

# Roaming vNFs at the Network Edge using Glasgow Network Functions

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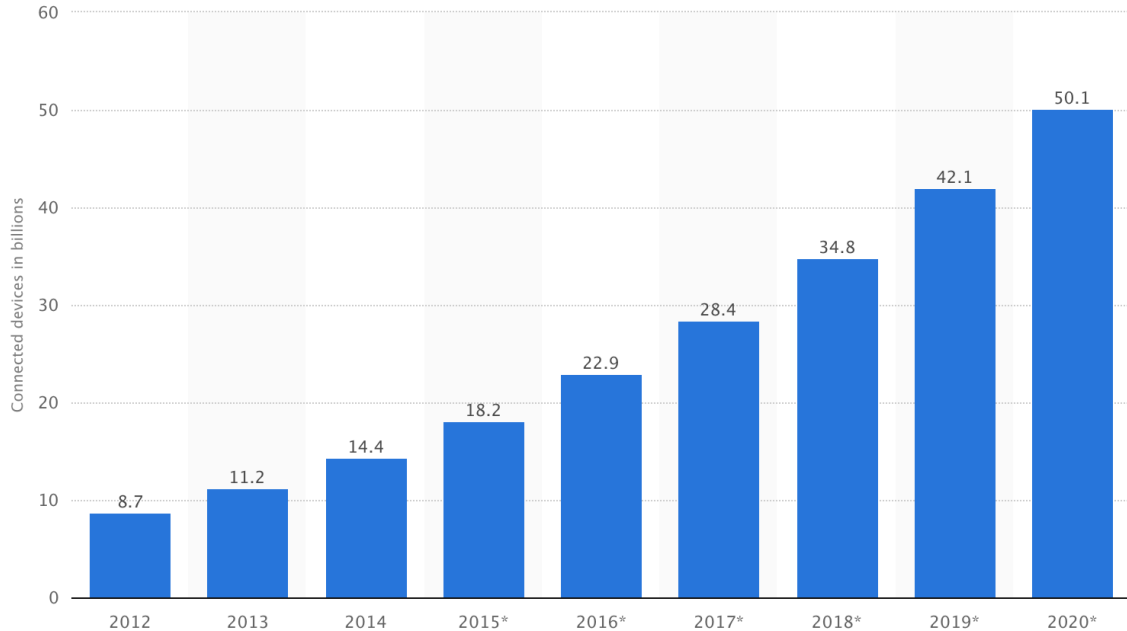
Joint work with Simon Jouet and Dimitrios Pezaros

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Multi-Service Networks Workshop, Abingdon, UK 08/06/2016



