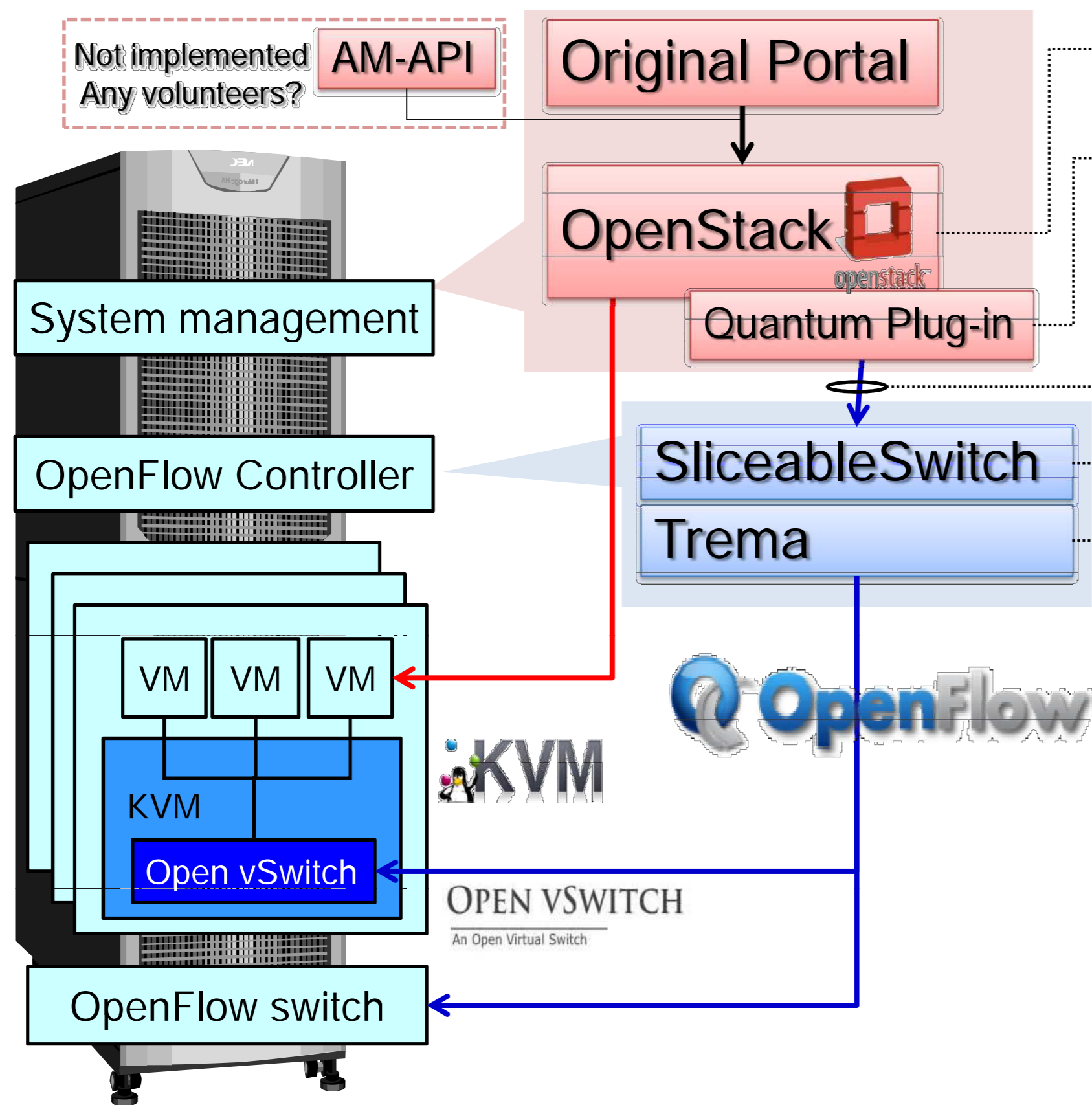# Dynamic cloud infrastructure using Trema and OpenStack

HIDEyuki Shimonishi, Kentaro Sonoda, Yoichi Hatano, Kazuya Suzuki, Ryota Mibu, Yasunobu Chiba, Kazushi Sugyo; Cloud System Research Laboratories, NEC Corporation

Open source cloud-in-a-rack system

Try Now !

