

+

2019

4

.....	<i>ii</i>
.....	<i>1</i>
+	 <i>3</i>
.....	<i>3</i>

AWS

Amazon CloudFront

Amazon RDS

Amazon QuickSight

AWS Amplify

AWS Server Migration

Service

Azure

AWS

5G

2018

OpenStack Stein

EasyStack

2018

SDN NFV

CCBN2019

“

”

“

”

IPF2019

NFV

“

• ”

5G

Linkerd 2.3

Kubernetes

CNCF

Kubernetes

Prometheus

Envoy

CoreDNS

containerd

Fluentd

Google

Google Cloud Next 2019

Cloud Run

Traffic Director

Kubecost

k8s

kubernetes

4

2019

”

”

40

iLnpP2P

1

3

Palo Alto

(SRM)

RedSeal

CASB

Bitglass

7000

D

Aqua Security

6200

C

VDOO

3200

B

2019 4 29

+

AWS

1.1 AWS Amplify

4 5 AWS Amplify “ Amplify ”

GitHub Web

GraphQL API Lambda

React Angular Gatsby “ Amplify ”

Amplify GitHub

“ Amplify ” Web

AWS

1.2 Amazon CloudFront

QuickSight

50 90 95

n

“ ”

1.4 Amazon RDS

4 12 Amazon Relational Database Service (RDS)

Amazon RDS

Amazon RDS

RDS for Oracle RDS for PostgreSQL

RDS for MySQL

I/O

1.5 AWS Server Migration Service

Azure

AWS

4 18 AWS Server Migration Service (SMS)

Microsoft Azure

(VM) AWS

Microsoft Azure

AWS

AWS Server Migration Service

AWS

VMware

vSphere Microsoft Hyper-V

VM

Server

Migration Service

Microsoft Azure

VM

Azure

VM

Server Migration Service

VMWare

GOOGLE

3.1

4 2

LoRa

10~50

PaaS

5.2

5G

4 24

5G

5G

8K

5G

“ ”

4K

4K

5.3 2018

4

25

Gartner

2018

19.6%

11%

8%

2017

4.7

2018

213.4

20

1-2 All in Cloud

6.1

4

19

4

18

“ ”

6.2

4

25

()

,

()

5G

IoT

5G

IoT VR 8K AI

5G

Openstack

1.1 OpenStack Stein

4 12 OpenStack 19

Stein 75

1000 OpenStack VMs

GPUs

Stein

5G NFV

OpenStack Stein Kubernetes

2018 OpenStack Kubernetes OpenStack

OpenStack 61%

Stein OpenStack

OpenStack Magnum Kubernetes Kubernetes

— 10-12 5

OpenStack Manila Cinder Keystone

Kubernetes OpenStack

Neutron OpenStack

Ironic

5G NFV

Neutron API

StarlingX

Rocky

Stein

Neutron

OpenStack Nova

API

OpenStack

QoS

aliases

QoS

Blazar

API

Placement

Stein

Nova

API

50% Train

Nova

Placement

Nova

Placement

Sahara

Hadoop

+

Easystack

2.1 EasyStack

“

TOP100 ”

4 4

“ TOP100 ”

100

EasyStack

‘

≥

“ 2019 SDN/NFV/AI ”

■

1.1

V7.0

3

111

7

203

640

V7.0

1

CPU

2

3

web

DDOS

1U 2U

ATCA

1.2

4 18

101

14

1.3

“

”

