

IoT-Cloud and Blockchain

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Outline

Virtual machines

Raspberry Pis

Virtualized RPIs

What is a Virtual Machine?

A machine that emulates
another machine

Church-Turing thesis and
universal Turing machines

Cloud – super-scaling through
portability of processing

Why Virtual Machines?

Master/slave VMs

Autonomous VMs

Orchestrating complex systems
Emulating many machines

Virtual Machines Models

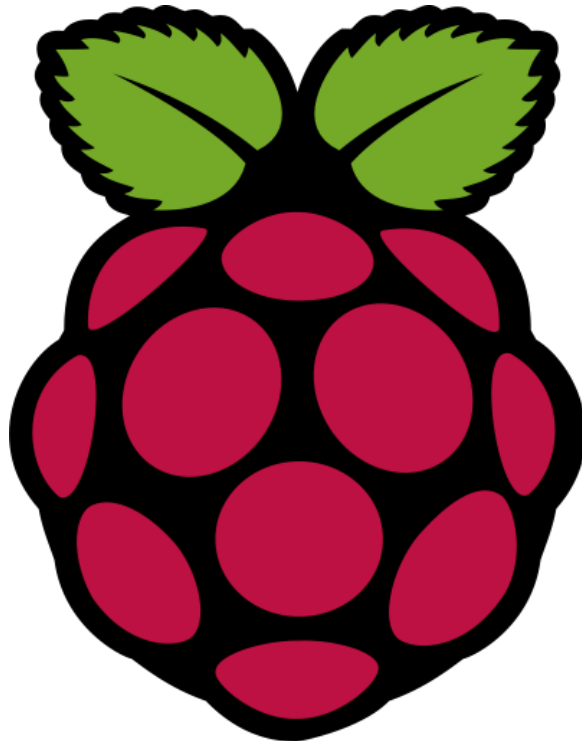
Saving state

Virtual networks

Sharing resources

Generating consensus

Why Raspberry Pis?



Will IoT adopt mostly to Turing complete computers?
Much IoT will be for non-Turing complete computers

What can we do with Raspberry Pis?

Ten Raspberry Pis for the cost of a good laptop

Any advantage from ten Raspberry Pis?

General purpose autonomous computation

Raspberry Pis are autonomous

Raspberry Pis are general purpose

Virtual Machines for IoT?

IoT devices

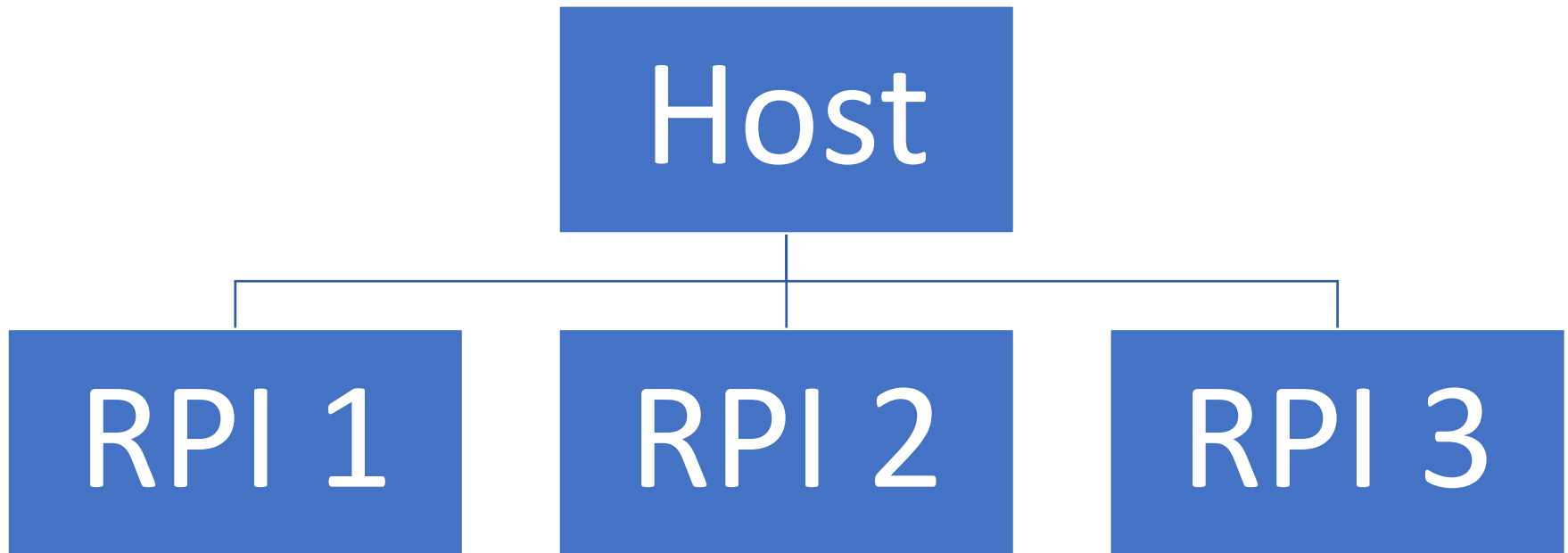
Combinatorial explosion of configurations

Planning and design before implementing

Emulators are key!