Not implemented Any volunteers?
AM-API

Original Portal

OpenStack

Quantum Plug-in

System management

OpenFlow Controller

SliceableSwitch

Trema

VM VM VM

KVM

Open vSwitch

OPEN vSWITCH
An Open Virtual Switch

OpenFlow switch

KVM

OpenFlow

http://openstack.org/

http://wiki.openstack.org/Quantum-NEC-OpenFlow-Plugin
•Converts Quantum-API to SliceableSwitch northbound API

https://github.com/trema/apps/wiki
•REST-A PI for virtu al n etwork a n d glo bal ACL configuration

https://github.com/trema/apps/tree/master/sliceable_switch
•Virtual flat L2 network domains + L1-4 access control list

https://github.com/trema/trema
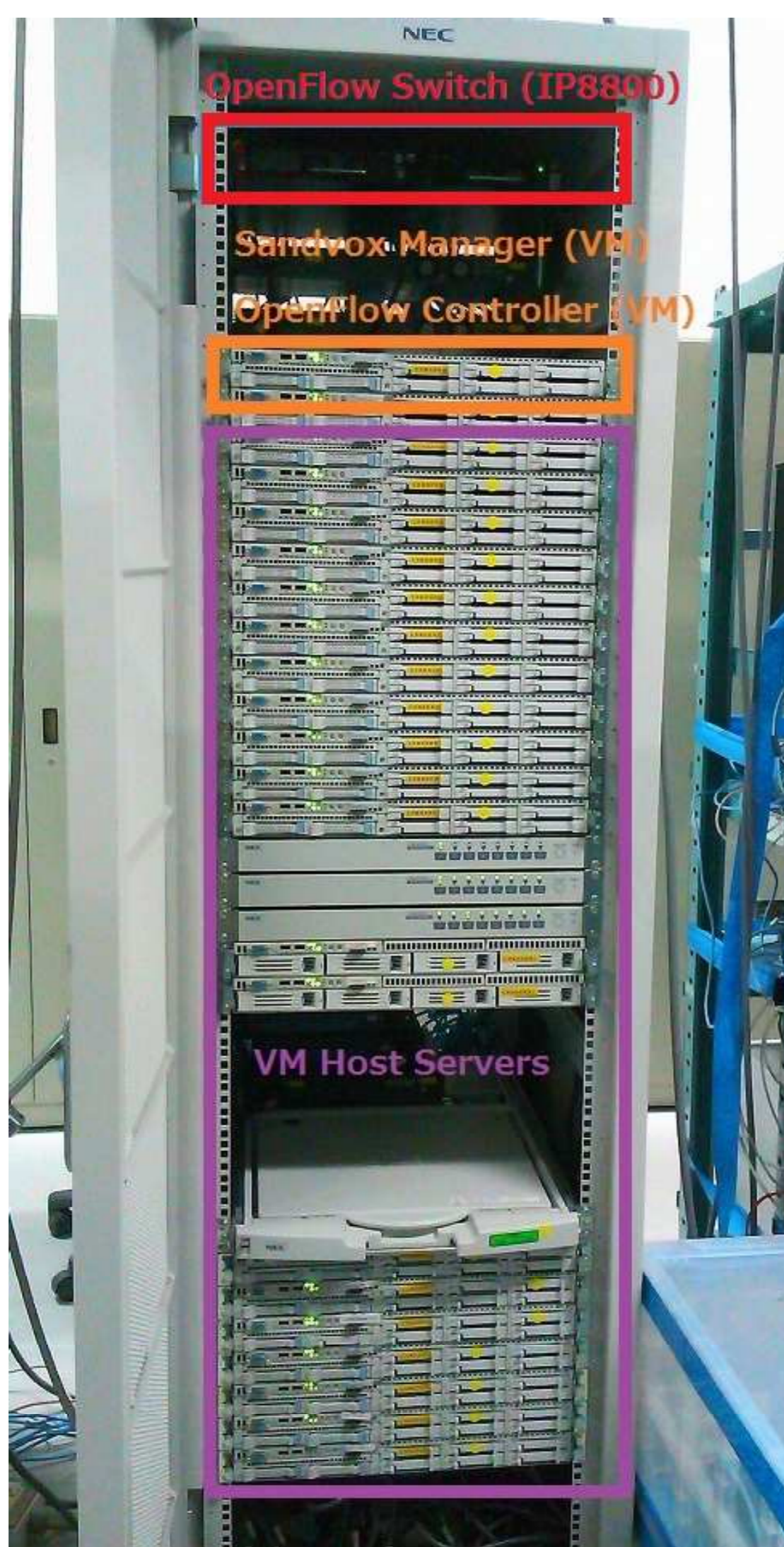•Full-Stack OpenFlow Framework in Ruby and C
•GEC1 4tutorial @http://groups.geni.net/geni/wiki/GEC13Agenda/TremaTutorial

