



Managing IP Allocation with an Open-Source DDI



CHNUG #4
26.08.2026

Marco Martinez



Agenda

- What's a DDI
- Promises of a DDI
- DDI Landscape
- Open-Source DDI
- Limitations
- Conclusion



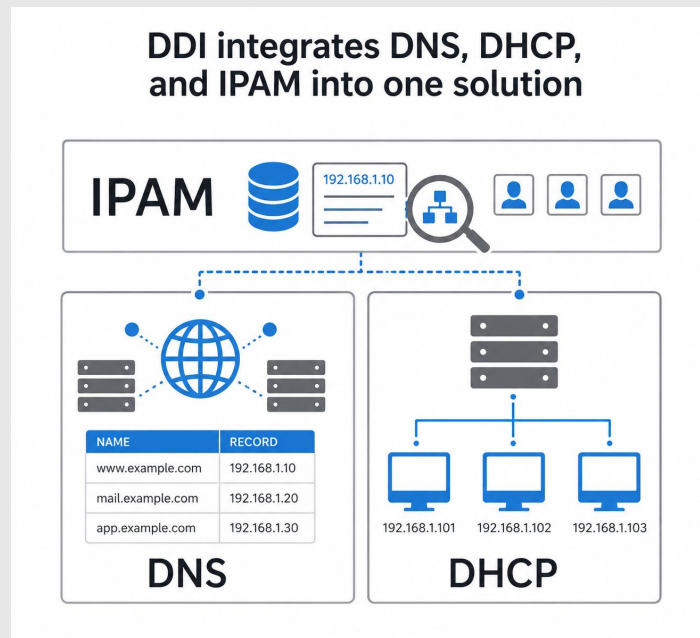
DDI – DNS, DHCP, IPAM

- Combines all addressing functions in one place
 - a. DHCP
 - b. DNS
 - c. IPAM
- A management plane that unifies the functions
 - a. Physical Box
 - b. Virtual Appliance
- Management plane with an API



DDI Promises

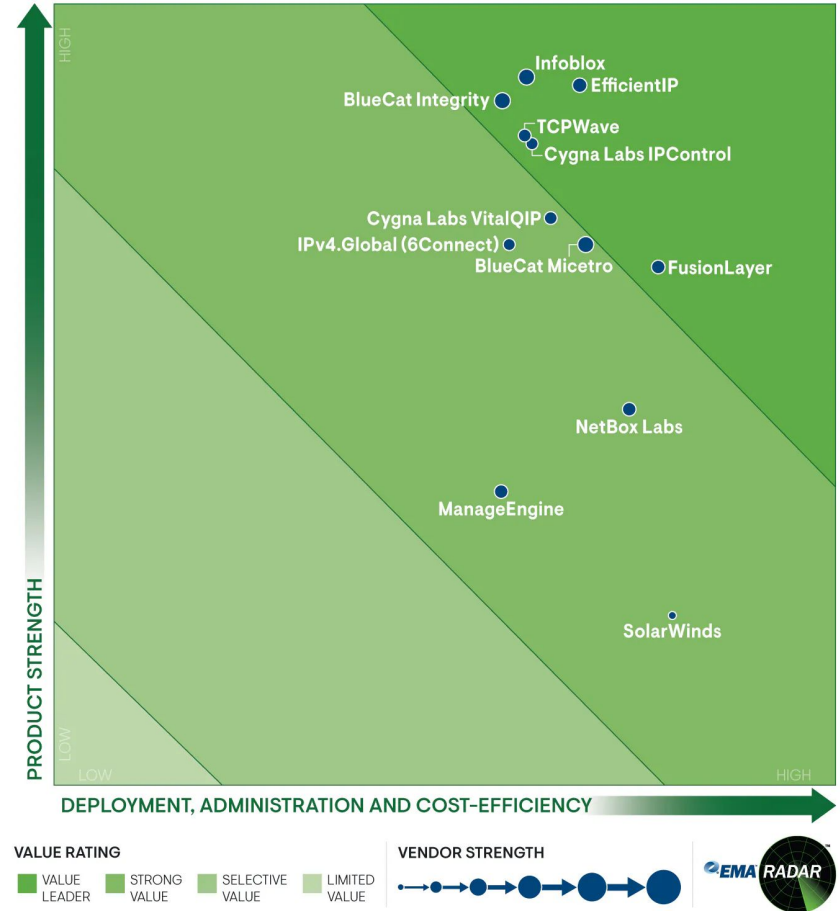
- Proprietary product solving all addressing headaches
- Vendor support over the whole “IP Allocation Stack”
- Traceability between the functions
 - a. Correlation will be easier
 - b. Integrated monitoring
- Enhance operational efficiency
- Organizational boundaries more clear



