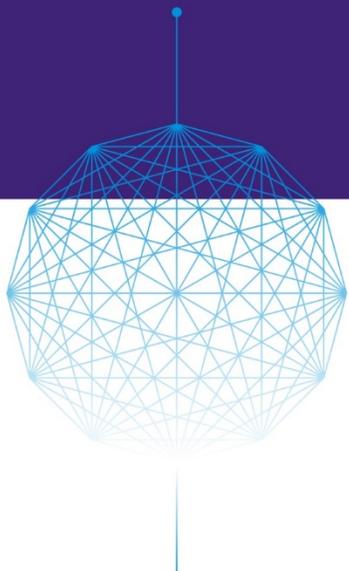


DPDK SUMMIT CHINA 2017



主办方：

参与方： 腾讯云  ZTE  美团云  Panabit®  太一星辰  UnitedStack 联合云  云杉网络 Yunshan Networks

协办方： SDNLAB 专注网络创新技术 视频支持方： IT大咖说

F-Stack - a full user-space network development kit

BASED ON DPDK, FREEBSD TCP/IP STACK

Fengbo Jiang, Hailong Wang

DPDK China Summit 2017, Shanghai



主办方: 

参与方: 













协办方: 

视频支持方: 



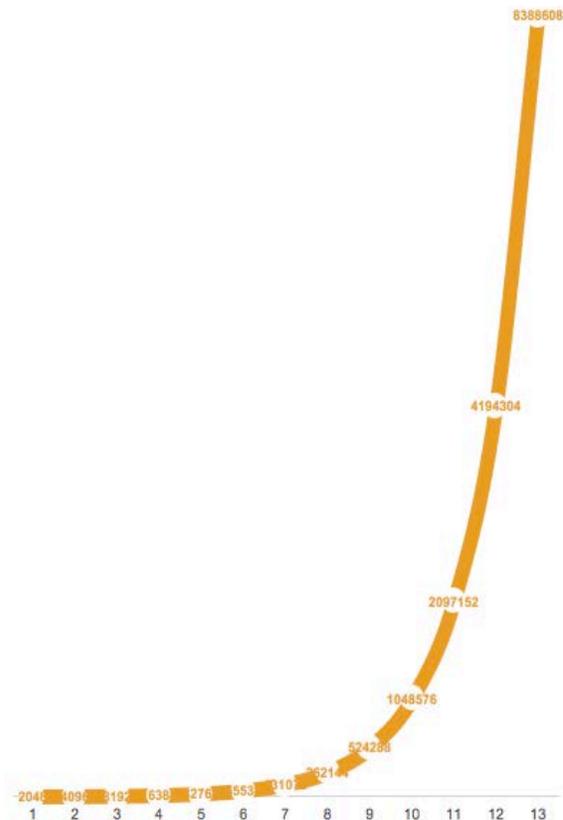
Explosive growth of data services

► Challenges

- service traffic: CDN, live streaming (RTMP), etc.
- DDoS, CC

► Solution

- NIC: 25GbE → 40GbE → 100GbE
- CPU: 24Cores → 48Cores → 56Cores
- L2/L3: Kernel bypass (DPDK)
- L4/L7: ?





