Information Security Education & Solidarity

IT Security Challenges – a Case Study in Rwanda

Prof. Konrad Marfurt

Lucerne University of Applied Sciences and Arts
Business School

ITU et al are Providing a Lot (1/3)

Source: http://www.impact-alliance.org/

ITU et al are Providing a Lot (2/3)

Source: http://www.impact-alliance.org/

ITU et al are Providing a Lot (3/3)

But…

… all these services have one thing in common:

- They are meant for organizations
    - CERTs
    - Government
    - Universities
    - Large (most likely international) Companies

→ It is important to consider smaller units like private Schools and individuals, too!

A Day at a Small Private University

- Equipment (~200 PCs)

- Teaching

- Electricity
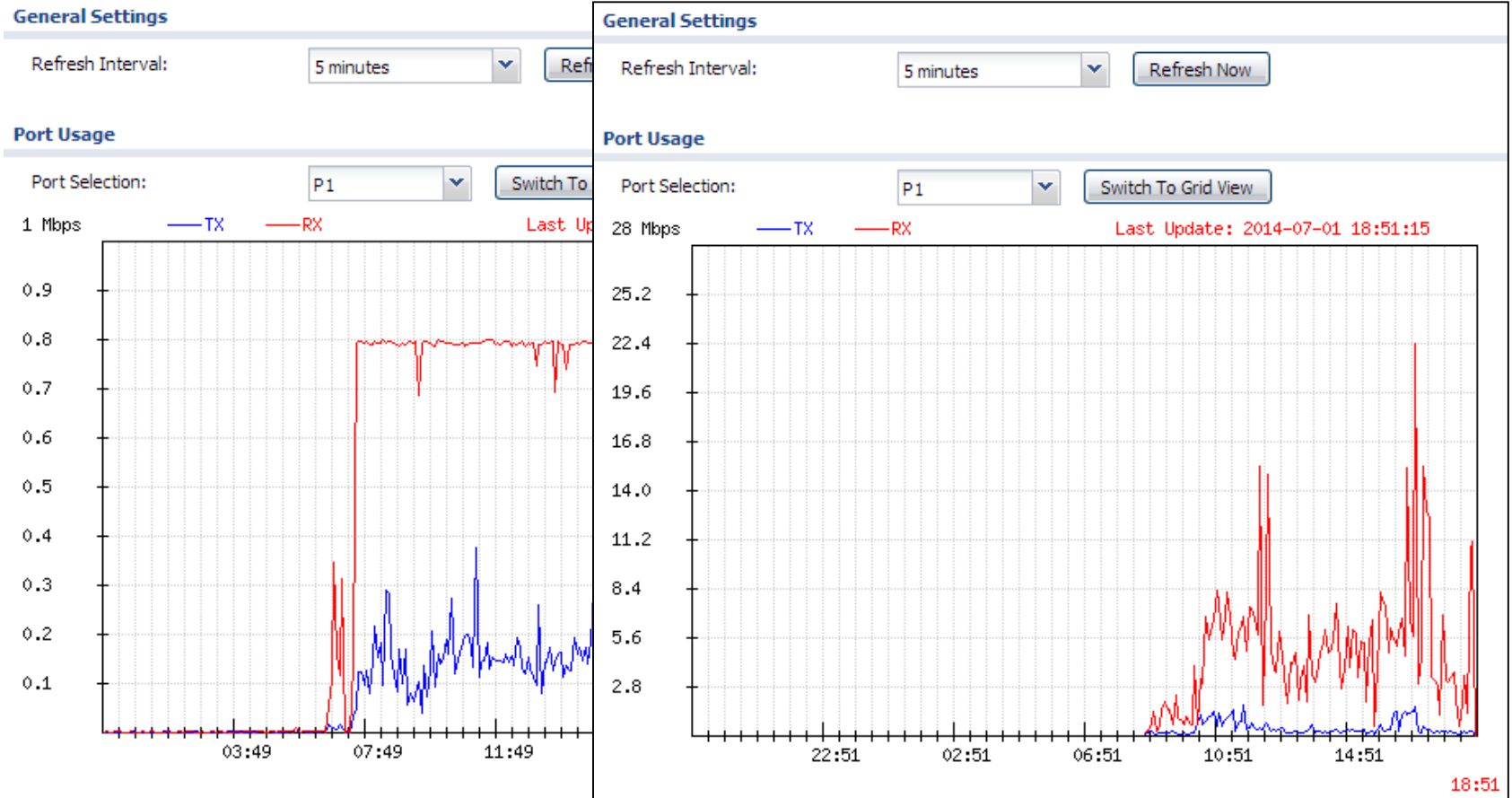
- Improvisation
  (just fix it)

→ "It works"

The "It Works" Problem

- Improvisation is fascinating

- But not in IT-Security!

- Awareness

- Protection

- Maintenance

- Connect 200 PCs to Internet:
    - No problem? Wait for the first patch-day☺
    - Monitor traffic
    - Tune firewall rules

Bandwidth – Related Problems (1/2)

- You don't necessarily get what you pay for

- Be patient!

- Today (2015) it looks much better...