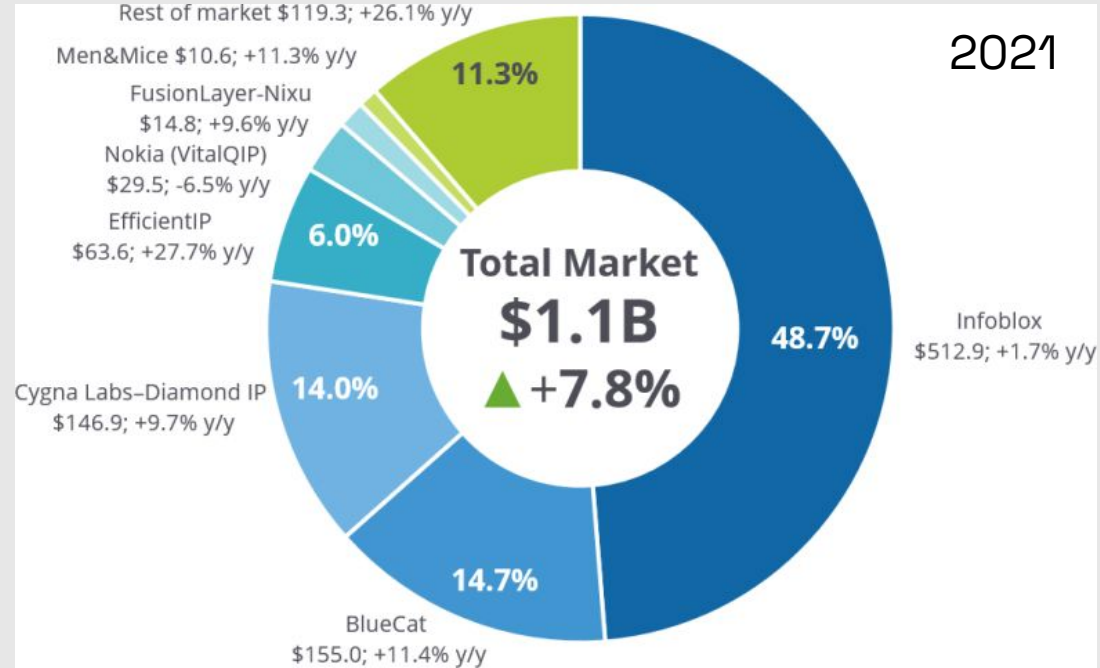
DDI Landscape I

- Currently there are no Open-Source DDI available
- Existing DDI Solutions use Open-Source under the hood
- Many great Solutions for an even greater Price
- Traditional DDIs mostly out of reach for smaller environments

EMA RADAR REPORT FOR DDI



DDI Landscape II



The Shift to Software-Drive and Cloud-Managed DDI Continues (Doc # US49818822)