user space TCP/IP stack

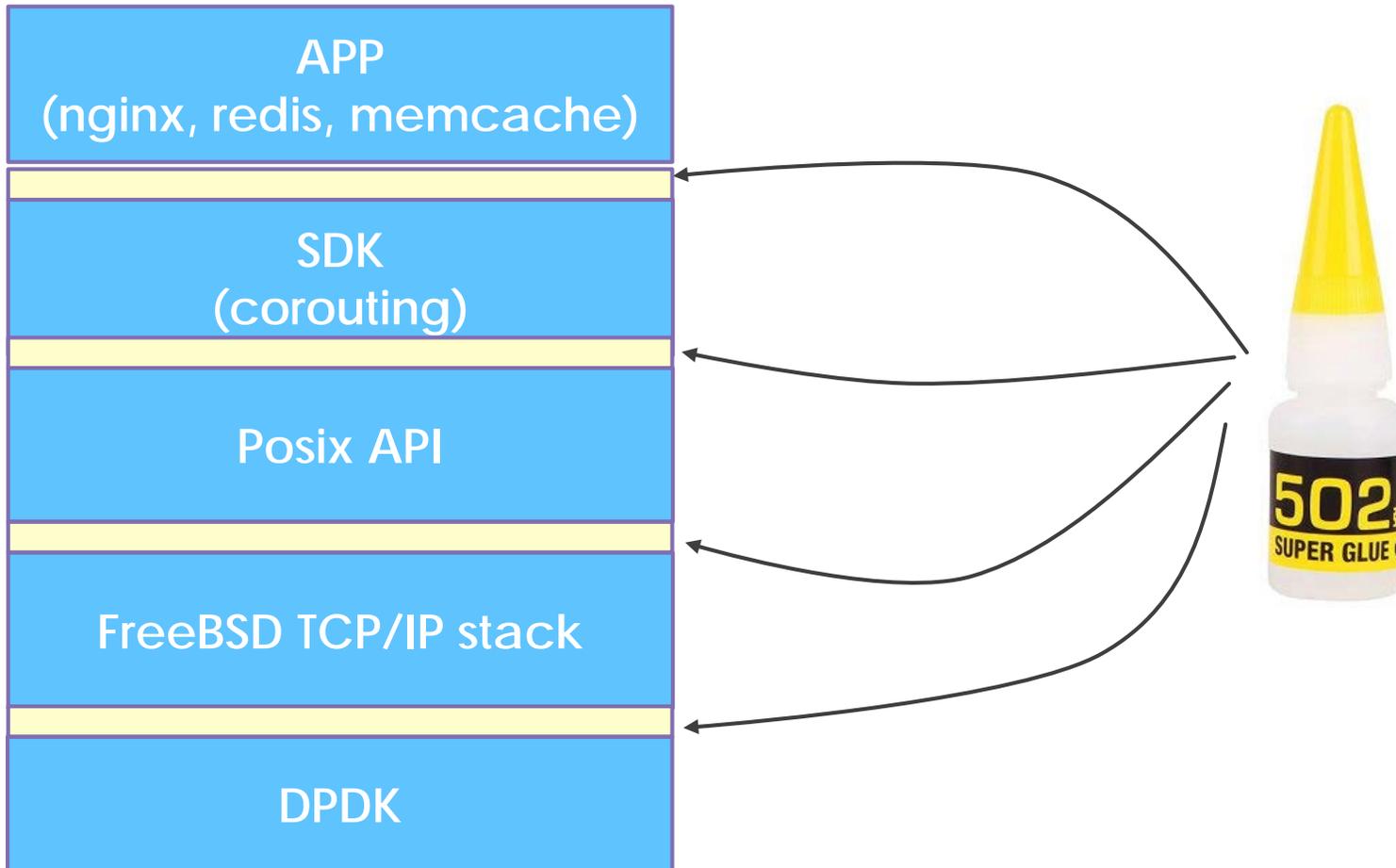
- ▶ Seastar's native stack
 - ▶ problems in WAN
 - ▶ incompatible with existing programs
- ▶ mTCP's user-level stack
 - ▶ tcp only.
 - ▶ too simple to be a production ready stack