Towards mix and match emulation to keep up with the combinatorial explosion of hardware configurations

Client/Server

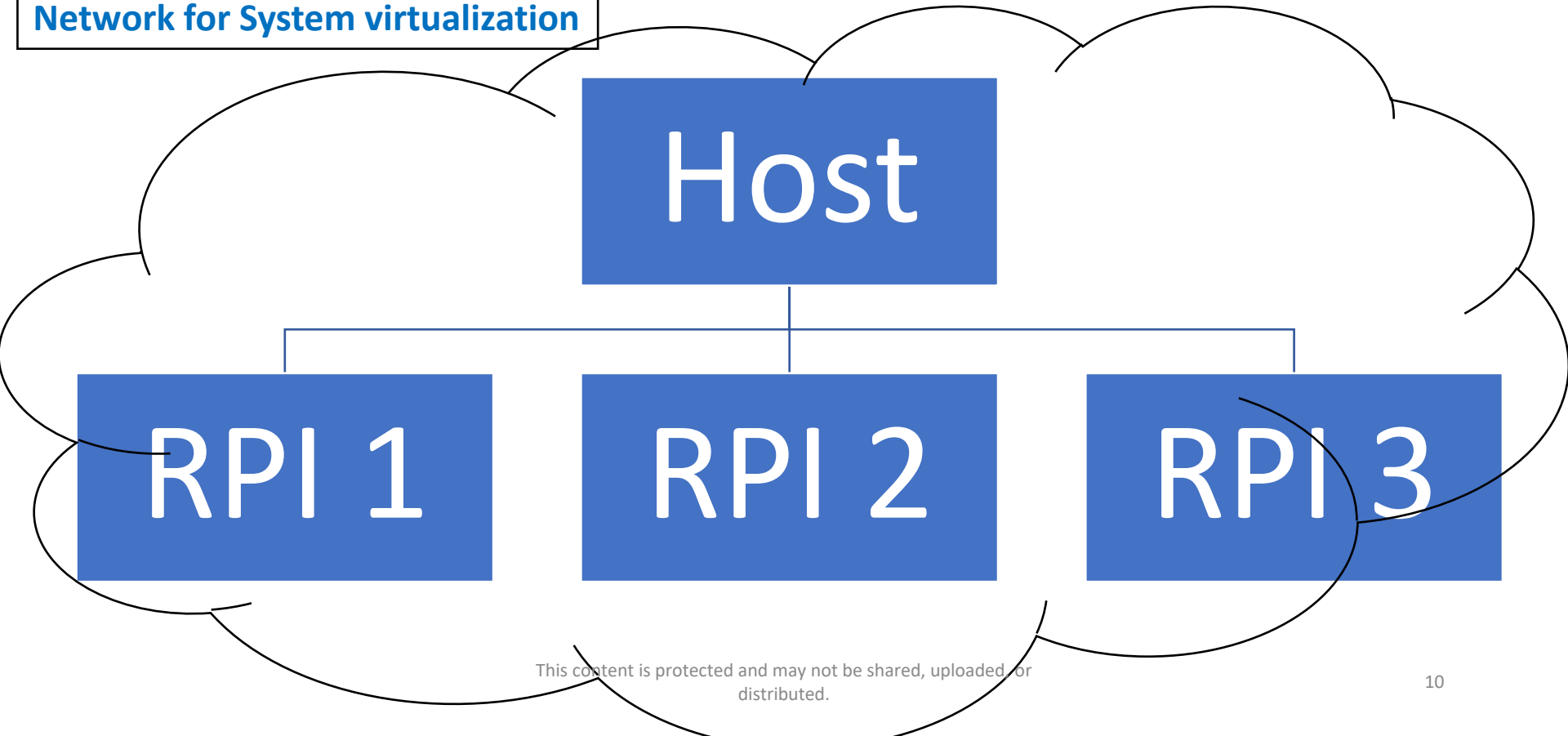


Network needed

System virtualization – DNS servers, routers, etc.

Process virtualization – OS serves as communication hub

Network for System virtualization



What can we do with Raspberry Pis?

Distributed consensus with autonomous machines

Paying for maintenance

Adding value

Distributed computing

Autonomous - Blockchains

Synchronized - Clockchains