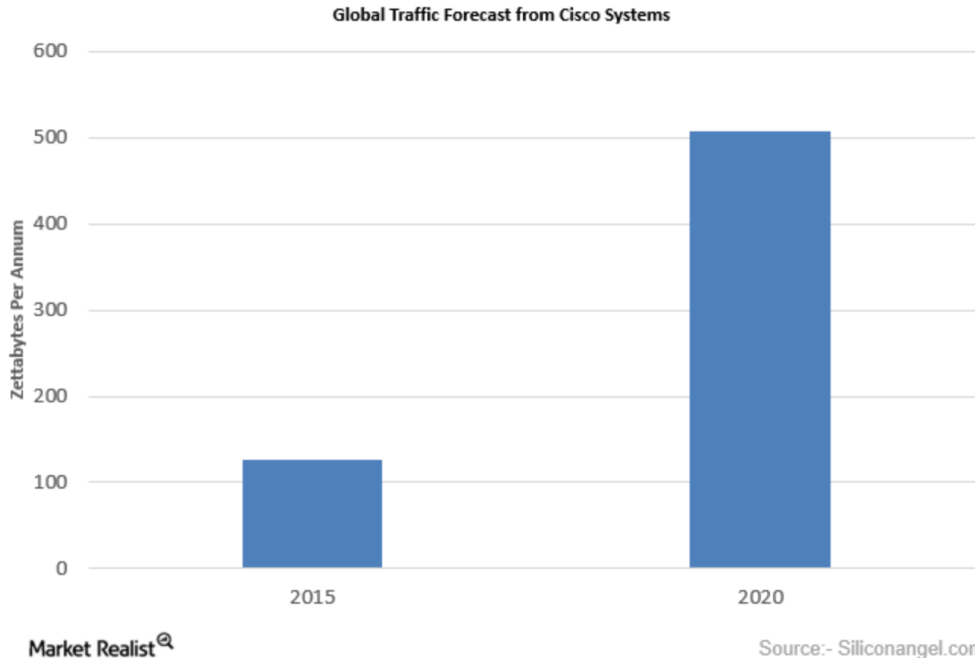
# Increase of connected devices



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# Growth of network traffic

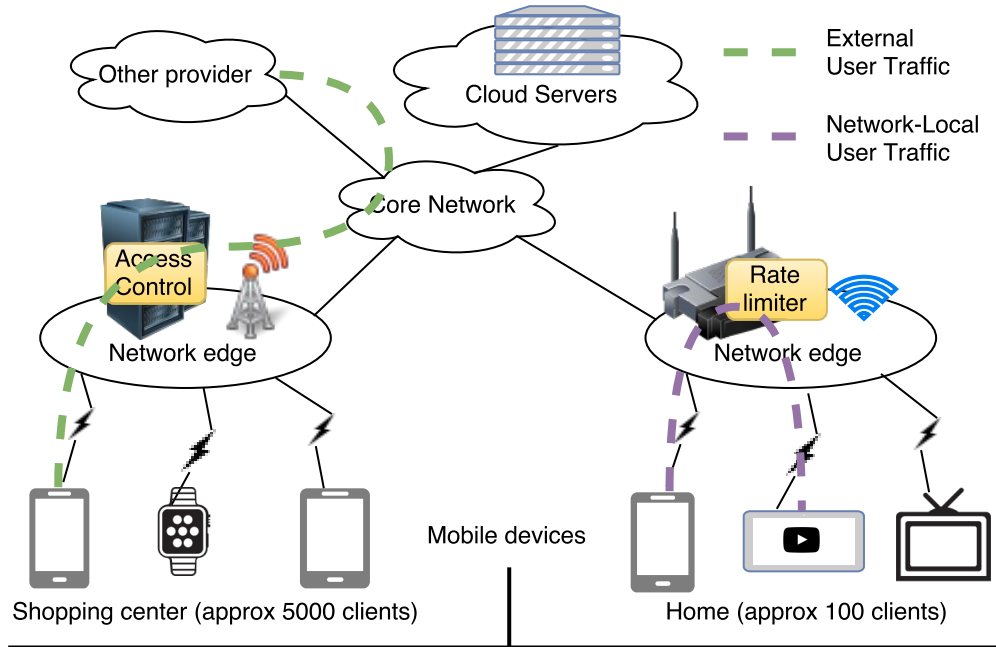


Cisco: “growth is due to mobile devices and wearables”

# Requirements for the Next Generation Network

- Personalized services
  - security, QoS, parental control, rate limiter ...
  - reconfigured quickly
  - lower latency / higher throughput
  - Support for new type of services
    - Machine-to-Machine communication
    - IoT
- Supporting mobility
  - Location agnostic services

# Network Edge vNFs



*The other question is: What type of virtual Network Functions fit the Network Edge architecture?*

# vNFs at the Network Edge

- vNFs need to run on wide variety of devices
  - Most devices or capillary gateways are low cost (e.g., single chip computers)
- vNFs need to support fast lifecycle mgmt.
  - A vNF should be started in few seconds
- The virtualization overhead should be minimal
- vNFs should be as simple as possible