VLAN/VxLAN/Tunnel/Bonding/Network Tools are not supported



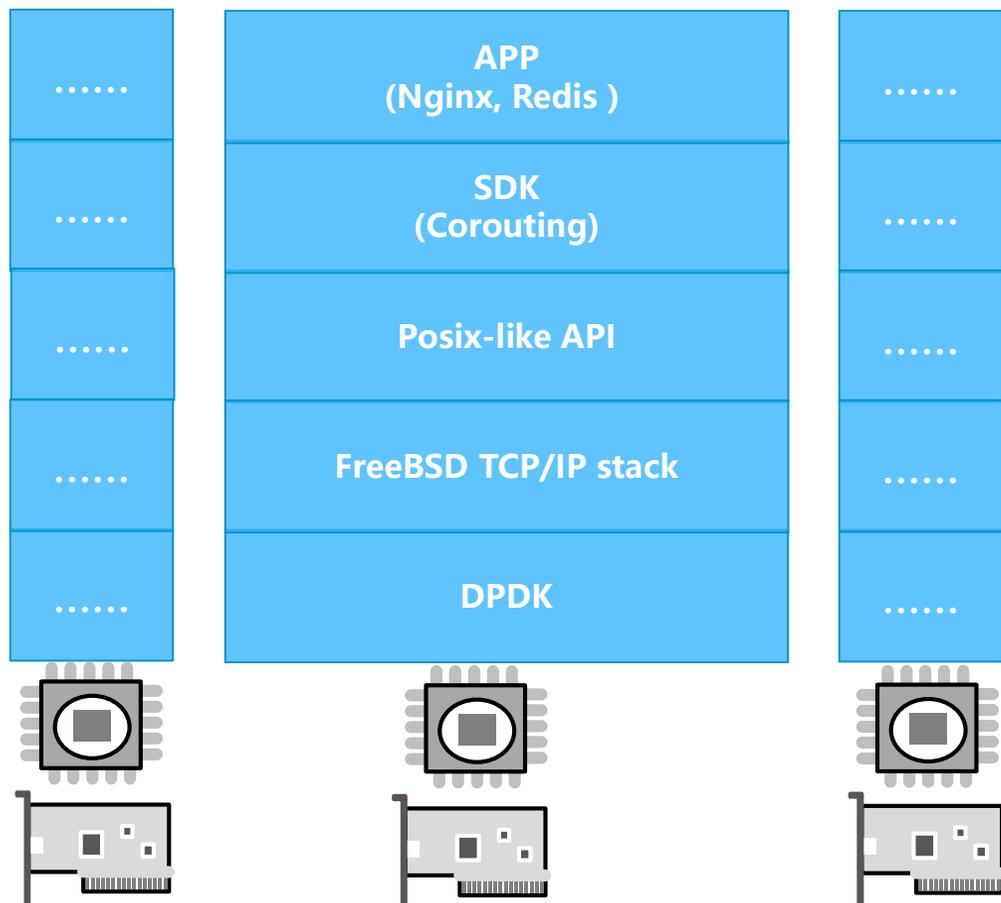


What does F-Stack do ?