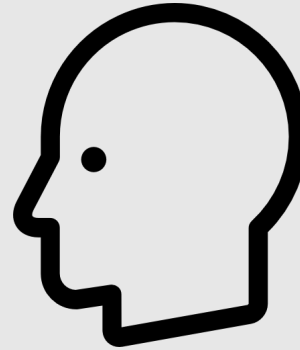
DDI Landscape III



DDI Landscape IV



DNS, DHCP



IPAM

DDI Landscape V



Open-Source DDI

“

**With reasonable effort a reasonably good
Open-Source DDI should be possible.**

”

Marco Martinez - 2025

Building a DDI – Considerations

Requirements

- Unify DNS, DHCP and IPAM
- One API to configure all
- Transparency
- Enable Operations with Data
- Don't build your own DNS, DHCP or IPAM
- Use three Open-Source Products
- HA Functions

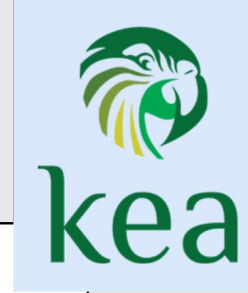
Building a DDI – Components



IPAM



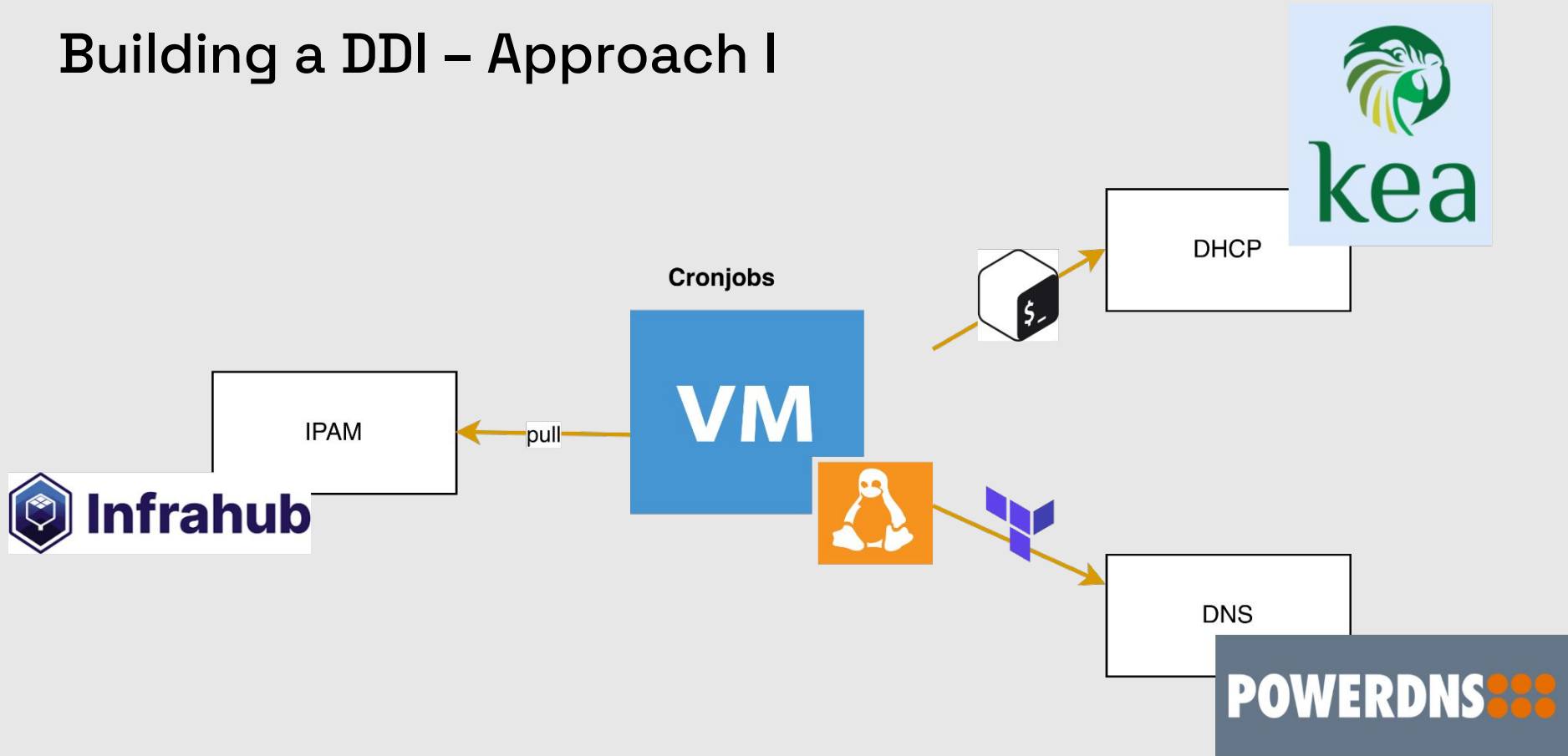
DHCP



DNS

POWERDNS 

Building a DDI – Approach I



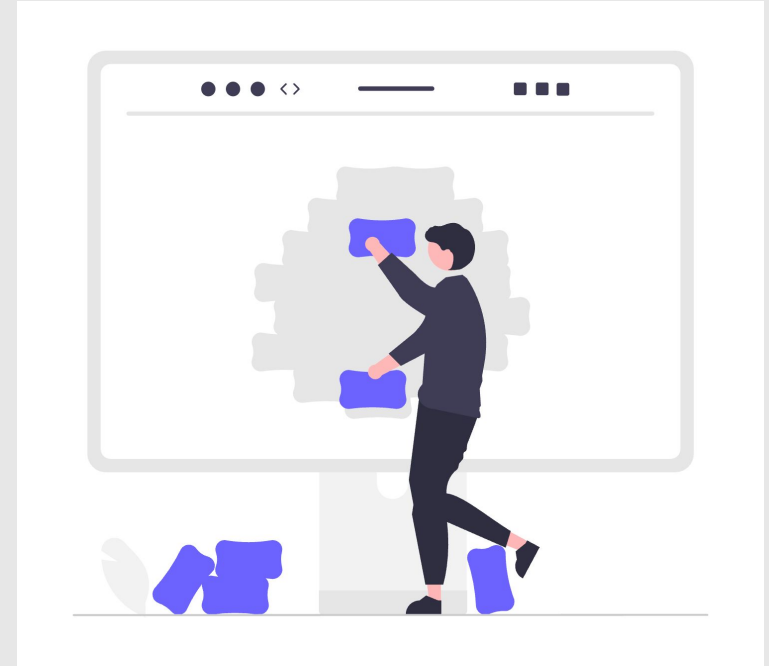
Building a DDI – Approach I

Advantages

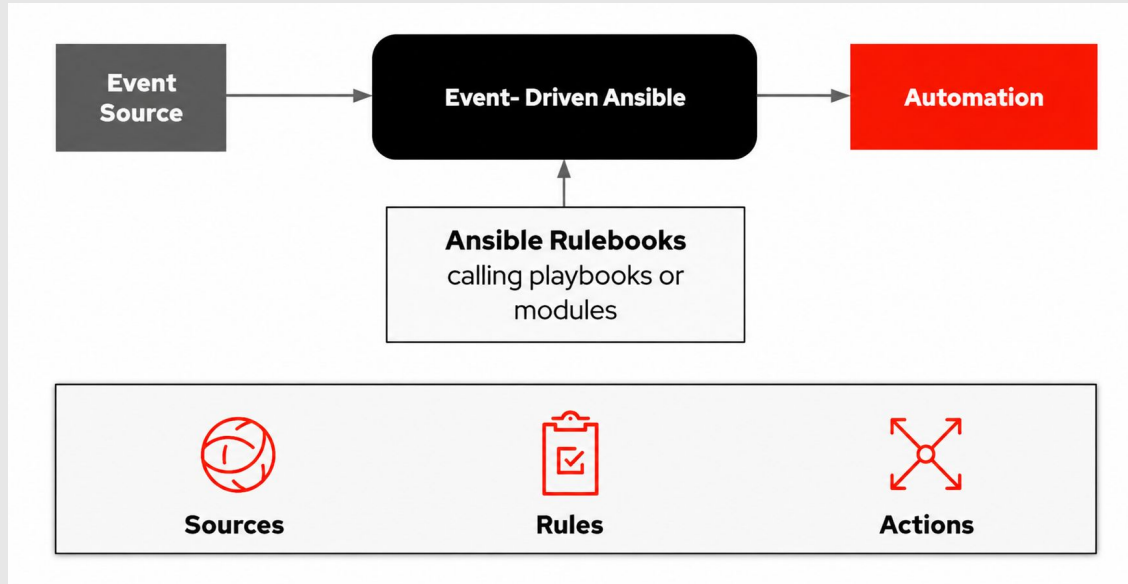
- Somewhat functional DDI
- One Configuration Plane

