

This is the web version of the talk.

Pages that are empty had content we had to remove in order to publish the slides.

Landscape photo by Felix Kronlage

Small Kids motives by:

<http://jujus-delivery.com>



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# Dr. Restless

or

how I stopped worrying about not having proper infrastructure docs at hand!

## Ubucon Europe 2016

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@felixkronlage



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# bytemine

- Linux- / Unix infrastructure since 2003
  - *reliable infrastructures*
- 
- Oldenburg / Dortmund
  - Hosting: FRA-ZRH



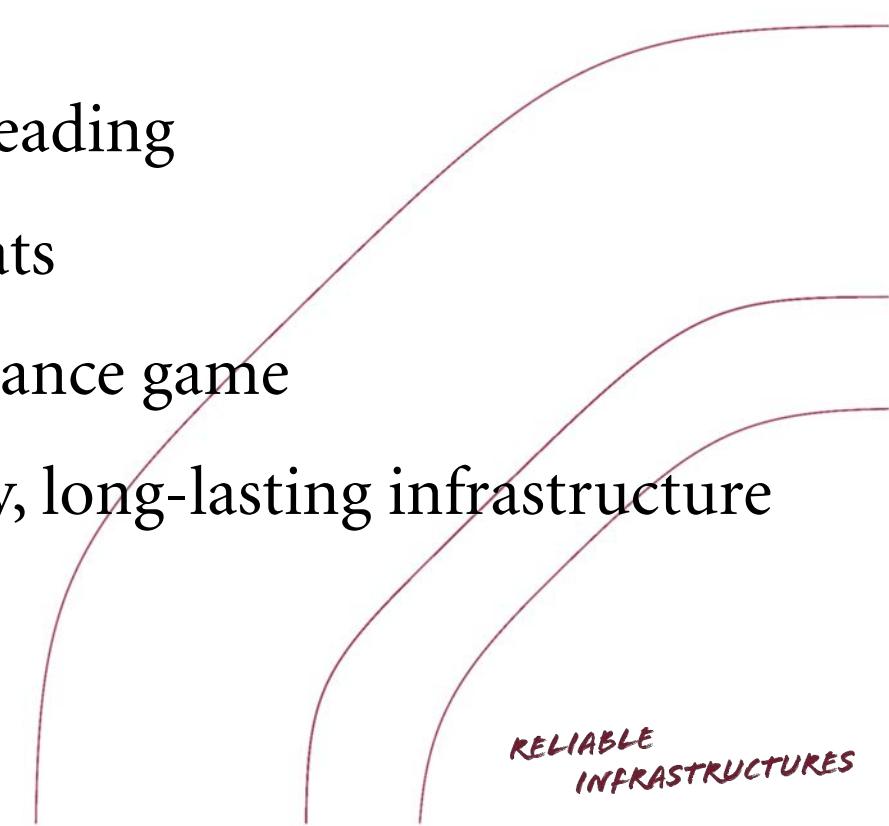
# bytemine idb

- infrastructure database
- CMDB
- documentation
- hardware management
- universal source of truth



# why

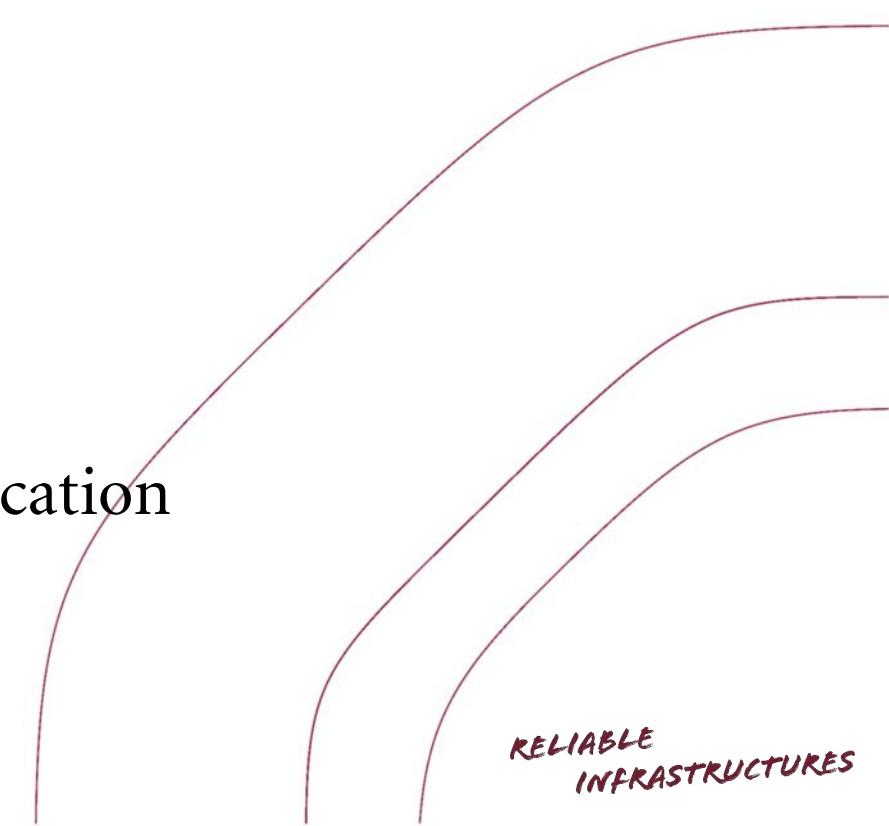
- Documenting is annoying
- Information is often
  - not to be found
  - outdated
  - worst case: simply wrong and misleading
- We want to be techies - *not* bureaucrats
  - yet we still want to play the compliance game
  - and we want to deliver high quality, long-lasting infrastructure work



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# how?

