

Wicked – A Network Manager

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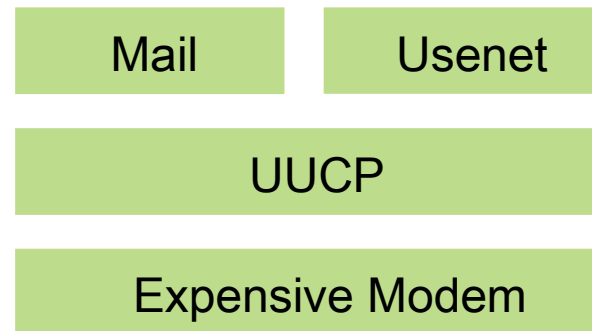
Agenda

- Why Wicked!?
- What we want to achieve
- What Wicked can do today/tomorrow
- Architecture
- Wicked little intro

Why Wicked!?

Why Wicked?

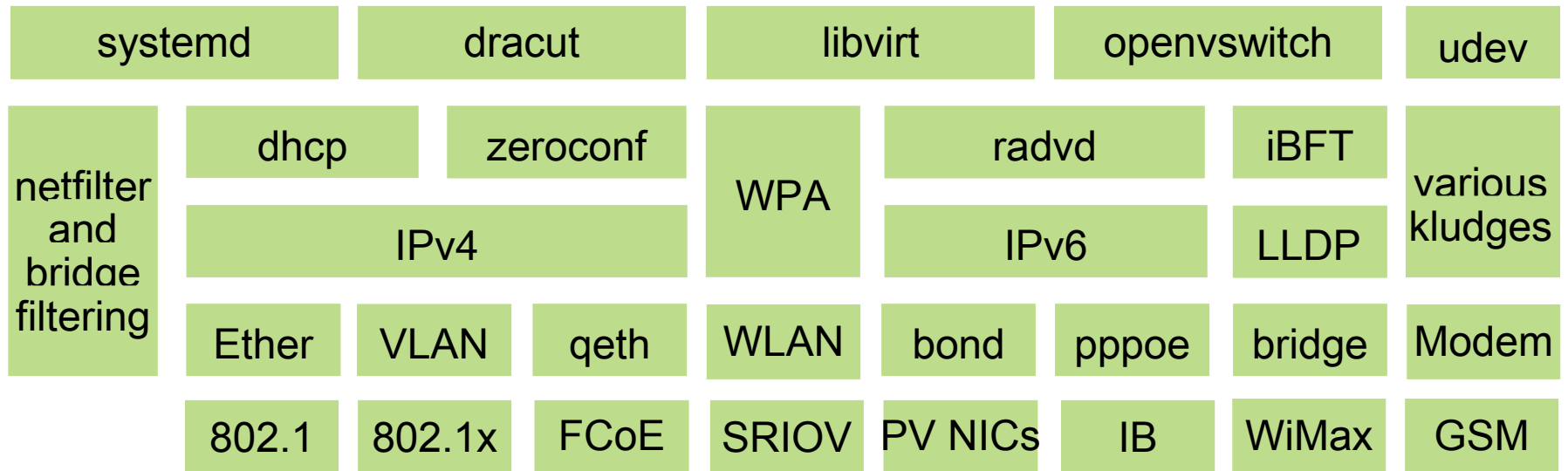
Basically because we went from this...



Why Wicked?

... to something like this.

Converged Networks, Network Virtualization, Storage Networks, ...



How Can I...

... set up a bridge using two bonded NICs as one of its ports?



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... conveniently check routes, addresses, link-speed... and perhaps hardware offload settings on my Ethernet NIC?



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... reconfigure a bonding device without bringing it down?



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... reconfigure a bonding device without bringing it down?

... configure a wireless connection with WPA2 and DHCP?



How Can I...

- ... set up a bridge using two bonded NICs as one of them conveniently checks routes, addresses, WPA2 and DHCP?
- ... configure a wireless connection with hardware offload WPA2 and DHCP?
- ... configure a bonding device without bringing it down?

... disable IPv6 on my DMZ Ethernet Interface?