Drawbacks

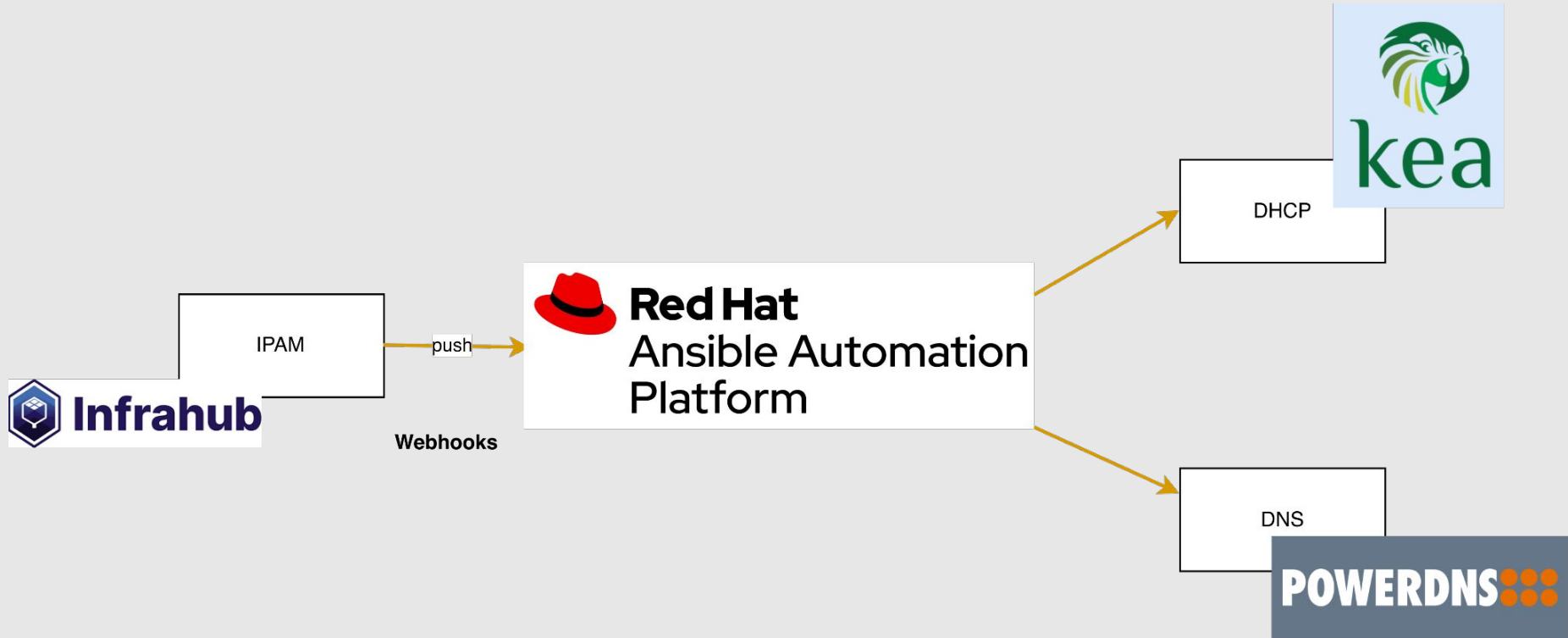
- Different Automation Tooling
- Configuration Consistency



