are Ecosystems? You haven't introduced them so far.

. Though many a times Docker can be made to work with the other configuration management tools.[3]Docker

Citation

can also the eliminate the need for a development team to have the same versions of everything installed on their local machine. The repeatable nature of Docker images makes it easier for them to standardize their production code and configurations. Their work has led to the creation of Helios

You need to be more specific here. Whose work led to Helios?

, an application that manages Docker deployments across multiple servers and that alerts them when a server isn't running the correct version of a container.

Docker as Virtualized Sandbox

[3] Docker

Citation

allows sytems administrators and developers to build applications that can berun

Spelling

on any Linux distribution or hardware in a virtualized sandbox without making custom builds for all the different enviorments.Finally, it's easy to deploy Docker containers in a cloud scenario. You can easily integrate it with typical DevOps environments seamlessly (Ansible, Puppet, etc.) or use it as a standalone.

Grammar

Docker for continuous integration

Docker can be used as git for continious integeration

Spelling

. Docker is similar as changes in the system can be tracked just like chaneges

Spelling

in the git. These collaboration features (docker push and docker pull) are one of the most disruptive parts of Docker. The fact that any Docker image can run on any machine running Docker is very much appreciated. But The Docker pull/push are the too new fot

Spelling

the first time developers and ops guys have ever been able to easily collaborate quickly on building infrastructure together.[1]The

Citation

app guys can share app containers with ops guys and the ops guys can share MySQL and PosgreSQL and Redis servers with app guys.

This paragraph needs major revision. First, it's very colloquial ("guys", "much appreciated", etc. Second, the meaning is not very clear. Git is not a CI tool so the first sentence doesn't make sense. It's also hard to understand what features of Git, Docker duplicates. Finally, is the Git-like functionality being "too new for the first time developers" your subjective assessment, or is there any reference you can provide?

DOCKER MACHINE

[4]Docker Machine is a tool that lets you install Docker Engine on virtual hosts, and manage the hosts with docker-machine commands. You can use Machine to create Docker hosts on your local Mac or Windows box, on your company network, in your data center, or on cloud providers like AWS or Digital Ocean. Docker Machine is the only way to run Docker Engine on Mac or Windows previous to Dockerv1.12 and starting with the Dockerv1.12 we have Docker for Mac and Docker for Windows. Thus we can create a cluster of Docker hosts which is called a Swarm using Docker Machine.

A little too colloquial. For example, instead of "You can use Machine to create Docker hosts on your local Mac or Windows box...", you can reword "Machine can be used to create Docker hosts on Mac and Windows machines, ..." Your style is conversational which is not a terrible thing, but you need to make it a little less so for a paper like this.

DOCKER SWARM

[5]Docker Swarm

Citation

provides native clustering capabilites to turn a group of Docker engines into a single, vrtual

Spelling

Docker Engine. These help you scale up the applications as if these all are running on a single,huge

Term

computer.It does so by providing a stabdard

Spelling

Docker API where if any tool which communicates with the Docker deamon can use Docker Swarm to transparently scale to multiple hosts: Dokku, Docker Compose, Krane, Flynn, Deis, DockerUI, Shipyard, Drone, Jenkins and, of course

Term

, the Docker client itself. Docker Networking, Volumes and plugins can also be used through their respective Docker commands via Swarm. Swarm has been tested and is production ready to scale up to one thousand (1,000) nodes and fifty thousand (50,000) containers with no performance degradation in spinning up incremental containers onto the node cluste

This is a very specific quantitative statement that needs a citation; also, spelling/punctuation

Swarm also comes with a built-in scheduler, but you can easily plugin the Mesos or Kubernetes backend while still using the Docker client for a consistent developer experience. To find nodes in your cluster, Docker Swarm can use either a hosted discovery service, static file, etcd, consul and zookeeper depending on what is best suited for your environment.

ECOSYSTEM SUPPORT TO DOCKER

[3]Finally

Citation

, it's easy to deploy Docker containers in a cloud scenario. You can easily integrate it with typical DevOps environments seamlessly (Ansible, Puppet, etc.) or use it as a standalone. The main reason it's so popular

How popular is it? You need to provide evidence.

is simplification, says Ben Lloyd Pearson via opensource.com.

Who is Ben Lloyd and why would we want to listen to him? You shouldn't cite specific people by name, but their work; the work should speak for itself.

You can do local development within a system that is identical to a live server; deploy various development environments from your host that each use their own software, OS, and settings; easily run tests on various servers; and create an identical set of configurations, so that collaborative work isn't ever hindered by parameters of the local host.Ecosystem support for Docker is improving with every passing day

subjective, please avoid

as it is gaing

Spelling

the popularity among the developers and the system operators.

Operating Systems suppport to Docker: Is compatible with virtually any distribution with a 2.6.32 + kernel RedHat Docker collaboration to work with across fedora and other(2.6.32)+.

It is compatible with Private PaaS(Platform as a Service) technolgies: OPen Shift, Solum(Rackspace and OPenstack).

Public PaaS technologies like Voxoz, Cocaine(Yandex),Biadu,etc.

Ecosystem Support for IaaS is present via Rackspace,Digital Ocean, AWS(Amazon Web Services), AMI,etc.

Orchestration tools Support and Integeration with: Chef,Puppt,Jerkins,Travis,Ansible..

In Open Stack Docker integeration into NOVA(compatibility with Glance,Horizon)are aslo present

SHORTFALLS OF DOCKER

Though dockers are leagcy virtualization techniques, they are not a go to

Spelling

solution for all kinds of virtualization and cannot be considered as a replacement of the VMs.

VMs are self constarined

Spelling

with as they have a unique operating system(OS), drivers and application components whereas the containers are dependent as containers under Docker cannot run on Windows server.

VMs provide high level of isolation as the system's underlying hardware resources are all virtualized and thus any bugs or viruses could not affetc the other VM in the virtualized enviorment

Spelling

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The kinds of tools and technologies required to manage the containers are still lacking in the industry and thus only a few management tools from companies like Google and Docker like Kubernetes and SWarm respectively are present which is not a good situation for an open-source products

FUTURE WITH DOCKER

Docker Inc has set a clear path on the development of core capabilities (libcontainer), cross service management (libswarm) and messaging between containers (libchan). Docker's key open source project is libcontainers ,which is on it's

Grammar

way to becomiing

Spelling

the default standard for Linux-based technology. Libcontainers enables the containers to work with the Linux namespace, control groups, capabilities, AppArmor security profiles, network interfaces and firewalling rules in a consistent and predictable way . [3]Libcontainers

Citation

is getting help from Google, RedHat, and Parallels to build the program asthey will work with docker as core maintainers of the code. libconatiner which is written natively in Google's Go, is also being ported into other languages. Microsoft may be porting it to ASP.NET. Parallels' libct, which includes libcontainer's functionality, has native C/C++ and Python bindings. Microsoft is even jumping on board

too colloquial

by bringing Docker to their Azure platform, a development that could potentially make integration of Linux applications with Microsoft products easier than ever before.

CONCLUSION

[6]With

Citation

more than 1200 Docker Contributors , 10,000 Dockerized Applications at index.docker.io 3 to 4 million Developers using Docker, 300 Million Downloads, 32,0000 Docker related Projects and 70 percent of enterprise using DockerIt

You need to provide a source for quantitative claims like this

is not an exaggeration

"is not an exaggeration" is too colloquial

that with Docker Ecosystem there is a greater potential for some advanced deployment tools that combine containers, configuration management, continuous integration, continuous delivery and service orchestration in the days ahead.

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