CCBN-BDF

CCBN2019

Yo

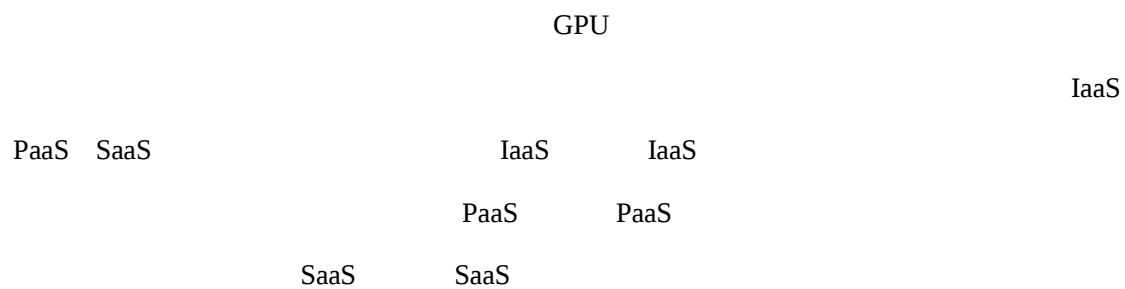
+

2019

04

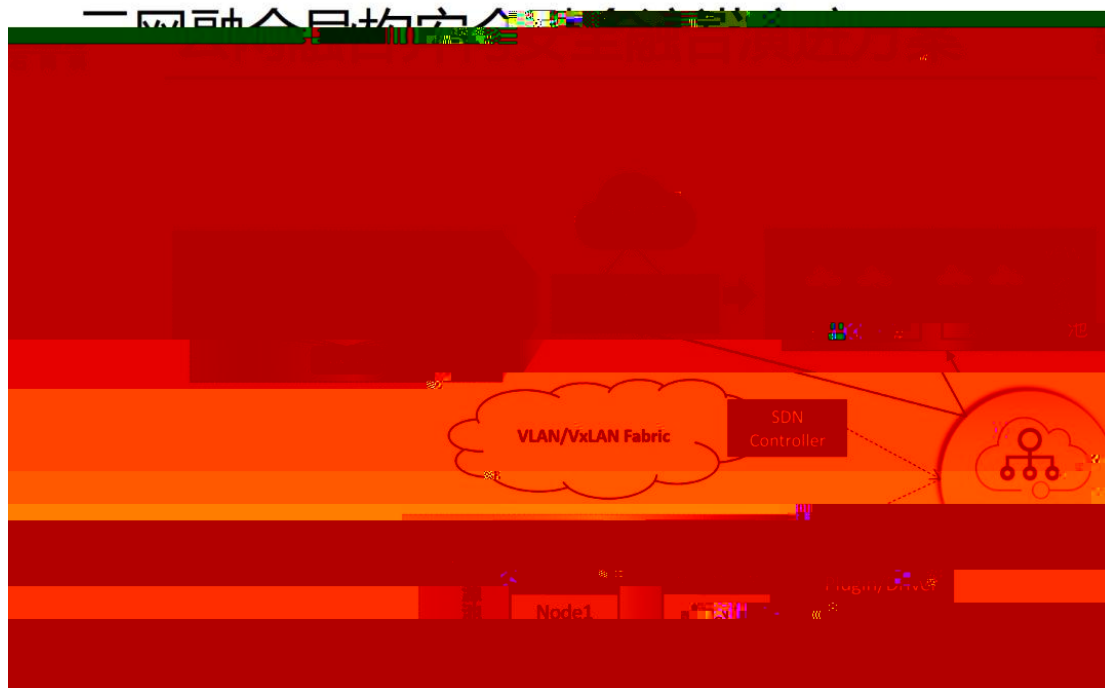
3

3



3.1 ． | NFV

4 18 “ 2019 SDN/NFV/AI ”
 “ ． ” —— NFV



“ ． ” +

SDN

“ ． ”

4.1 : 5G

2019 5G

5G () 5G

5G 5G ()

5G

5G XaaS()

NFV

5G 5G ()

)

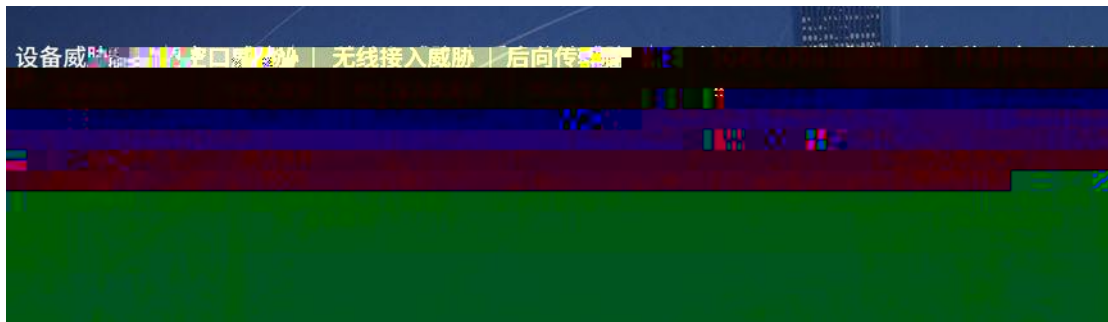
(

)