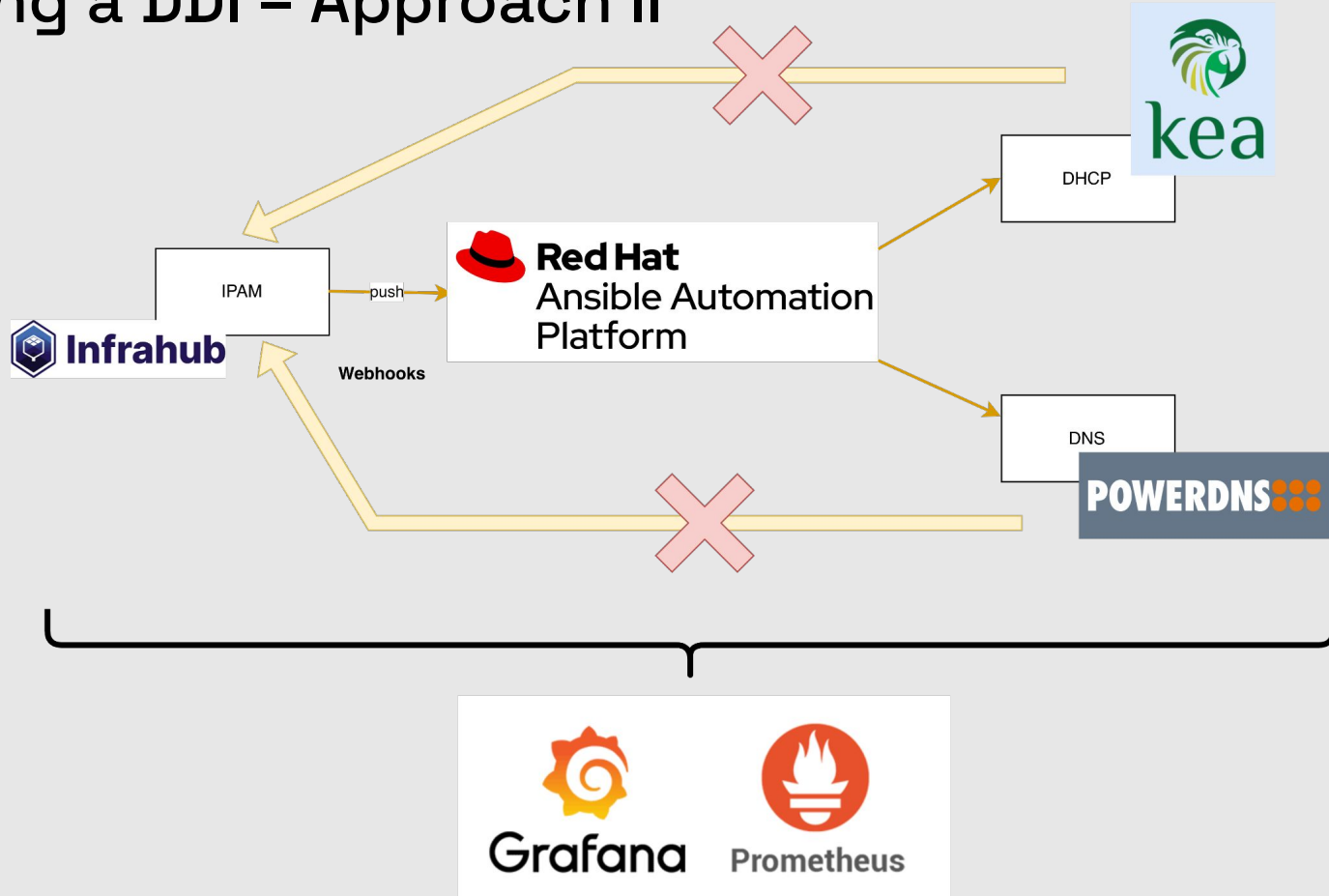
Building a DDI – Approach II



Building a DDI – Approach II



Building a DDI – Approach II



