BISDN

BISDN – WE WHITEBOX NETWORKS

BISDN Linux is a completely free and open NOS that is ready to be integrated into any standard data center environment. Alternatively, it can be utilised in more specific use cases in the telecommunication sector. BISDN Linux was developed in Berlin, Germany, by BISDN. The company focuses on developing whitebox and open networking solutions.

BISDN LINUX AT A GLANCE

LINUX ABSTRACTION

Utilizing the Linux network stack, BISDN Linux can be configured with the standard Linux tools you already know. Therefore, it allows you to continue using all the network automation routines you already have.

MODULAR AND ADAPTABLE

Combining the community-driven and well tested software build chain from OpenEmbedded and Yocto, BISDN Linux allows you to easily add tooling you are already familiar with or switch whole components, depending on your requirements.

LAYER 3 ROUTING

With FRR as the dynamic routing management service, BISDN Linux supports all major routing protocols like BGP and OSPF as well as EIGRP, IS-IS and RIP. All of them can be configured either with the default FRR configuration files, or directly from the console utilizing vtysh.

BISDN LINUX – THE FREE AND OPEN NOS

BISDN developed baseboxd[1] as a completely free and open SDN controller to be run on any OpenFlow enabled whitebox NOS. With BISDN Linux[2], this SDN controller is integrated into an also freely available and mostly open source operating system, built to feel exactly like any other Linux system on the market. Baseboxd is built to listen on the Linux kernels netlink bus and translate everything that is configured here into OpenFlow and finally, via the Broadcom OpenFlow Data Path Abstraction (OF-DPA)[3] to the ASIC.

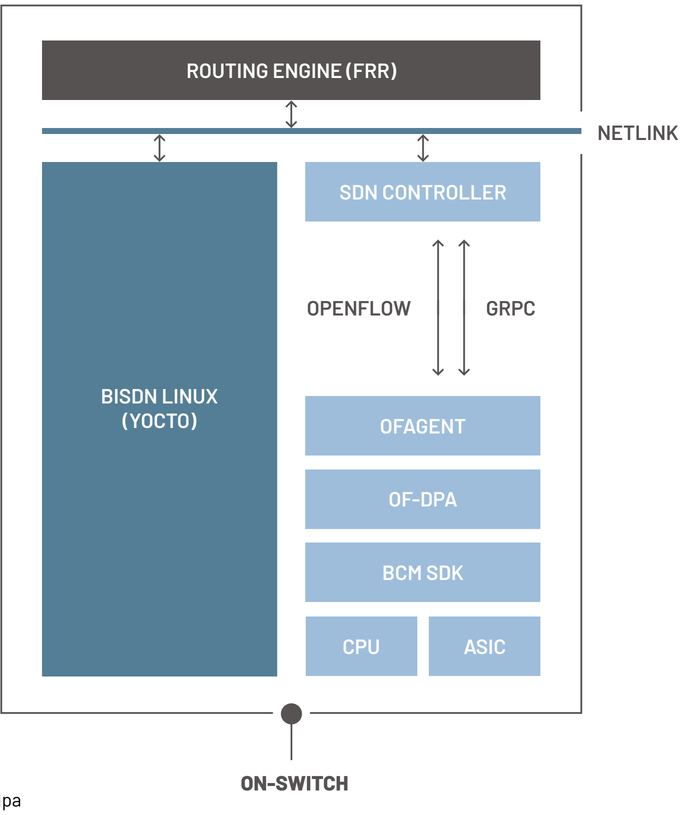
This setup is straightforward: instead of using any arbitrary templating or configuration interface to set up switch ports and configure IP addresses on them, default Linux tools like systemd-networkd[4] or iproute2[5] are used. This does not stop with just simple interface configuration.

If you want to configure some more sophisticated layer 3 routing scenarios, you can just use FRR[6], exactly like you would use it on any other Linux machine you are already running, while directly running all routing and forwarding actions on the ASIC.

If you are interested in testing and want to take a look at some examples of how to configure BGP, IS-IS or OSPF on BISDN Linux enabled switches, check out our docs at https://docs.bisdn.de.

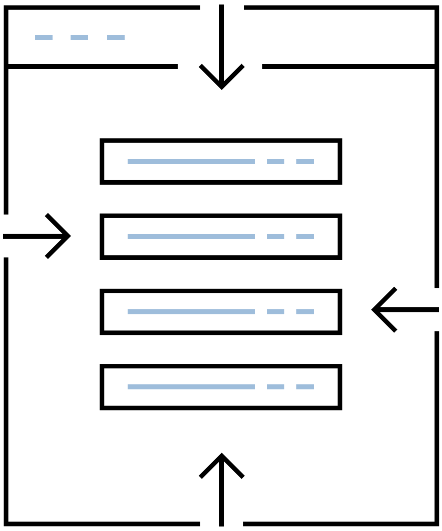
HOW FREE AND OPEN IS BISDN LINUX?