Today's Networking

- Highly Dynamic
- Virtualized/Software-Defined
- Converged

That Was the Why...Now the What

What We Want To Achieve

- Goal
 - Cope with increasingly complex configurations
- Target Audience
 - Data Center and End Users
- Positioning
 - Network configuration is a service
- Usability
 - Make adoption as smooth as possible

What We Want To Achieve

Technical Attributes

- Architecture-independent
- Extensible
- Needs small footprint (initrd use)
- React flexibly to network changes
- Broadcast event notifications
 - interface comes up, IP address assigned, routing changed

Where Are We?

- Wicked is in SUSE Linux Enterprise 12 GA
 - SUSE Linux Enterprise Server defaults to using wicked
 - SUSE Linux Enterprise Desktop defaults to using NetworkManager

Smooth Transition

- What's Changed?!
 - For end-users – nothing really, so relax :D
 - Sysconfig ifcfg-* style configuration
 - In place for backward compatibility
 - Converted to an internal format that is structured, extensible and more powerful
 - “Internal format” to be exposed to administrators/users by SP1
 - /sbin/{ifup,ifdown,ifstatus,ifprobe} scripts wrap wicked commands
- Wicked supports the same functionality as SUSE Linux Enterprise Server 11
- Invasive, yes – Disruptive, no