Layer 2 Domain (Slice) A
Global ACLs
Layer 2 Domain (Slice) B
Global ACLs
OpenFlow Network Substrate

User A

User B

OpenStack SliceableSwitch/Trema
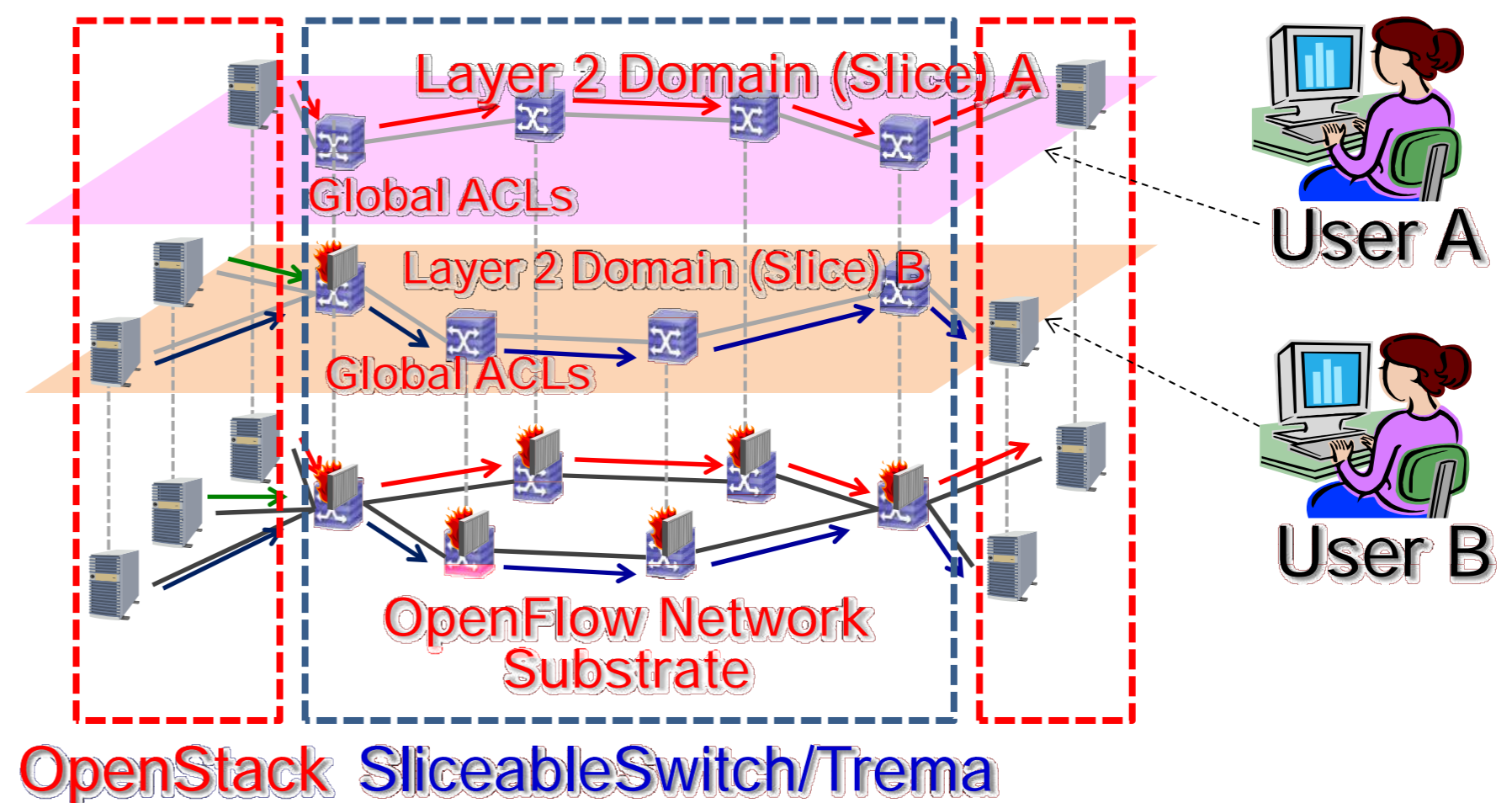
Demonstration: create your slice at our facility