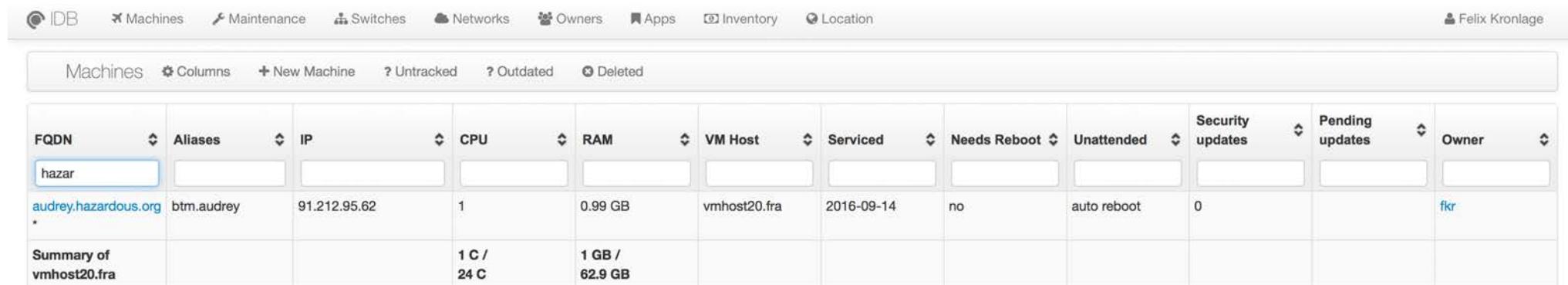
- Wiki
- Excel
- odt or ods documents
  - shared across the network
- Inline within other tools
- Brain of exactly that guy that is on vacation





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# to the rescue



A screenshot of a web-based machine management interface. The top navigation bar includes links for IDB, Machines, Maintenance, Switches, Networks, Owners, Apps, Inventory, and Location. A user profile for 'Felix Kronlage' is visible on the right. Below the navigation is a search bar with filters for 'Machines', 'Columns', '+ New Machine', '? Untracked', '? Outdated', and '? Deleted'. The main content is a table with the following columns: FQDN, Aliases, IP, CPU, RAM, VM Host, Serviced, Needs Reboot, Unattended, Security updates, Pending updates, and Owner. The table contains three rows: 1) A row for 'hazar' with FQDN 'hazar', Aliases 'btm.audrey', IP '91.212.95.62', CPU '1', RAM '0.99 GB', VM Host 'vmhost20.fra', Serviced '2016-09-14', Needs Reboot 'no', Unattended 'auto reboot', Security updates '0', Pending updates ' ', and Owner 'fkr'. 2) A summary row for 'audrey.hazardous.org' with FQDN 'audrey.hazardous.org', Aliases 'btm.audrey', IP '91.212.95.62', CPU '1', RAM '0.99 GB', VM Host 'vmhost20.fra', Serviced '2016-09-14', Needs Reboot 'no', Unattended 'auto reboot', Security updates '0', Pending updates ' ', and Owner 'fkr'. 3) A summary row for 'vmhost20.fra' with FQDN 'Summary of vmhost20.fra', Aliases ' ', IP ' ', CPU '1 C / 24 C', RAM '1 GB / 62.9 GB', VM Host ' ', Serviced ' ', Needs Reboot ' ', Unattended ' ', Security updates ' ', Pending updates ' ', and Owner ' '.

FQDN	Aliases	IP	CPU	RAM	VM Host	Serviced	Needs Reboot	Unattended	Security updates	Pending updates	Owner
hazar											
audrey.hazardous.org	btm.audrey	91.212.95.62	1	0.99 GB	vmhost20.fra	2016-09-14	no	auto reboot	0		fkr
Summary of vmhost20.fra			1 C / 24 C	1 GB / 62.9 GB							

# how did we start?

- PuppetDB
- Parser for icinga1 configs
- mcollective virsh worker
- Lexware importer



# lift off!



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# nomenclature

- Modules
  - Inventory
  - Cloud-Provider
- Adapter
  - Source of information
  - collecting information
  - run regularly
- Importer
  - usually run once



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# a matter of perspective

- physical view
- logical view
- informations are mapped together



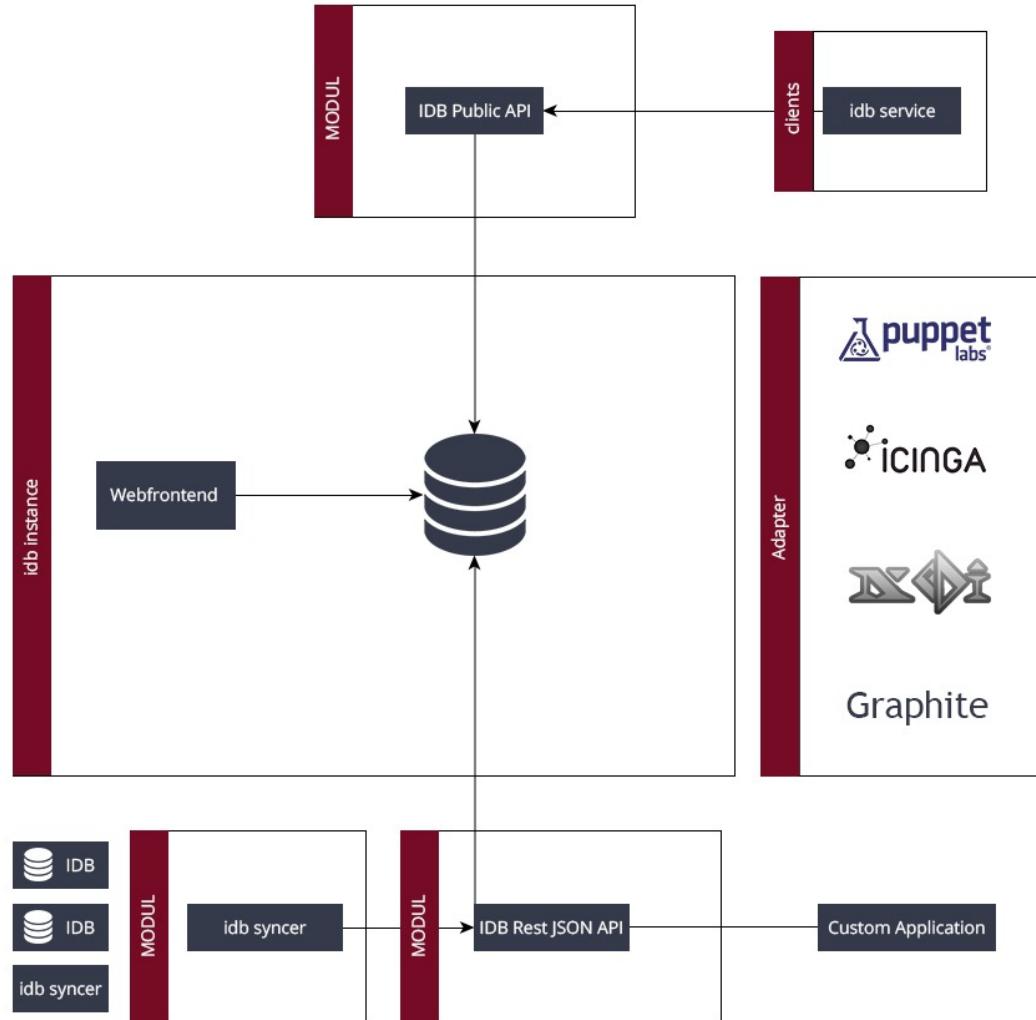
# idb-core

- Ruby on Rails web application
  - Rails 5 since last week
- SQL Backend
- directory service for users
  - ActiveDirectory
  - LDAP
- *privacyIdea* integration
- REST JSON API