F-Stack



1、 Full user-space

- ▶ No content switch
- ▶ Zero copy
- ▶ No hirqs and sirqs

2、 Shared-nothing architecture

- ▶ Linear scalability
- ▶ No schedule
- ▶ No lock
- ▶ No cache locality miss





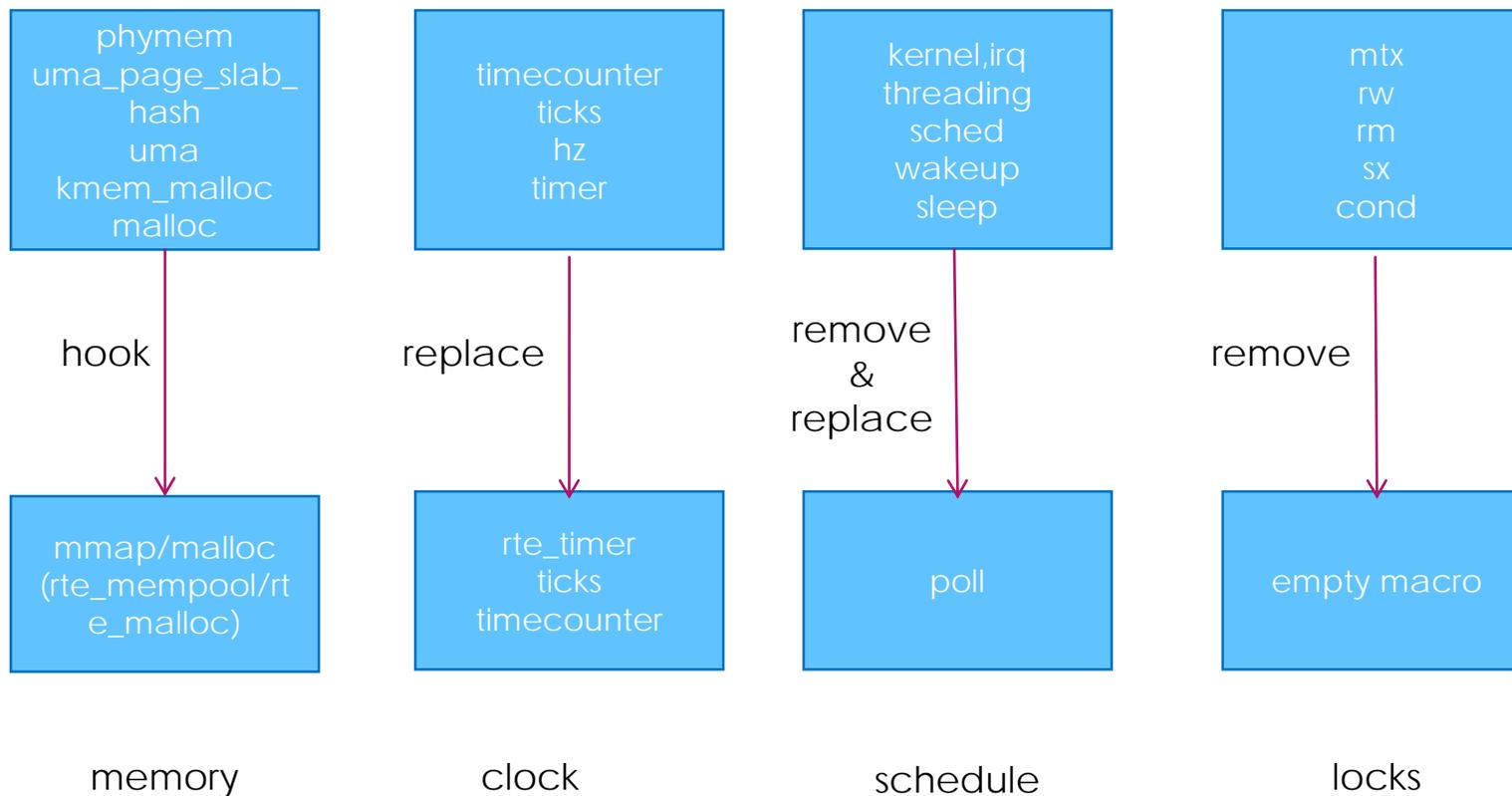
Why FreeBSD

- ▶ Why full TCP/IP stack ?
 - ▶ Advantageous functional, production ready stack, IGMP/IPv6/VLAN/VxLAN/Tunnel/Bonding/Net Tools
 - ▶ Stable.
- ▶ Why not Linux ?
 - ▶ complicated logic.
 - ▶ GPL