# Glasgow Network Functions

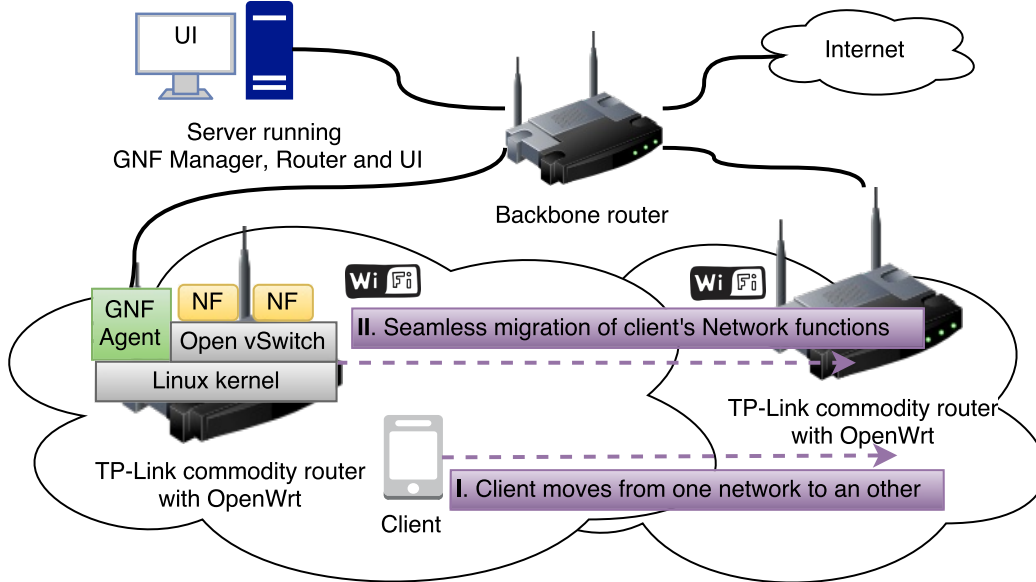
- Glasgow Network Functions (GNF)
  - Research and development project from Netlab
- Main characteristics of GNF are:
  - Minimal footprint
  - Container-based
  - Supports function roaming
  - Transparent traffic handling

# Containers

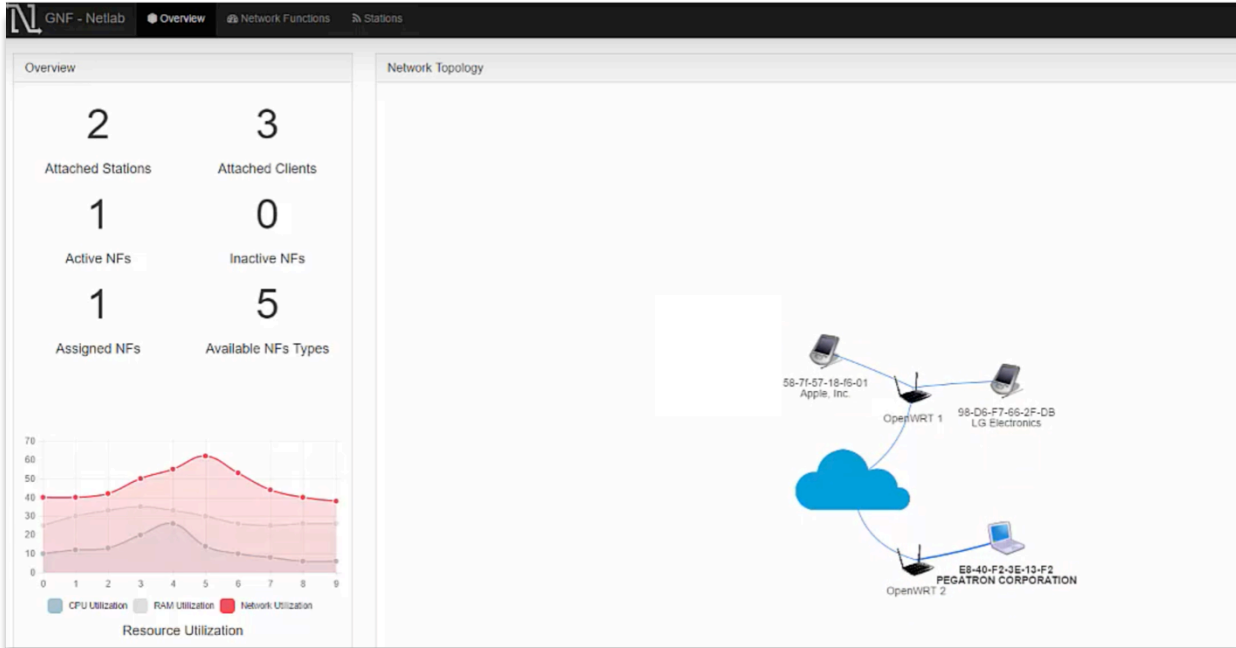


- Lightweight “virtualization”
  - Shared kernel on the host
- Fast create/start/stop/delete
- High performance
  - Small delay, high throughput, low memory usage
- Reusable / shareable
- Traditional software environment
- Micro-services architecture