5G

5G

5G 6



7.1

IDC

2018

“

”

13.4%

“

ICG

”

“

”

“

”

2004

“

”

200

“

”

ATCA

30

“

”

200

“

”

“

”

“

8.1

4 18

2) TLS Kubernetes

24

3) TLS

2.3 Linkerd

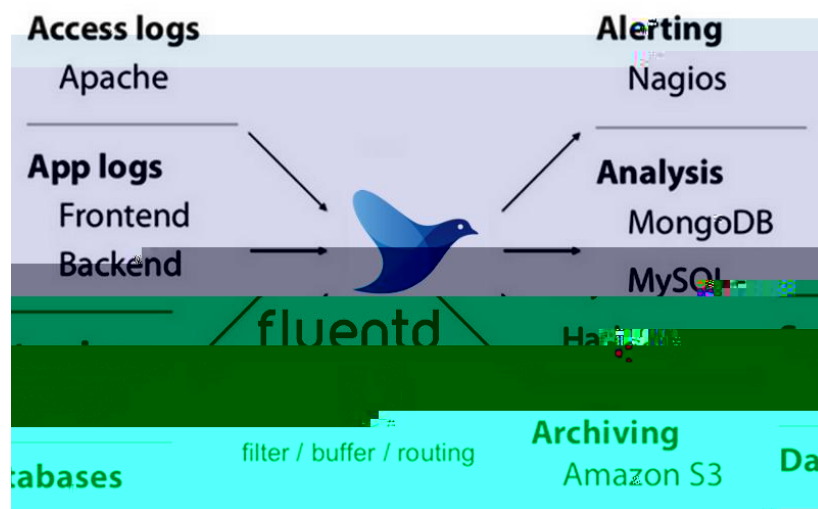
Kubernetes

2. Fluentd CNCF

CNCF 2019 4 11 Fluentd

CNCF 6 Kubernetes Prometheus

Envoy CoreDNS containerd



Fluentd 2011 Treasure Data Sadayuki "Sada" Furuhashi

2016 11 Fluentd 6 CNCF

Fluentd RDBMS NoSQL IaaS SaaS

Hadoop

3. Google Cloud Run Traffic Director

Google Cloud Next 2019

Google Cloud

Cloud Run Traffic Director

Cloud Run

Knative + Kubernetes + gVisor

Serverless

HTTP

‘ ’

+

2019

04

Kubecost

“

”

(S3)

issue#72779 kube-proxy v1.13.0 and 1.13.1 brokes services with externalIPs

issue#71555 kube-proxy/IPVS: arpignore and arpannonce break some CNI plugins

bug fix kube-proxy ipvs-strict-arp 0

ARP 1

CVE-2019-3874

Matteo Croce Natale Vinto Andrea Spagnolo

Kubernetes	Pod	Root	cgroup	SCTP
	DoS	Kubernetes	Kubernetes	
		SCTP		

modprobe sctp; lsmod | grep sctp

SCTP

echo "install sctp /bin/true" > /etc/modprobe.d/sctp.conf

1. " "

4. iLnkP2P

iLnkP2P

ID

Paul Marrapese

iLnkP2P

200

39%

19%

7%

ID

FFFF

GGGG

HHHH

III

MMM

ZZZZ

5.

2019

“ 2019 ”

4

10

5

“ ” “ ”

? /

6.

86% 97%

2.

2.1 Aqua Security 6200 C

4 3 Aqua Security Insight Partner 4 6200 C
Aqua Security

2.2 Bitglass 7000 D

4 8 Bitglass Future Fund 4 7000 D
Bitglass CASB

2.3 VDOO 3200 B

4 24 VDOO 83North 7 3200 B VDOO