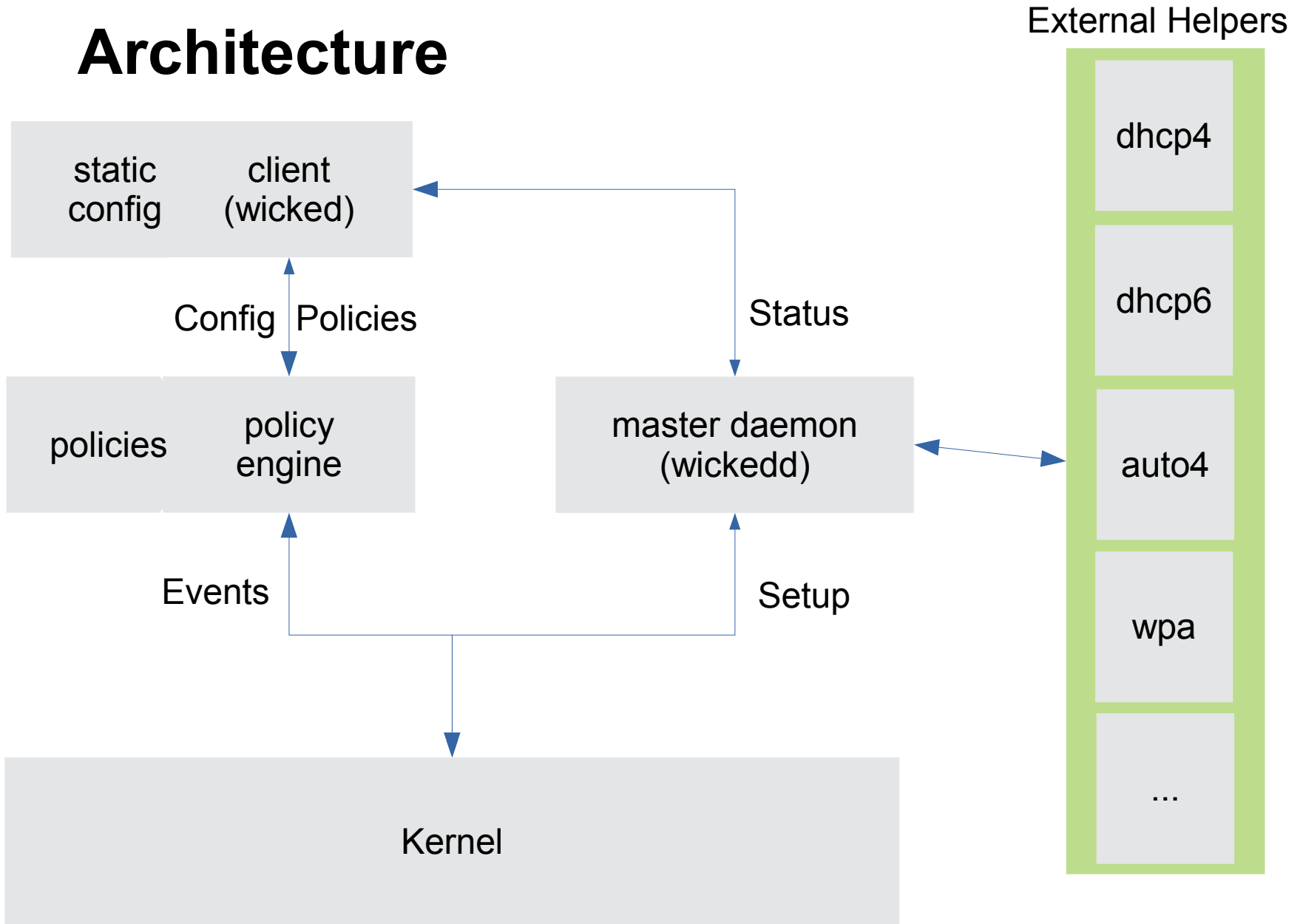
What Wicked Can Do Today

- Device types
 - Ethernet, VLAN, Bridging, Bonding, Infiniband, Loopback
 - tun, tap, ipip, sit, gre, dummy
 - macvlan, macvtap
 - hsi, qeth, iucv
 - wireless (one wpa-psk/eap network)
- Address configuration: static, dhcp4, dhcp6, IPv4 zeroconf
- Hot-plugging

What Wicked Will Do Tomorrow

- In implementation
 - better tunneling (esp. IPv6 tunneling)
- On the roadmap:
 - Documentation improvements
 - pppoe (lower priority), ppp/UMTS [SP1]
- On the radar:
 - Improve integration with openvswitch
 - Network namespace awareness and virtual ethernet support
 - Improve wireless support

Architecture



A Wicked Little Intro

Network Service

- Wicked is a systemd thing!
 - lots of systemd unit files
- network.service
 - Start and stop “The Network”
- wicked.service
 - Start and stop the networking the wicked way
- wickedd.service
 - Control all wicked daemons
- Don't Mention the Interface Name War.

Restarting the Network

- `systemctl restart network.service`
 - restarts the network interface configuration
- `systemctl restart wickedd.service`
 - restarts wicked daemons without reconfiguring the network interfaces

Debugging Options

- Command line

- `wicked --debug <all | most | help | ...>`
 - Enables debug level and sets filters by wicked facilities, e.g.:
`"all,-events,-socket,-objectmodel,-xpath,-xml,-dbus"`

- Configuration file

- In `/etc/wicked/common.xml`, add
`<debug>true</debug>`

Diagnosis

- Testing DHCP availability
 - `/usr/lib/wicked/bin/wickedd-dhcp4 --test $IFNAME`
 - `/usr/lib/wicked/bin/wickedd-dhcp6 --test $IFNAME`
- Things to watch out for in IPv6 setups
 - If your router advertises Managed configuration, make sure you have a (working) DHCP6 server running :-)
 - Verify the information distributed via DHCP6
- Collecting logs
 - `journalctl:`
`journalctl -b -o short-iso > wicked.log`

Time for a Demo!



Summary

Today's Networking

- Highly Dynamic
- Virtualized/Software-Defined
- Converged

Wicked Network Configuration

- Configuration Tools matching the pace of evolution
- Network Configuration as a Service
- Supporting both Data Centers and End Users

Try it

Now part of SLES 12!

Clone it

<https://github.com/openSUSE/wicked>

Your Questions!?



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Backup Slides

Implementation Decisions

- Client / Server model
 - Dbus Service (provided by a daemon)
- Layered architecture
 - providing separate Dbus interfaces for hardware, netdev, address configuration, etc.
- Structured configuration files
 - Sysconfig ifcfg- style for now, XML as internal representation
- Extensible
 - Server can be extended with scripts
 - NIS/dns/hostname updates