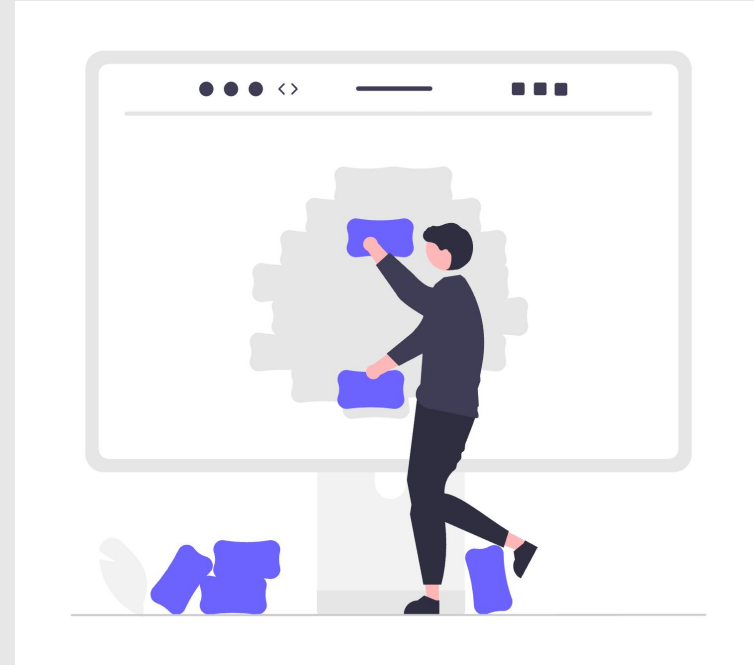
Building a DDI – Approach II

Advantages

- Open-Source DDI with Ownership over Components
- Single Event-Driven Configuration Plane

