Contents

- Facts and numbers
- Printer network
- Management with CHEF
- Guest printing
- Security considerations
Facts and numbers

- many different printer manufacturers and models
- printers mostly managed by IT department, but still some unmanaged devices in GSI LAN

- ca. 310 printers for Windows clients
- ca. 120 printers for Linux (and Mac) clients via CUPS
- ca. 30 printers for guests via CUPS
Printer network

- all new printers in separated VLAN, but
  - many old printers still in GSI network (ca. 70 %)
  - migration in progress
- access only via dual homed print server
  - Windows 2008 R2 for Windows clients
  - Debian Jessie for Linux (and Mac) clients
- Linux printing via CUPS
  (got rid of lprng finally)
Printer network

- GSI LAN
- PRINTER VLAN
- Windows
- Linux

Devices connected to GSI LAN and PRINTER VLAN.
CUPS server

dual homed Debian Jessie
- `eth0` in GSI network
- `eth1` in PRINTER VLAN

- NTP (ntpd)
- DNS/DHCP (dnsmasq)
- SMTP (postfix)
Management with CHEF

- printer list available as .xlsm file on Windows share
- column **Linux?** with value **ja** marks printers for Linux
Management with CHEF

Ruby script using RubyXL for parsing .xlsm file:

- section `drivers` for assigning ppd file to printer model
- grab only lines with printers for Linux
- skip printers with no valid DNS name
- skip printers not responding to `ping`
- harmonize some model names (different notation)
- create data bags for CHEF
example for printer data bag:

$ cat p007.json
{
  "id": "p007",
  "model": "lsb/usr/custom/ncc1701.ppd",
  "uri": "socket://p007.gsi.de",
  "location": "Alpha Quadrant",
  "desc": "PhaserJet NCC 1701"
}
Management with CHEF

using two CHEF cookbooks:

- **cookbook cups from github** (Artem Sidorenko)
  - infrastructure for data bags
  - edit `printers.conf` using `lpadmin`
- **additional site cookbook gsi_cups** (Christopher Huhn)
  - deploying additional ppd files
  - removing outdated print jobs via cron
still some remaining hand work:

- no automatic addition of new printers → process has to be started manually
- data bags for disabled printers are not removed → must be done manually
- find the correct ppd file using:
  - \texttt{hplip} for HP printers
  - “Open Printing Database” by The Linux Foundation
  - “black magic” for remaining manufacturers
Where no one (@GSI) has gone before

- managing printer options with data bags
- authentication with Kerberos
- accounting
- redundant print server setup
- Windows printer driver distribution via Samba
- autodiscovery using DNS-SD (for guest printers)
- ...

Guest printing

- small subset of CUPS printers available for all operating systems from guest network (GSI-FREE)
- managed by CUPS forwarding server (VM)
- manual selection of public printers, data bags transferred automatically using CHEF
- data bags containing modified URI
  - pointing to `cups.gsi.de` instead of `socket`
  - done by script using `jq`
- all guest printers in PRINTER network (only one exception due to location)
Security considerations

You may check for ...

- empty, default, or easy to guess passwords
- public accessible shares for scans
- outdated firmware versions
- unused/unwanted features, e.g.
  - services like ftp, snmp, ...
  - protocols like IPX, Appletalk, ...
- second-hand printers not reset to factory defaults
Live long and prosper!

HEPiX Fall 2017