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# Architecture

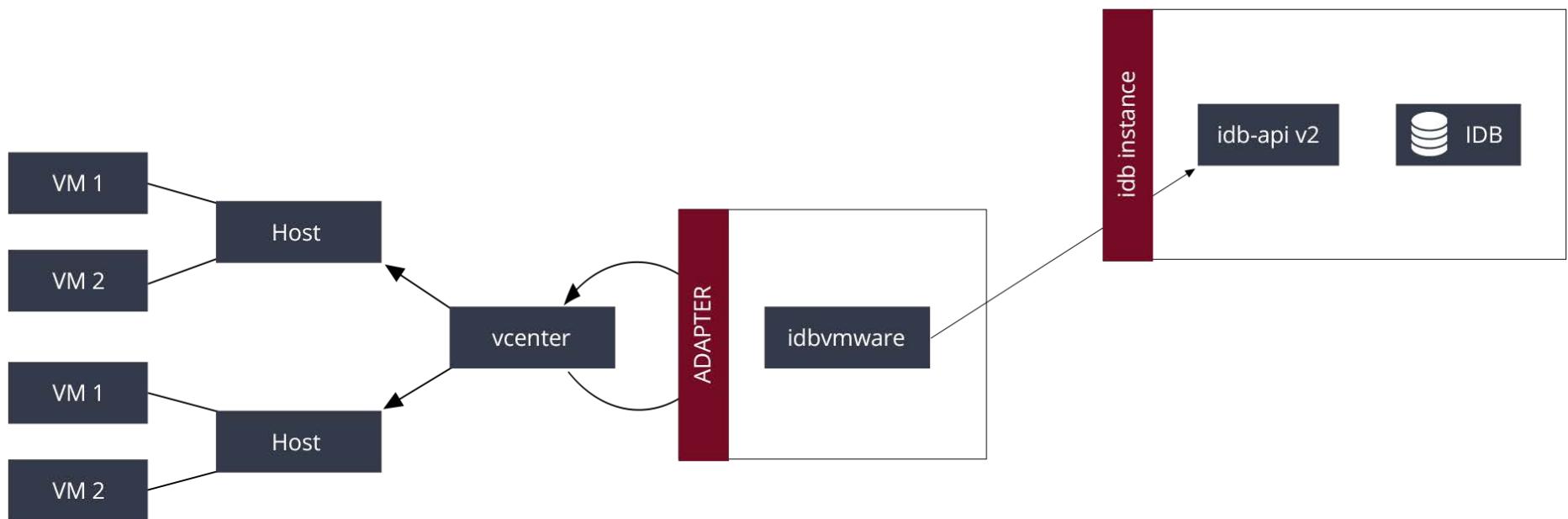


# all your APIs are belong to us



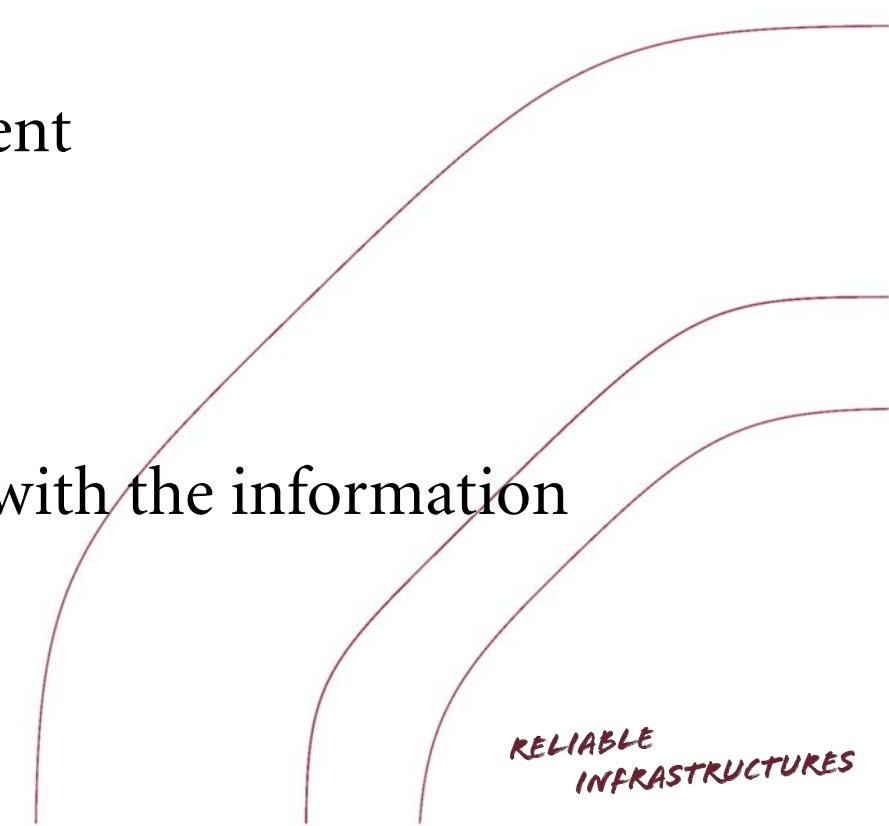
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# Architektur



# Procedure

- Adapter crawls source of information
- Adapter submits json filled with information to idb rest api
  - Adapter requests certain actions
    - eg. create machine if non-existent
- idb decides what to do
- idb has the final say on what is done with the information