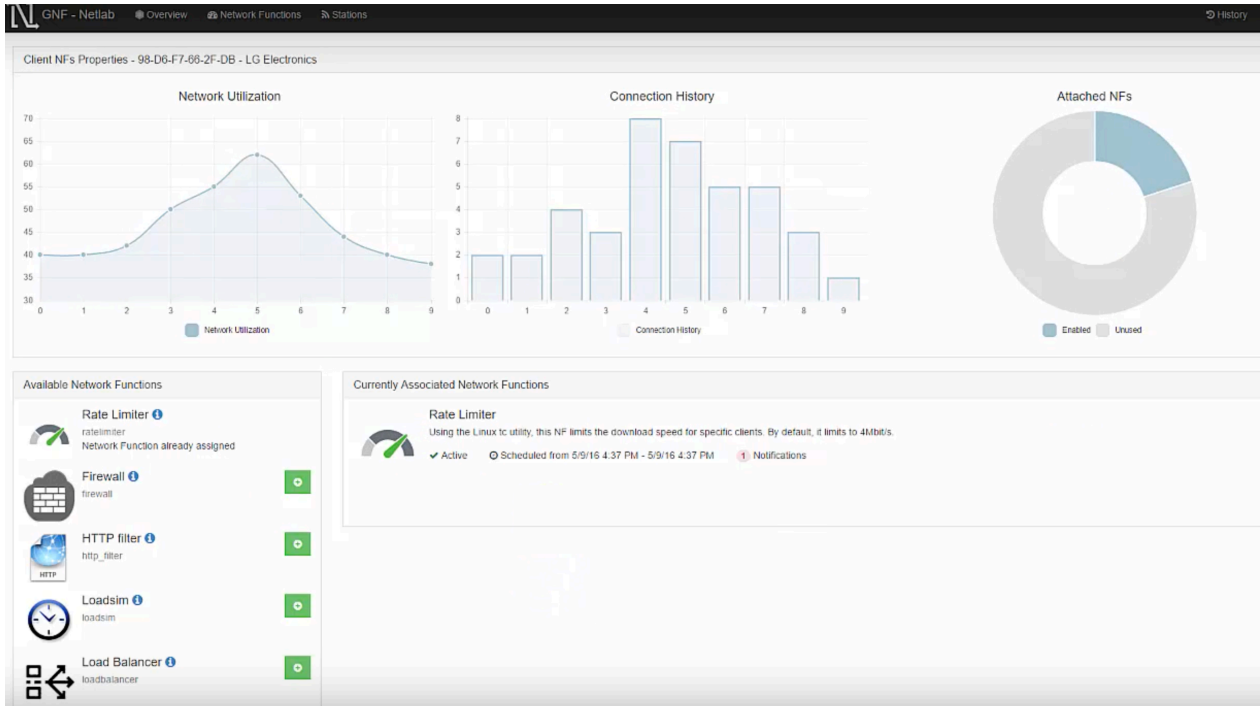
# Mobility use case: Supporting vNF roaming



# GNF User Interface



# GNF User Interface



# Example GNF vNFs

- Examples vNFs available on our website:  
<https://netlab.dcs.gla.ac.uk/projects/glasgow-network-functions>
- Firewall
- Parental control
- HTTP proxy
- Network measurement functions
- Introducing delay
- Rate limiter
- DNS load balancer
- SNORT

# Thank you!

UofG-netlab / gnf-demo








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Code Issues 0 Pull requests 0 Pulse Graphs

No description or website provided.

7 commits 1 branch 0 releases 2 contributors

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|   |
|---|
|  <b>czivar</b> Merge branch 'master' of ssh://github.com/UofG-netlab/gnf-demo Latest commit ec955e5 6 days ago |
|  <b>agent</b> Merge branch 'master' of ssh://github.com/UofG-netlab/gnf-demo 6 days ago                        |
|  <b>openwrt</b> Added OpenWRT image for WDR3600 9 days ago   |
|  <b>parentalcontrol</b> Adding parentalcontrol and some minor fixes 6 days ago                                 |
|  <b>server</b> Adding parentalcontrol and some minor fixes 6 days ago  |
|  <b>.gitignore</b> First commit, add agent and server 9 days ago   |
|  <b>README.md</b> Initial commit 9 days ago  |