OpenFlow Switch (IP8800)

Sandvox Manager (VM)

OpenFlow Controller (VM)

VM Host Servers

Self-management user portal:
-Create multiple VMs and virtual networks
-Attach VM to network

Index of /GEC14 | Virtual system detail

sandvox.svp.cl.nec.co.jp/sandvox/user/vsnew

NEC Central Research Laboratories
Cloud Computer Resource

Sandvox

Sandvox2 Manager

Menu – h–shimonishi | Change user

Systems | **New system** | Indep.VMs | New Indep. VM | Images | Storage | Booking State | N/W list | WAN IP | Hosts | Users | Account | Help

Virtual system name: TEST SYSTEM

Column: virtual networks

Virtual system detail

Virtual Machine		WAN sharedWAN	Network connections	LAN1	LAN2	Host
1	226: UbuntuDesktop10 (v2) : Ubuntu Desktop 10.10 32 ▾	☐ NIC ☐NAT Select WAN IP ▾		☑ NIC	☐ NIC	Host sharing ▾
	Memory 1.0GB ▾ CPU 1 ▾					
2	226: UbuntuDesktop10 (v2) : Ubuntu Desktop 10.10 32 ▾	☐ NIC ☐NAT Select WAN IP ▾		☑ NIC	☑ NIC	Host sharing ▾
	Memory 1.0GB ▾ CPU 1 ▾					
3	229: CentOS5.6 (v2) : CentOS 5.6 64bit Virt I/O not su ▾	☐ NIC ☐NAT Select WAN IP ▾		☑ NIC	☑ NIC	– ▾
	[Create from install media] Memory 1.0GB ▾ CPU 1 ▾					Host sharing ▾

Row: virtual machines

Check box on a intersection: Binding of VM and network

+f:Can change structure +w:Can change settings only No-mark:Reference only +L:Locked(cannot delete)
Check if VM should be able to access outside of gateway
*VM can affect NEC Intranet directly if checked on. Please take care of VM configuration.
Caution: Address in the list will be used by other group 14 days after removing VM from VM list

Schedule ● Start Immediately ○ Set Start Time 2012-07-03 01:49
Set End Time 2012-08-03 01:46

Create system