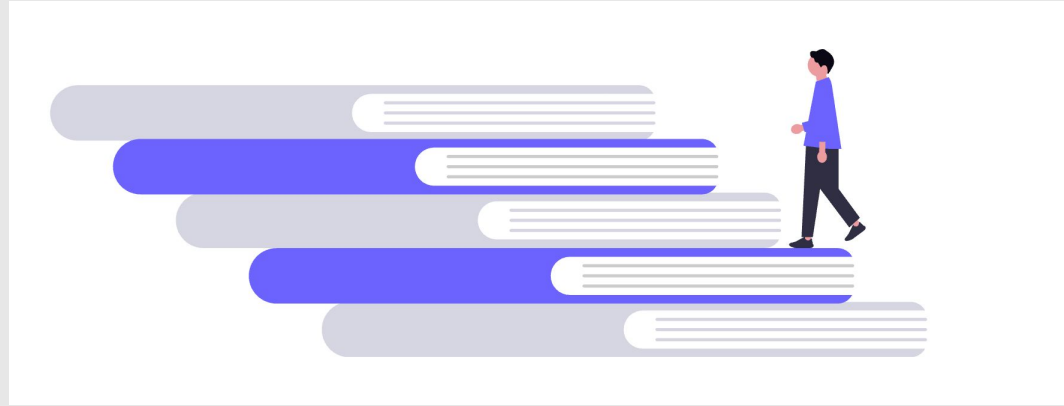
Drawbacks

- More complex than a traditional DDI
- Multiple vendors



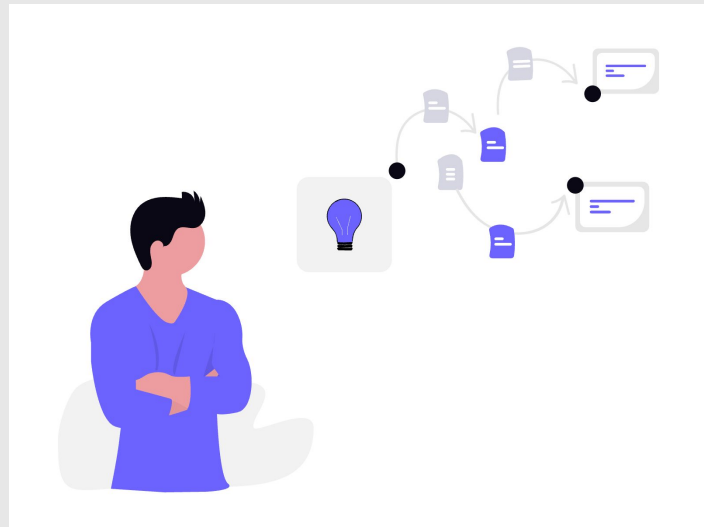
Motivations

- Open-Source
- Fast Moving Environment
- Transparency
- Source of Truth
- Moving out of the silo
- Reduced Costs

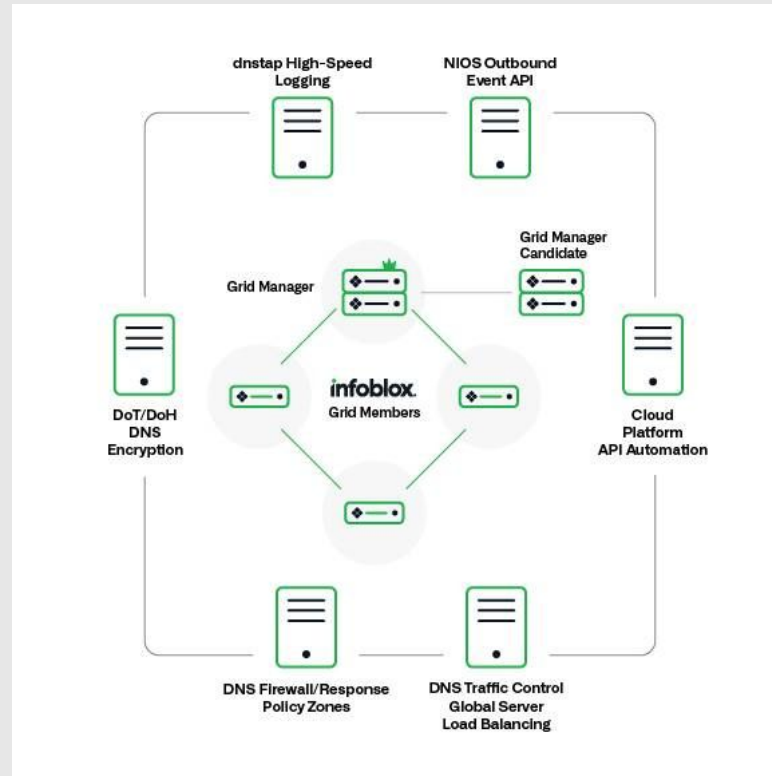


Limitations

- High Availability
- Hardware Box
- Single Vendor to support the entire Stack
- Complexity likely to be higher
- Everything runs on Containers or Linux



Limitations



Conclusion

“

**With reasonable effort a reasonably good
Open-Source DDI should be possible.**

”

Marco Martinez - 2025

Sources

Infrahub: <https://github.com/opsmill/infrahub>

Kea DHCP: <https://www.isc.org/kea/>

PowerDNS: <https://www.powerdns.com/>

DDI Version 1: <https://github.com/marcom4rtinez/ddi>