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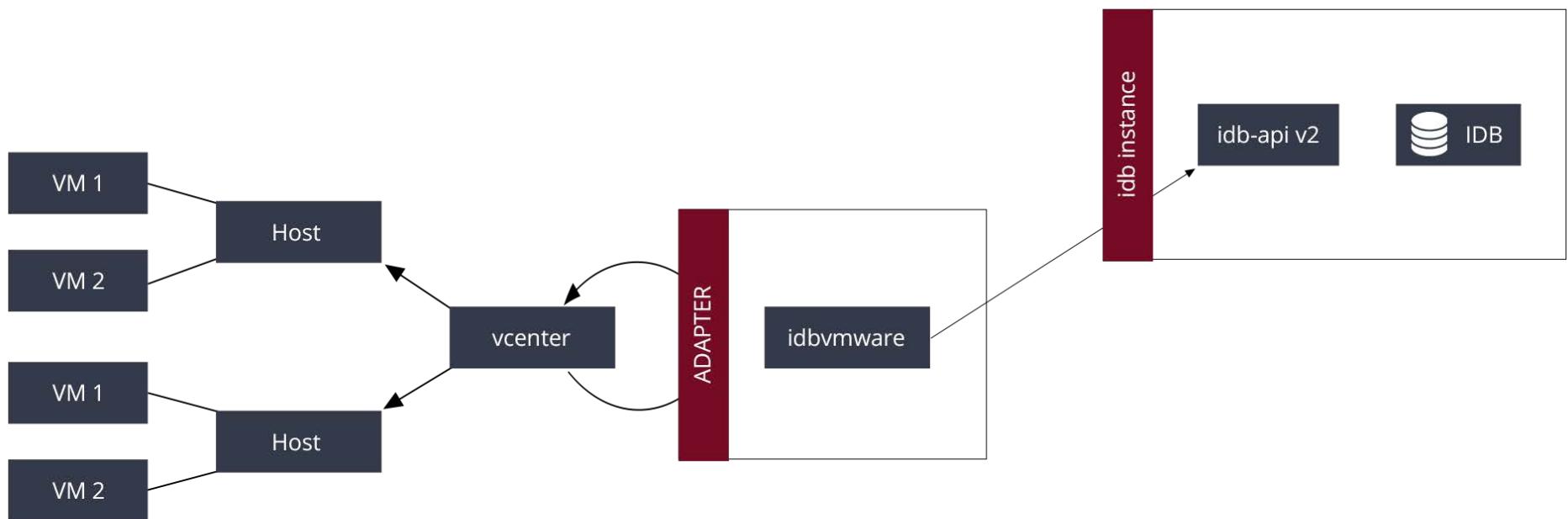
```
{  
  "fqdn": "oliver.hazardous.org",  
  "cores": 6,  
  "nics": [  
    {  
      "ip_address": {  
        "addr": "199.10.13.15",  
        "netmask": "255.255.255.254"  
      },  
      "name": "eth0"  
    }  
  ],  
  "aliases": [  
    {  
      "name": "girotti.hazardous.org",  
      "remove": true  
    }  
  ],  
  "create_machine": "true"  
}
```

