What are containers?
But First...

Why this guy talking about containers at a networking conference?
In the future a lot of internal and external traffic will be generated by/on these containers.
Quick introduction to containers
What it actually looks like

$ top

<table>
<thead>
<tr>
<th>PID</th>
<th>USER</th>
<th>%CPU</th>
<th>%MEM</th>
<th>COMMAND</th>
</tr>
</thead>
<tbody>
<tr>
<td>1204</td>
<td>root</td>
<td>43.3</td>
<td>3.4</td>
<td>dockerd</td>
</tr>
<tr>
<td>4313</td>
<td>root</td>
<td>23.7</td>
<td>0.2</td>
<td>python</td>
</tr>
<tr>
<td>4682</td>
<td>root</td>
<td>12.8</td>
<td>2.9</td>
<td>python</td>
</tr>
<tr>
<td>2930</td>
<td>root</td>
<td>10.0</td>
<td>3.1</td>
<td>kubelet</td>
</tr>
</tbody>
</table>
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● Containers are just processes
● They come from a tarball
● Attached to namespaces
● Controlled by cgroups

https://kubernetes.io/docs/concepts/containers/
Namespaces

Namespaces are the feature that make the container look and feel like it is an entirely separate machine.

cgroups

How much resources can our process get?

https://www.linuxjournal.com/content/everything-you-need-know-about-linux-containers-part-i-linux-control-groups-and-process
What are containers good at?

stateless applications (ephemeral, short lived processes)
i.e. a frontend process serving requests
What are containers good at?

Containers are also portable. You do not have to worry about dependencies.
What are containers good at?

Disaster recovery
What are containers bad at?

stateful applications
i.e. databases
You can’t just deploy containers

Containers need friends
Containers these days is a vast ecosystem of vendor solutions
Plan for answering these questions:

● Dev Setups (Dockerfile, buildah)
● Orchestration (kubernetes, docker swarm)
● Lifecycle Management (openshift)
● Networking (envoy, cilium, linkerd, istio, calico)
Simple dockerfile:
FROM centos:7
RUN yum -y update && \
yum -y install httpd && \
yum clean all
COPY data/httpd.conf /etc/httpd/conf/httpd.conf
ADD data/html.tar.gz /var/www/html/
EXPOSE 80
ENV HOME /root
WORKDIR /root
ENTRYPOINT ["ping"]
CMD ["google.com"]

https://docs.docker.com/compose/gettingstarted/
Further reading

How to create a container using docker https://docs.docker.com/develop/develop-images/baseimages/

How to create a container using buildah
https://github.com/containers/buildah/blob/master/docs/tutorials/01-intro.md

Podman is a daemonless container engine
https://github.com/containers/libpod/blob/master/docs/tutorials/podman_tutorial.md

Container monitoring https://prometheus.io/docs/introduction/first_steps/

Container management https://docs.openshift.com/container-platform/4.1/welcome/index.html

Kubernetes training https://www.cncf.io/certification/training/ (Free)
QUESTIONS?

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