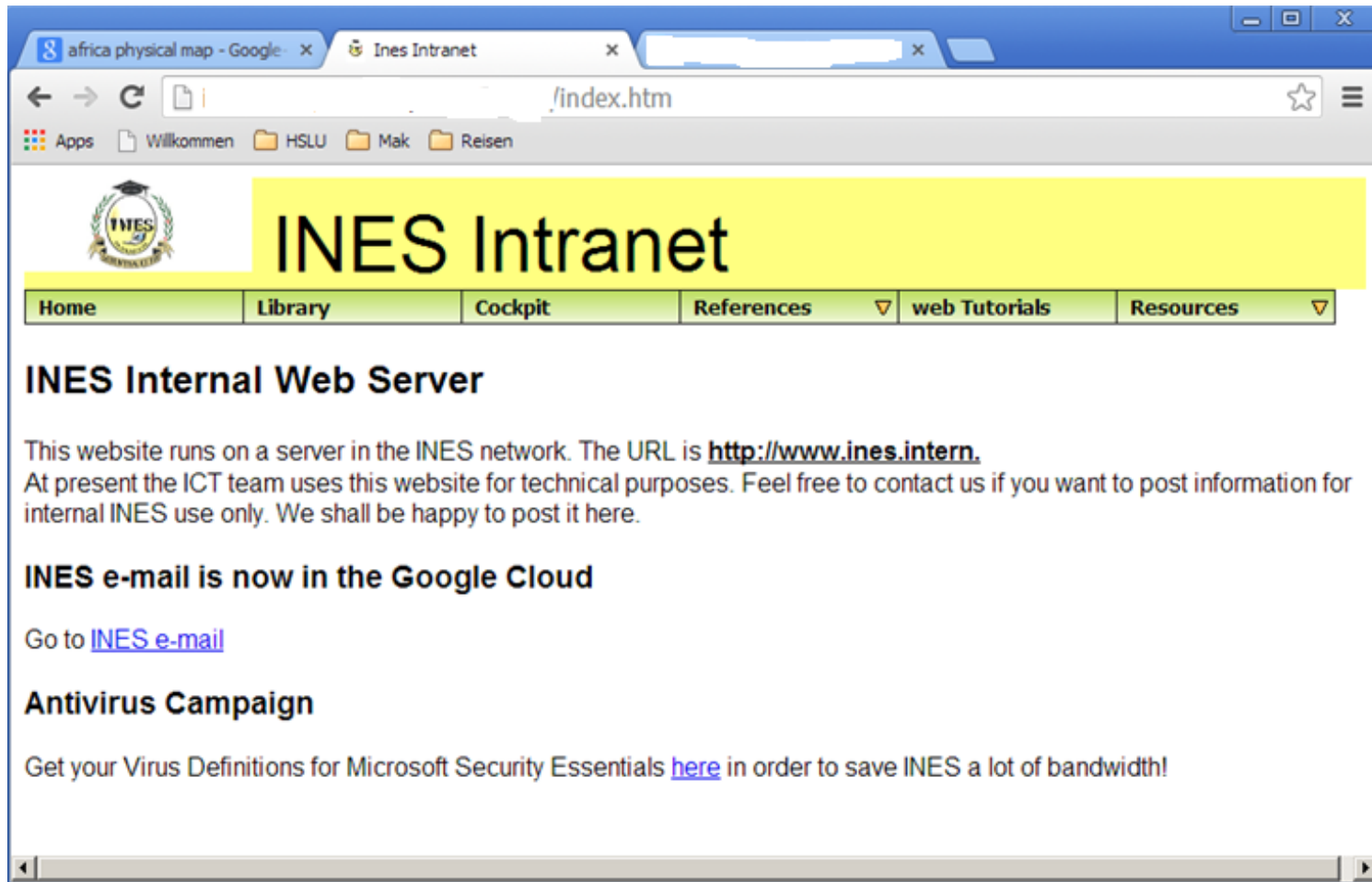# Bandwidth – Related Problems (2/2)

- Download Traffic:
    - SW updates
    - Signature updates
    - YouTube etc (faculty preparation, students' research, leisure)
    - (pirated) music, videos, software (Providers advertise data packages by the number of movie-downloads)

- Rule Set (example):
    - Limit access to download-sites to off-peak hours
    - Deny traffic for illegal downloads (not that easy)
    - Access-control for
        - Library
        - Internet-café
        - WLAN

        - ...

Status Quo

- Up to 20 Mbps for ~ 200 PCs and 4000 students
- Keep all systems up-to-date (local distribution of patches!)
- Mail services by Gmail @ines.ac.rw
  - High availability
  - SPAM check etc up-to-date
  - No local maintenance needed
- Project-related websites moved to the cloud (e.g. EALAN)
  - High availability
  - High performance collaboration with international partners
- E- and distance-learning must consider bandwidth and access limitations
  - Avoid streaming-only e.g. for MOOCs
  - Use DRM (Digital Rights Management) with care

Ad Interim Solutions I: KISS

Avoid complexity e.g. by using simple HTML / CSS instead of complex frameworks

Ad Interim Solutions II: Cloud

https://sites.google.com/site/ealanw/

Expectations

- Grant access to IP traffic of adequate speed
- Solidarity with educational institutions
    - Hardware and support
    - Education of staff and faculty
- Students must be educated in a cybercrime-free setting
    - No need to violate copyright
    - Reasonable use of Digital Rights Management (DRM) enforcing hardware- and software schemes
- Educational institutions need
    - Continuous access to up-to-date security software
    - Well educated staff and faculty (in terms of cyber-security)
    - Sustainable concepts for IT-based education: focus students' food- and job security, not "markets"

Our Message

- If we do not maintain a concept of solidarity in cyber security, organized cyber criminals will soon take over the business!

- If we think that our job is done by shipping loads of hardware, organized cyber criminals will be happy to (ab)use it!

- Note (for providers): securing LDC's internet means securing OUR internet!