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```
curl -X "PUT" "https://idb-dev.office.bytemine.net/
api/v2/machines" \
-H "X-IDB-API-Token: WeuY7geish6uota" \
-H "Content-Type: application/json;
charset=utf-8" \
-d "{\"fqdn\":\"oliver.hazardous.org\",\"cores\":6,\"nics\":[{\"ip_address\":{\"addr\":\"199.10.13.15\",
\"netmask\":\"255.255.255.254\"},\"name\":\"eth0\"}],\"aliases\":[{\"name\":\"girotti.hazardous.org\"},\"remove\":true}],
\"create_machine\":true\"}"
```

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# Architektur



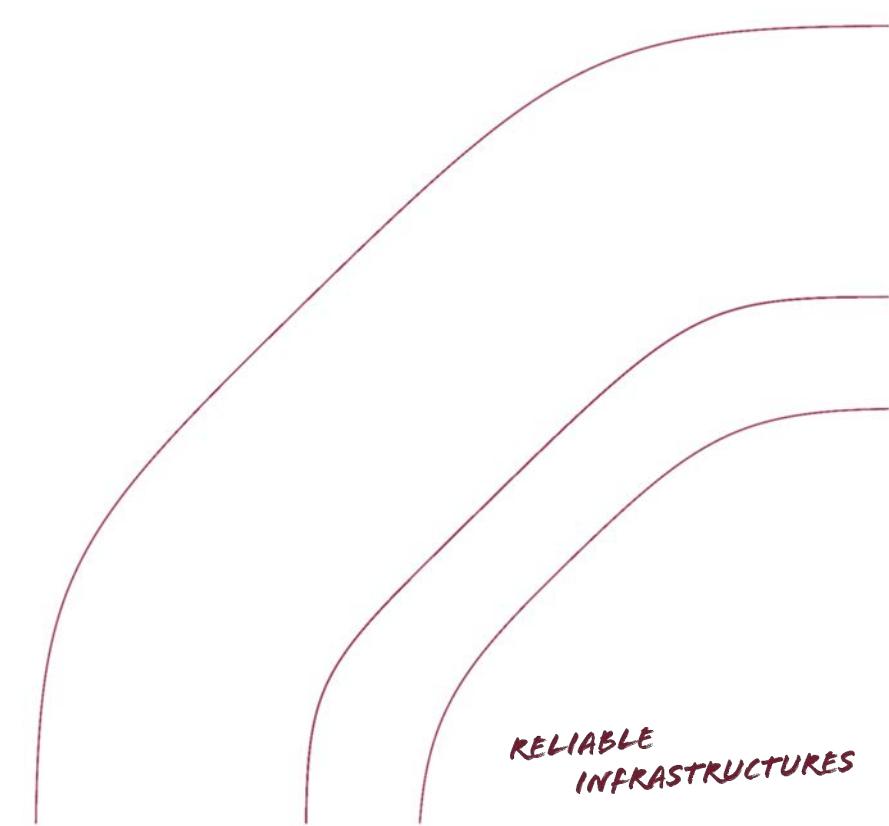
# Cloud Adapter

- Python
- based on libcloud
- fast prototyping possible
- low hanging fruits
  - AWS
  - Azure
  - Digital Ocean
  - libvirt
  - Profitbricks

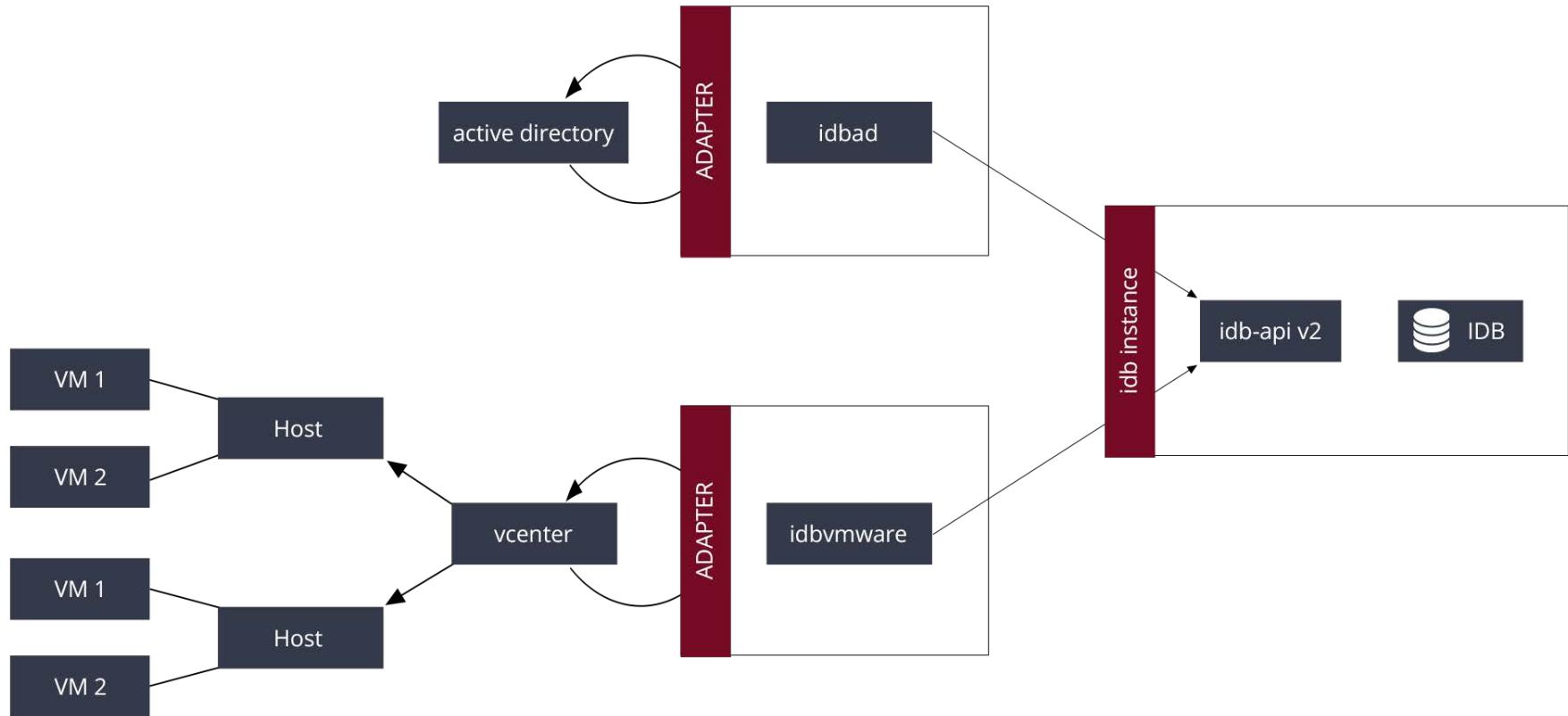


# idbvmware

- go (golang)
- crawls the rest api of vcenter/vsphere
- crawls the environment in order to
  - find new resources
  - find changed resources

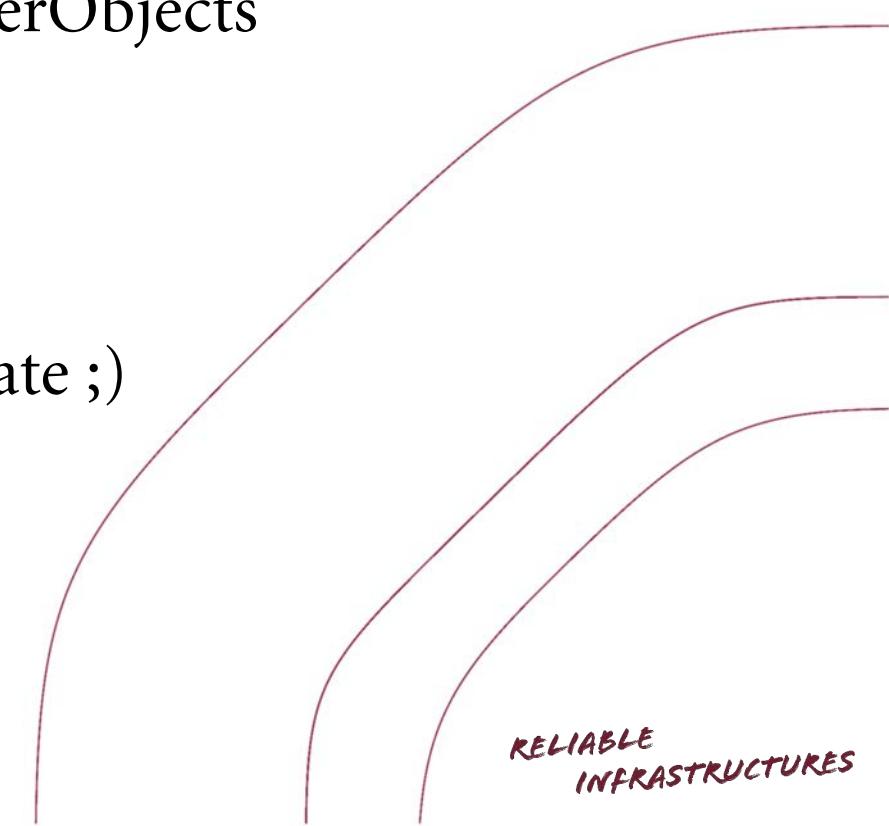


# Architektur



# idbad

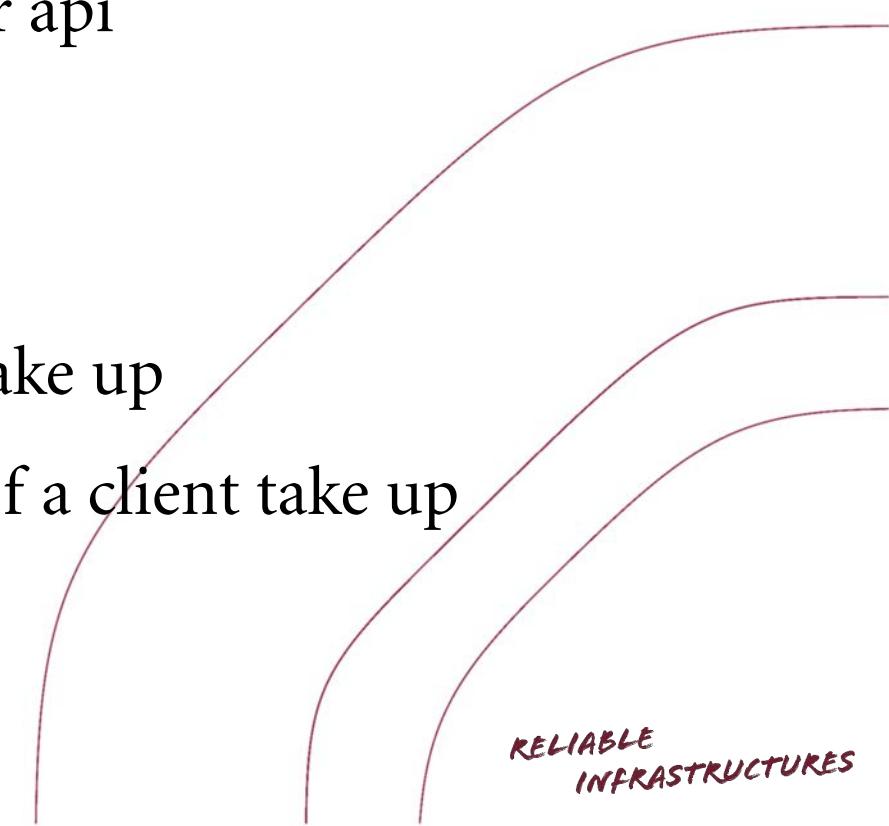
- PowerShell
- crawls the ActiveDirectory
  - based on a filter looks for ComputerObjects
  - submits these to the idb
- Assumption: AD is clean and up to date ;)



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# idbvamp

- go (golang)
- Adapter for bacula community
- crawls the database
  - only bacula enterprise has a proper api
  - backup of which type was run last
- Answers:
  - how much space does a machine take up
  - how much space do all machines of a client take up



