Aalto University

Researcher's Virtual Desktop using OpenVPN Tunneling

Future Internet SHOK results seminar 15.2.2011

Markus Peuhkuri

Aalto University
Department of Communications and Networks

2011-02-15

Content

WP4: Testbed

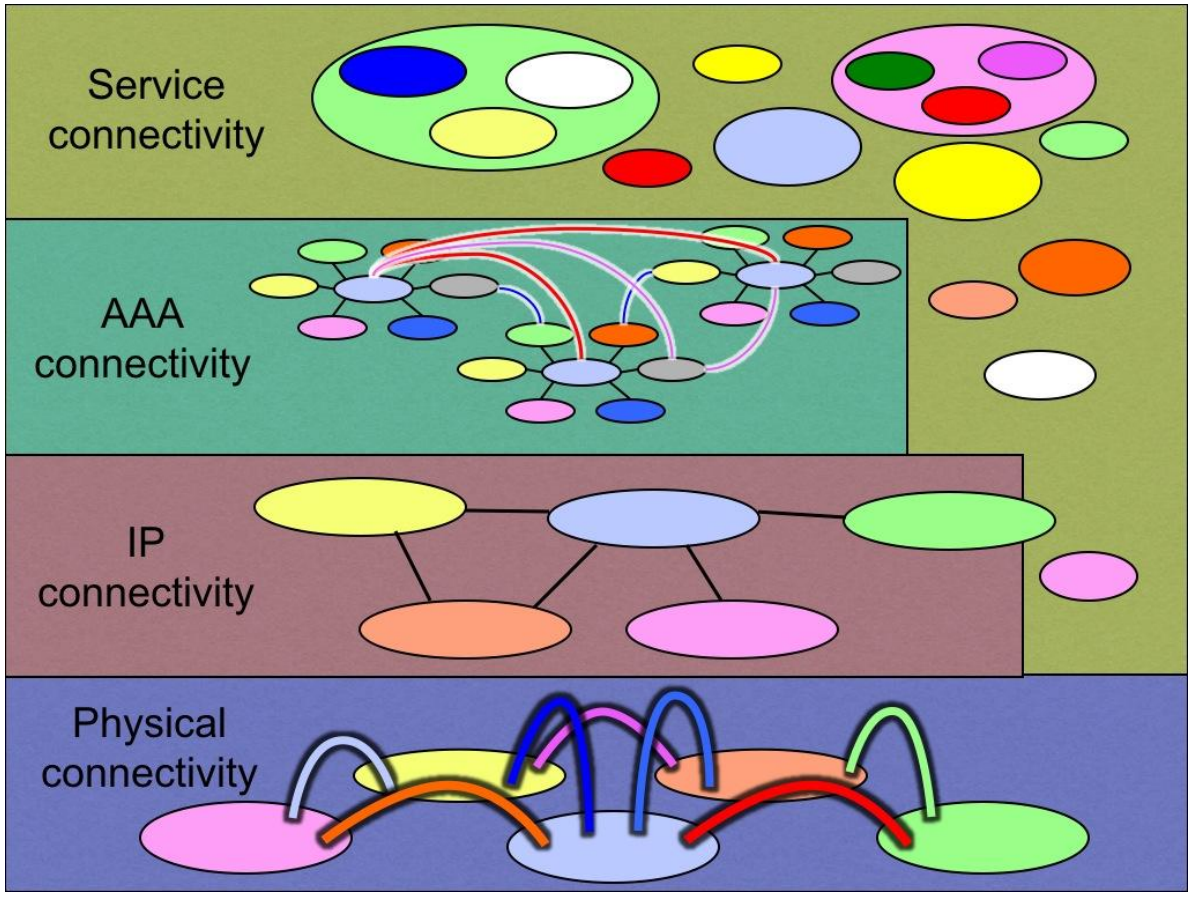
Connectivity improvement by tunneling

Virtualized research environment

Common problems for network reseacher

- Local network challenged when one wants
  - to use multicast
  - . . . IPv6
  - access some other in addition to TCP port 80. . .
  - accept incoming connection
- Test network interconnection at L3
- Test network interconnection at L2
- Test network interconnection at L1
- Local CERT approaches testing prototype with side cutters

Testbed architechture



Interconnect services

- Physical connections
  - dark fiber, mainly in campus areas
  - CWDM, metropolitan area
  - DWDM, depends on line protocol used
- IP connectivity services, routed
- Tunneled connections
  - most lightweight service
  - in many cases sufficient: performance is not critical
  - underlying network can be any IP supporting network

Tunneling for better connectivity

- Normal office networks
  - conservative services, firewalled
- $RANDOM WLAN and mobile networks
- Home networks (ADSL, Cable modem)
  - researcher
  - student
- Many of these are behind NAT

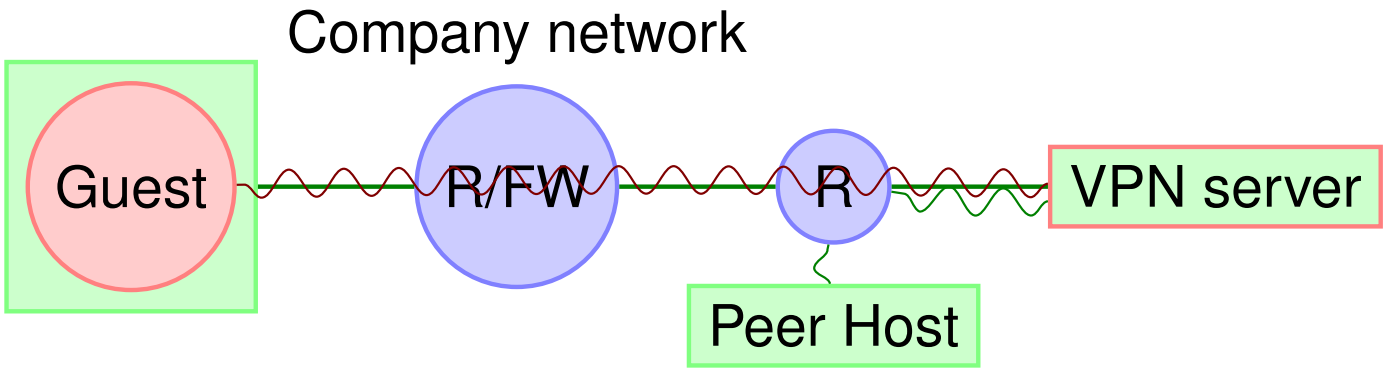
Research network connectivity

- Host (virtual) computer at research network
  - good for many uses
  - may have problems with display, sound and system administration
- VPN gateway with connection to research network
  - improved connectivity for set of computers
  - e.g. WLAN AP
- Virtualized research computer to PC
  - no additional boxes

Virtualized research computer

- VPN connection to host system
  - no address allocted for host system
  - is the only network interface the guest sees
  - local network is not visible to guest
- Possible to have multiple VPN connections to different networks
- Normal office computer: installation and basic config for OpenVPN client by IT administration
- Personal OpenVPN certificates via PurpleNet
- Demo LiveCD (based on Ubuntu 10.04)

Virtualized research computer



Conclusion

- WP4 has made possible co-operation of networks
- Connectivity at different layers
- OpenVPN as light-weight solution for connecting to testbed
- Lots of things can be made with virtualized setups
- At demo desk:
  - OpenVPN Box
  - OpenVPN Virtual Desktop