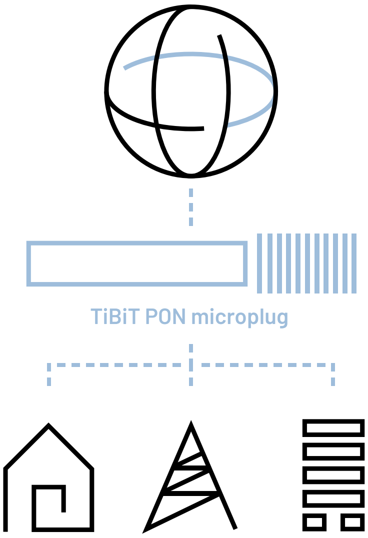
- The complete, fully functional BISDN Linux distribution is and will be available for download at no cost.
- Our code in BISDN Linux, including the core component, baseboxd, is and will remain available under OSI-approved Open Source licenses.
- For some hardware, our partners have provided code under NDA that we are not currently at liberty to disclose. In a process that we expect to go on for some time, we are working on getting changes merged into the upstream open source projects.



[1] baseboxd: https://github.com/bisdn/basebox
[2] BISDN Linux: https://www.bisdn-linux.com
[3] OF-DPA: https://www.broadcom.com/products/ethernet-connectivity/software/of-dpa
[4] systemd-networkd: https://www.freedesktop.org/software/systemd/man/systemd-networkd.service.html
[5] iproute2: https://wiki.linuxfoundation.org/networking/iproute2
[6] FRR: https://frrouting.org

BISDN LINUX USE CASES





DATACENTER

In almost all datacenters, Linux is the dominant operating system on servers, which should also be true for all switches.

With BISDN Linux, all those top-of-rack and spine switches can be managed, configured and monitored exactly the way servers are. This means that you can configure bonds and VRFs on-switch with systemd-networkd. Add IP addresses and dynamic BGP routing with FRR on top of that, and automate all of those tasks with Ansible[1] across switches and servers with exactly the same syntax.

After setting up this initial configuration, you can deploy the BISDN switch-statistics Prometheus[2] exporter and directly pipe all the metrics you need into your Prometheus server.

ACCESS NETWORK (OLT/PON)

In modern access networks, a disaggregated architecture has become the go-to model. In addition to that, most large telecommunication providers are working towards removing vendor lock-ins wherever possible, to be able to upgrade faster and be more versatile within the market.

Together with our partner TiBiT[3], we offer a fully modular solution, where pluggable TiBiT OLTs can be used directly in BISDN Linux enabled switches to build a multi-port OLT. This approach allows on-demand scaling up to 6000 customers on a single 48 port whitebox switch with a total bandwidth up to 480 gbps. Furthermore, the full Linux approach in combination with a BBF TR-385/383 netconf/yang interface offers a configuration abstraction, removes the need for additional hardware and is compatible with traditional chassis-based OLT solutions.

[1] / Ansible: https://www.ansible.com
[2] / Prometheus: https://prometheus.io
[3] / TiBit: https://tibitcom.com

Support Model

Our software is mostly open source. We provide it free to use and to contribute to, and invite you to test and deploy it at your convenience. Together with our partners, we offer enterprise support plans for the entire stack. Pricing depends on the requested duration and the level of support required.

If you wish, we can also integrate BISDN Linux in your environment and adapt it to your use case.

Please do contact us for pricing and details via sales@bisdn.de!

BISDN LINUX – TECHNICAL SPECIFICATIONS

FUNCTIONALITY	DESCRIPTION
Platform features	→ Port mirroring → Link auto negotiation → Source MAC learning → Power over Ethernet (PoE) (depending on platform) → OpenFlow abstraction via Broadcom OF-DPA
Layer 2 features	→ VLAN support for 802.1q and 802.1ad → Spanning Tree (STP 802.1D, RSTP 802.1w and MSTP 802.1s) → Link aggregation and bonding (active-backup and 802.3ad) → IGMP/MLD snooping
Layer 3 features	→ Full IPv4/v6 support → Virtual Router Redundancy Protocol → BGP for IPv4 and IPv6 → OSPFv2 (IPv4) and OSPFv3 (IPv6) support → EIGRP, RIP and IS-IS → Virtual Routing and Forwarding
Automation and configuration management	→ Default Linux integration with all major automation tools (e.g. Ansible and Salt[1]) → Static network configuration with systemd-networkd → Dynamic routing service management with FRR → Easy failover and L3 redundancy with keepalived → Deployable via ONIE → Automated configuration backup and version upgrade out of the box
Logging, monitoring and debugging	→ SSH access into a default Linux bash → Logging with journald → Default Yocto Linux based working environment → Full Python 3 support → ACL based traffic flow control to allow analysis of selected flows from the ASIC with tcpdump in Linux

[1] Salt: https://saltproject.io

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