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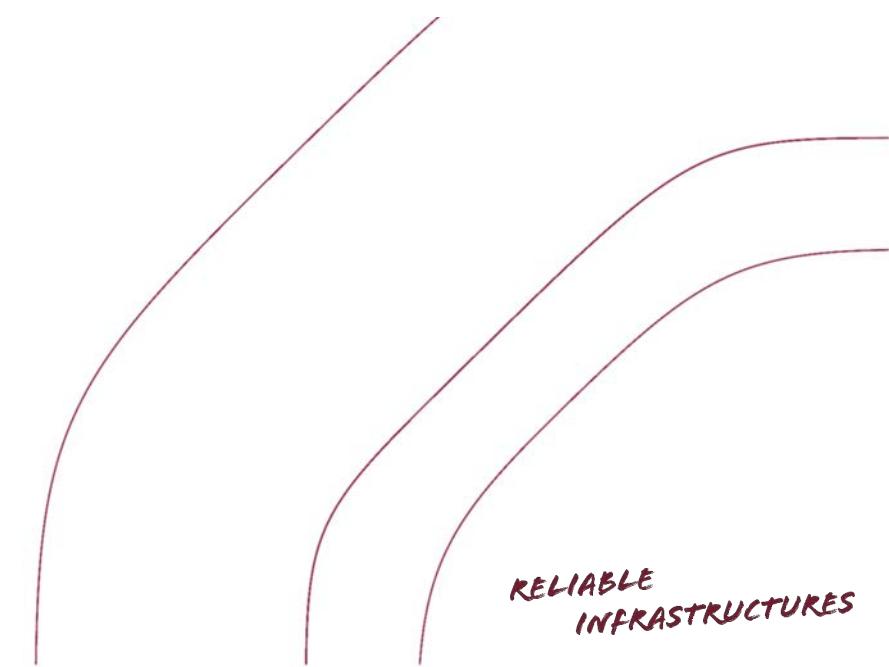
# idbvamp

IDB Machines Maintenance Switches Networks Owners Apps Inventory Location Felix Kronlage

audrey.hazardous.org Host Owner Network Backup Advanced Unattended Pending updates Maintenance History Graphs Edit Delete

**Backup type: Bacula**

Last full run:	Last incremental run:	Last differential run:	
2016-09-04 02:58:32	2016-09-06 01:35:27		
Last full size:	Last incremental size:	Last differential size:	Total backup size:
103 GB	620 MB		104 GB



# idbvamp

Owners								+ New Owner	CSV Import	Deleted
ID	Name	Nickname	Customer ID	Wiki	Machines	Total backup size				
	fel									
12	Kronlage, Felix	fkr	21127		1	104 GB				

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# idb-puppetintegration

- currently holds our “ubuntu-glue”
- */usr/lib/update-notifier/apt-check*
- */var/run/reboot-required*
- based on these, created facts for puppet
  - *idb\_pending\_updates*
  - *idb\_pending\_security\_updates*
  - *idb\_pending\_updates\_package\_names*
  - ....

# idb-puppetintegration

IDB Machines Maintenance Switches Networks Owners Apps Inventory Location Felix Kronlage

Machines Columns + New Machine ? Untracked ? Outdated ✘ Deleted

FQDN	OS	Serviced	Needs Reboot	Unattended	Security updates	Pending updates
fra.bytemine.net	Ubunt					
activemq.fra.bytemine.net *	Ubuntu 12.04	2016-10-26	no	auto reboot	0	
anti.fra.bytemine.net *	Ubuntu 14.04	2016-10-27	no	auto reboot	0	
bacula-sd2.fra.bytemine.net *	Ubuntu 14.04	2016-10-27	no	auto reboot	0	puppetlabs-releas...
collectd.fra.bytemine.net *	Ubuntu 14.04	2016-10-26	no	auto reboot	0	