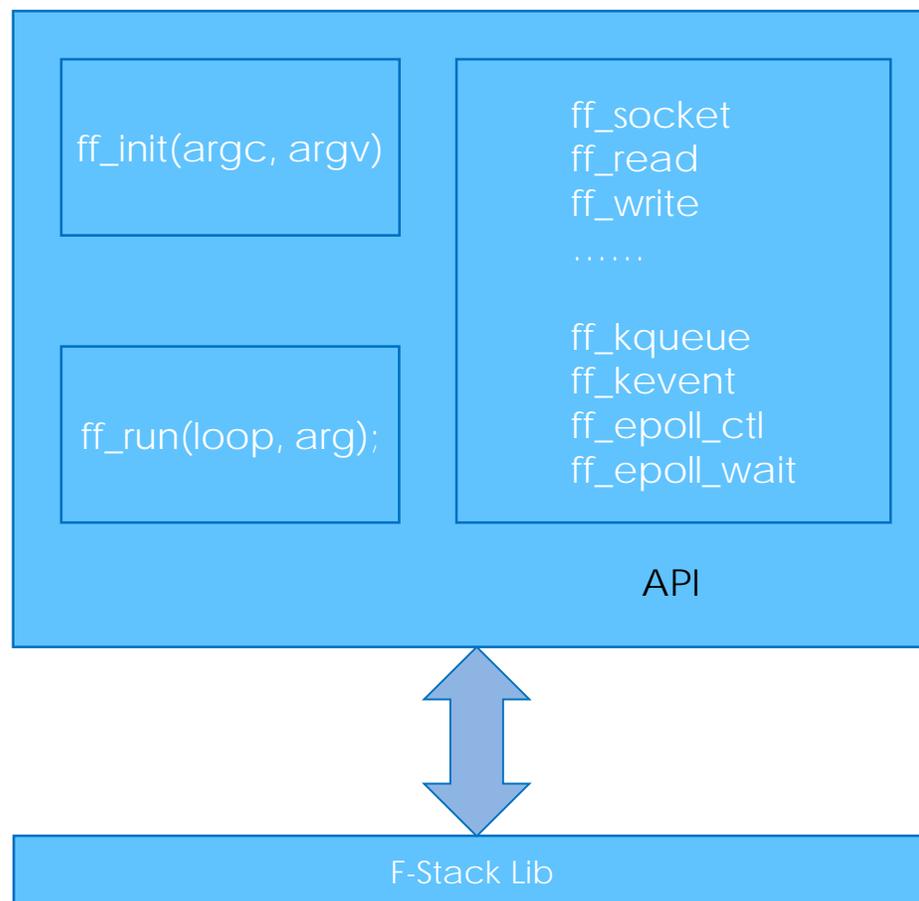


User space FreeBSD TCP/IP stack



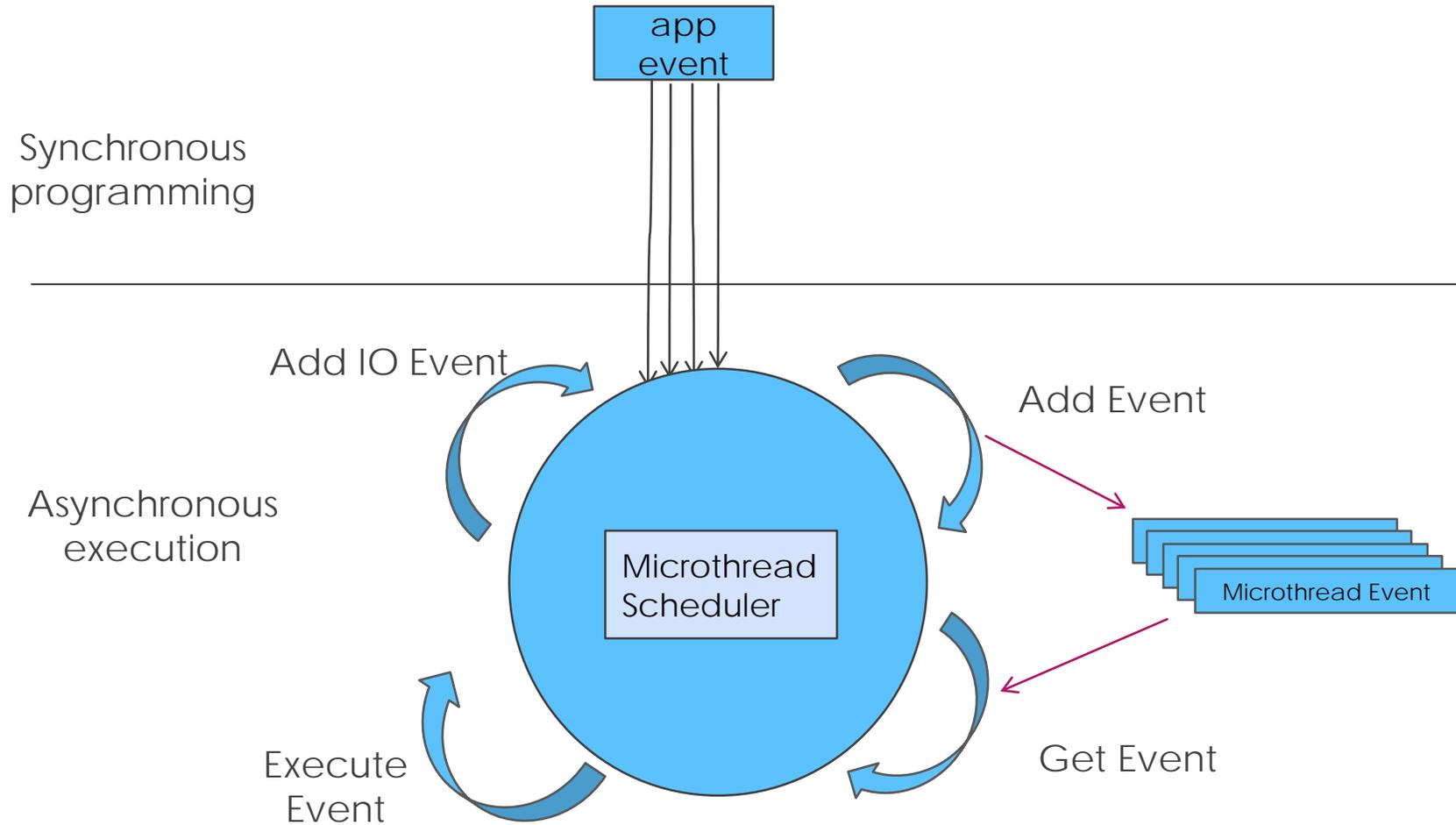


Posix-like API





Coroutine





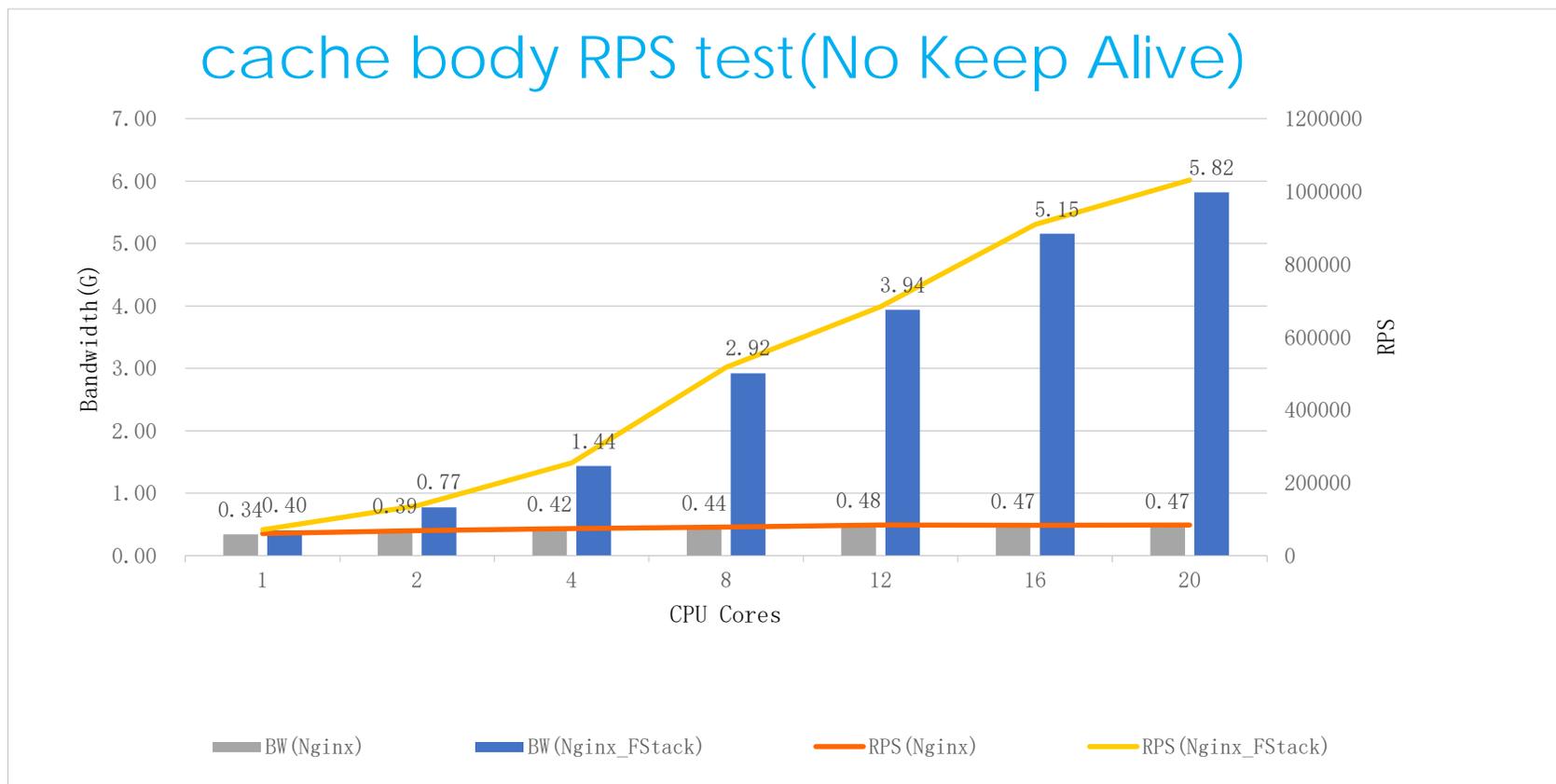
Network tools

- ▶ sysctl
- ▶ ifconfig
- ▶ route