cpp.fra.bytemine.net *	Ubuntu 14.04	2016-10-22	no	no	20	accountsservice b...
cryptorage-prod.fra.bytemine.net *	Ubuntu 12.04	2016-11-15	no	no	2	firefox-locale-en...
data0.fra.bytemine.net *	Ubuntu 14.04	2016-06-21	yes	no	28	accountsservice a...
dataspace-balancer.fra.bytemine.net *	Ubuntu 14.04	2016-10-21	no	no	20	accountsservice b...

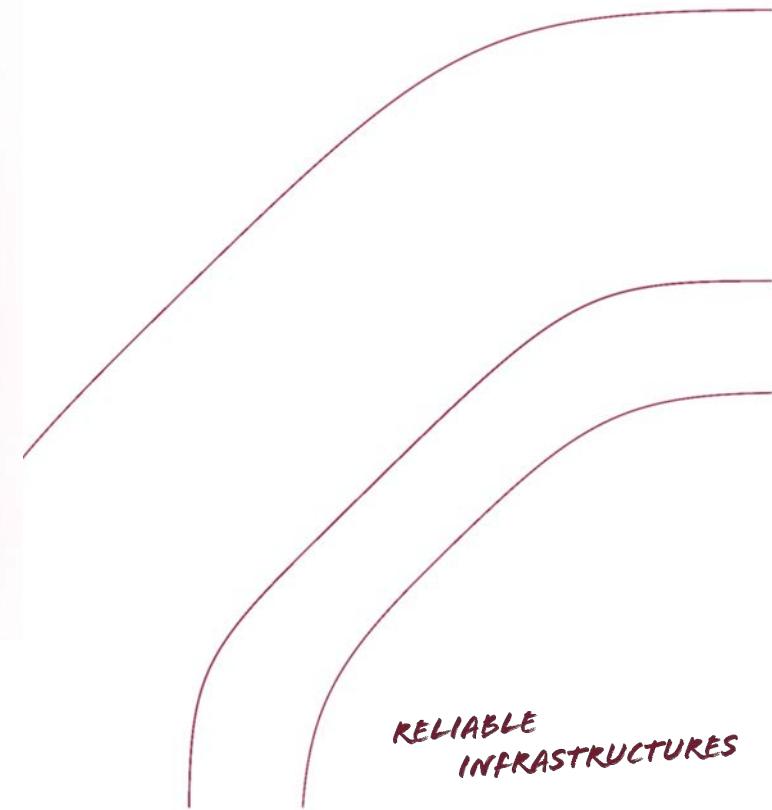
# idb-puppetintegration

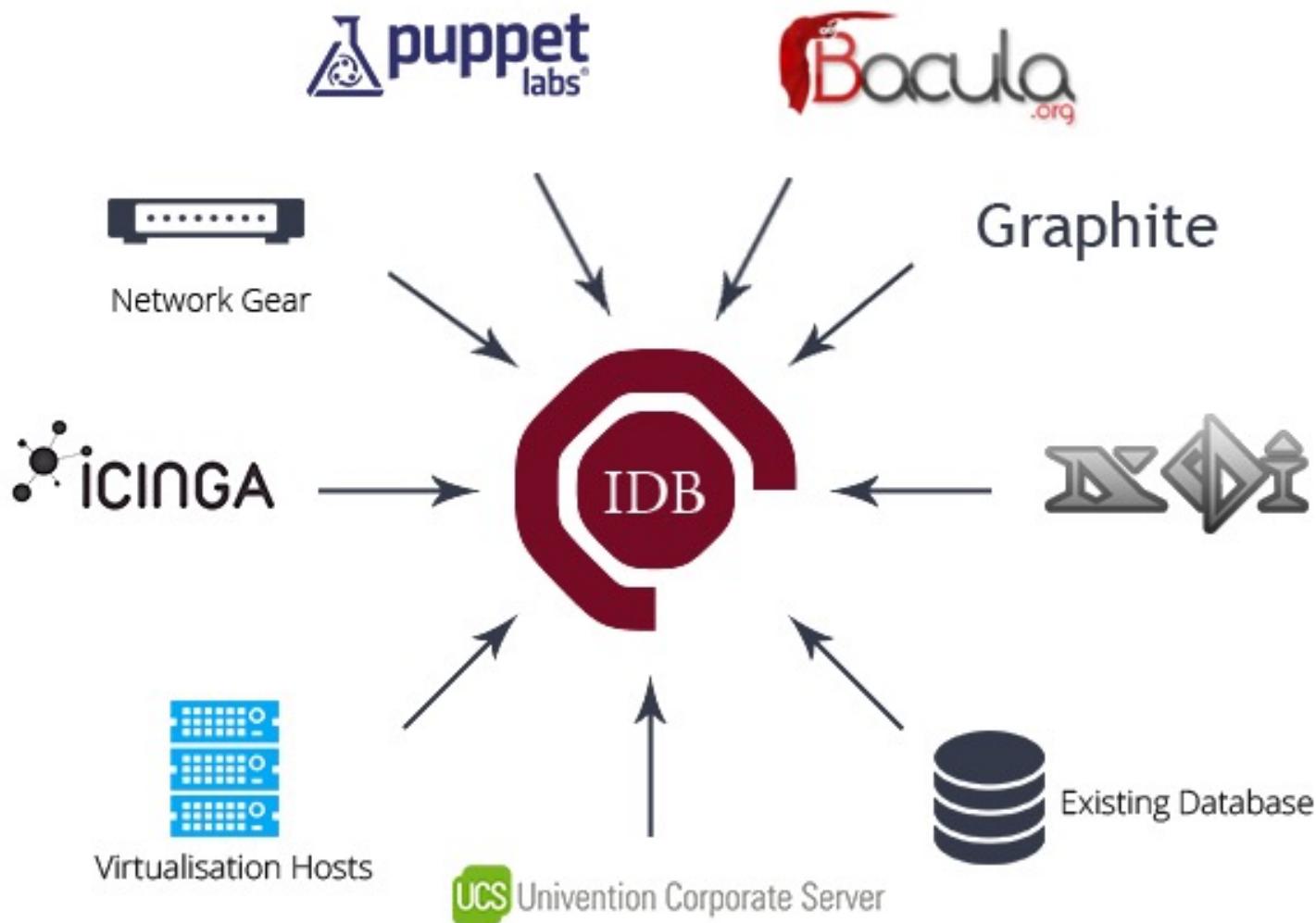
IDB Machines Maintenance Switches Networks Owners Apps Inventory Location Felix Kronlage

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anti.fra.bytemine.net *	Ubuntu 14.04	2016-10-27	no	auto reboot	0	
bacula-sd2.fra.bytemine.net *	Ubuntu 14.04	2016-10-27	no	auto reboot	0	puppetlabs-releas...
collectd.fra.bytemine.net *	Ubuntu 14.04	2016-10-26	no	auto reboot	0	
cpp.fra.bytemine.net *	Ubuntu 14.04	2016-10-22	no	no	20	accountsservice b...
cryptorage-prod.fra.bytemine.net *	Ubuntu 12.04	2016-11-15	no	no	2	firefox-1 accountsservice bind9-host curl dbus dnsutils klibc-utils libaccounts-service0 libbind9-90 libcurl3 libcurl3-gnutls libdbus-1-3 libdns100 libisc95 libisccc90 libisccfg90 libklibc liblwres90 libnl-3-200 libnl-genl-3-200 linux-generic linux-headers-3.13.0-101 linux-headers-3.13.0-101-generic linux-headers-generic linux-image-3.13.0-101-generic linux-image-extra-3.13.0-101-generic linux-image-generic sudo
data0.fra.bytemine.net *	Ubuntu 14.04	2016-06-21	yes	no	28	account
dataspace-balancer.fra.bytemine.net *	Ubuntu 14.04	2016-10-21	no	no	20	account
dovecot.fra.bytemine.net *	Ubuntu 12.04	2016-11-15	no	no	0	