- ▶ netstat
- ▶ etc..





Nginx_F-Stack





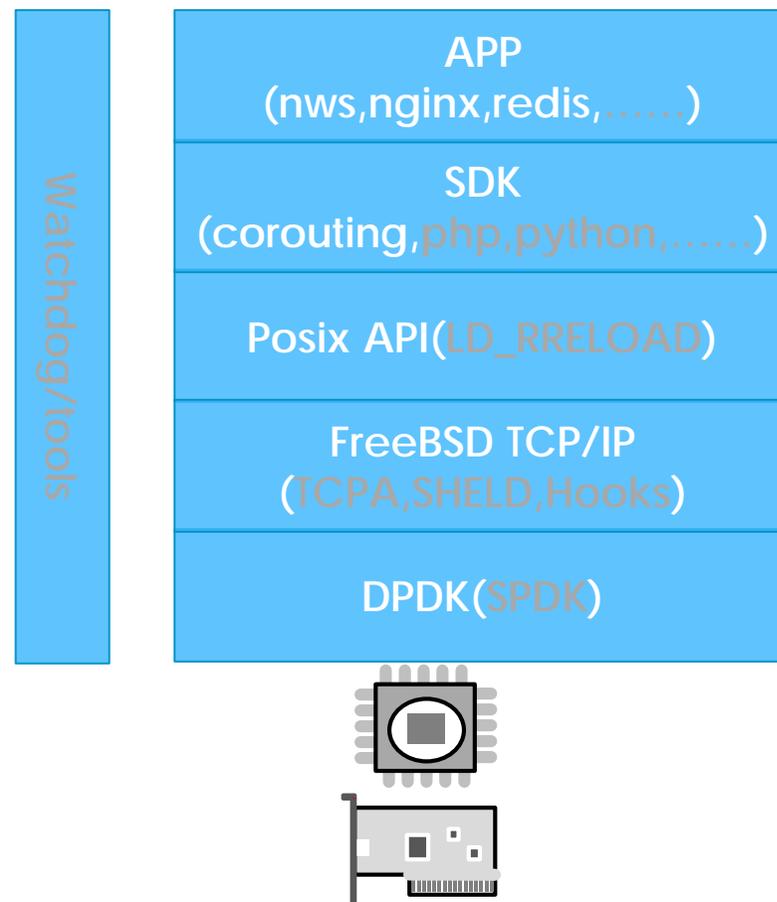
F-Stack in Tencent Cloud

- ▶ 2013 UDP DNS server based on DPDK
- ▶ 2014 TCP(user-space TCP/IP stack) DNS server
- ▶ 2015 L4/L7 gateway application
- ▶ 2016 Used on HttpDNS,CDN,COS(Cloud Object Storage)
- ▶ 2017 Port FreeBSD network stack to F-Stack and open source





Roadmap





Resources



<https://github.com/f-stack>



<http://www.f-stack.org>



F-Stack WeChat subscription





Thanks!!