foreman.fra.bytemine.net *	Ubuntu 14.04	2016-10-21	no	no	31	account
hoza05.fra.bytemine.net *	Ubuntu 12.04	2016-11-15	no	no	28	benno-i
icinga2.fra.bytemine.net *	Ubuntu 14.04	2016-10-21	no	no	30	account
kix-test.fra.bytemine.net *	Ubuntu 16.04	2016-10-21	no	no	3	base-fil
ldap.fra.bytemine.net *	Ubuntu 12.04	2016-11-15	no	no	0	
logger.fra.bytemine.net *	Ubuntu 12.04	2016-07-19	no	no	21	curl fon
mail-cus.fra.bytemine.net *	Ubuntu 12.04	2016-11-15	no	no	1	firefox-1
mx2.fra.bytemine.net *	Ubuntu 12.04	2016-10-26	no	auto reboot	0	

# Time to demo





# Eco System

- Creating an eco system
  - idbclient
    - ‘Framework’ in go
    - <https://github.com/idb-project/idbclient>
  - idb-puppetintegration
- Make it nice and appealing to create more
- is it worth it?



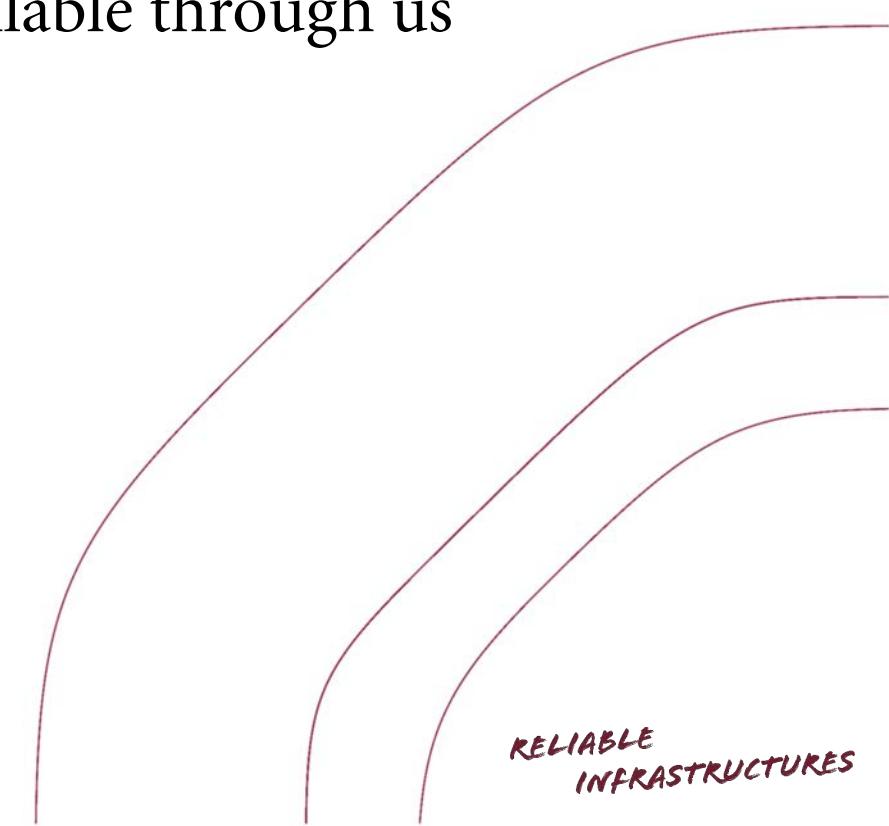
# Implementation with us

- Proof-of-Concept projects with us possible
- individual importers possible
- Adapters as contract work
  - “opsi-model”
- more than just tooling -> consultancy



# Packages

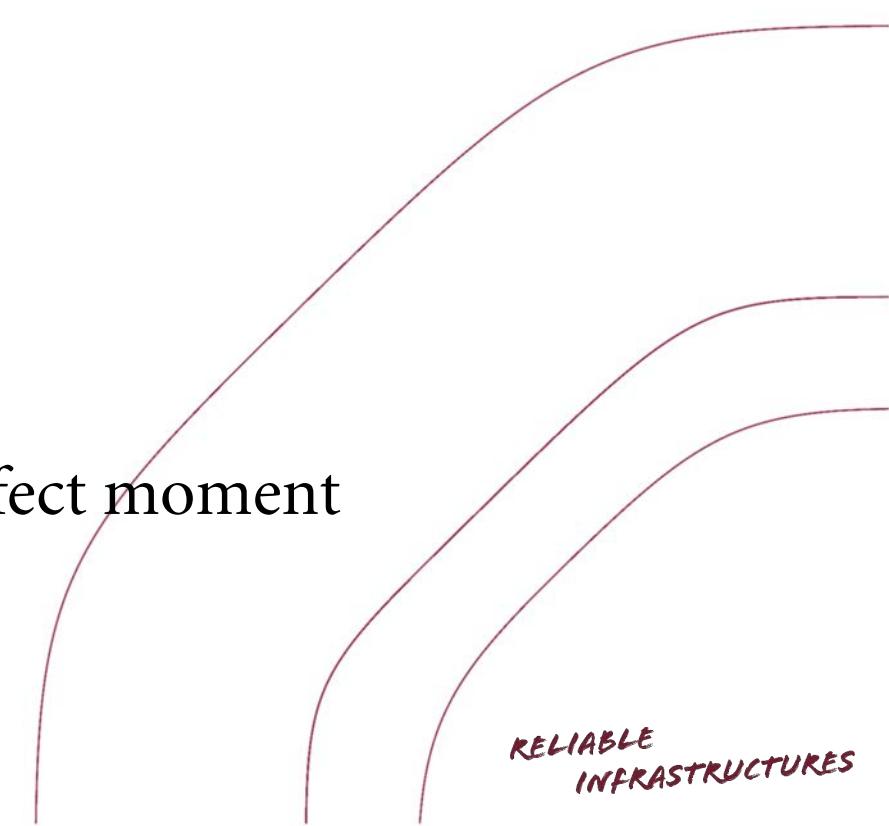
- Ubuntu 14.04 and 16.04
- CentOS / RHEL 6 und 7
- idb-core and all current adapters available through us
- Packages from us come with support



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# Implementing it on your own

- what are your information sources?
  - do you already have some sort of central machine registry?
  - if not, use this as a starting point
    - configuration management!
- Include your co-workers
- First results are the best arguments
- ...and there is never (always) the perfect moment



# Sources

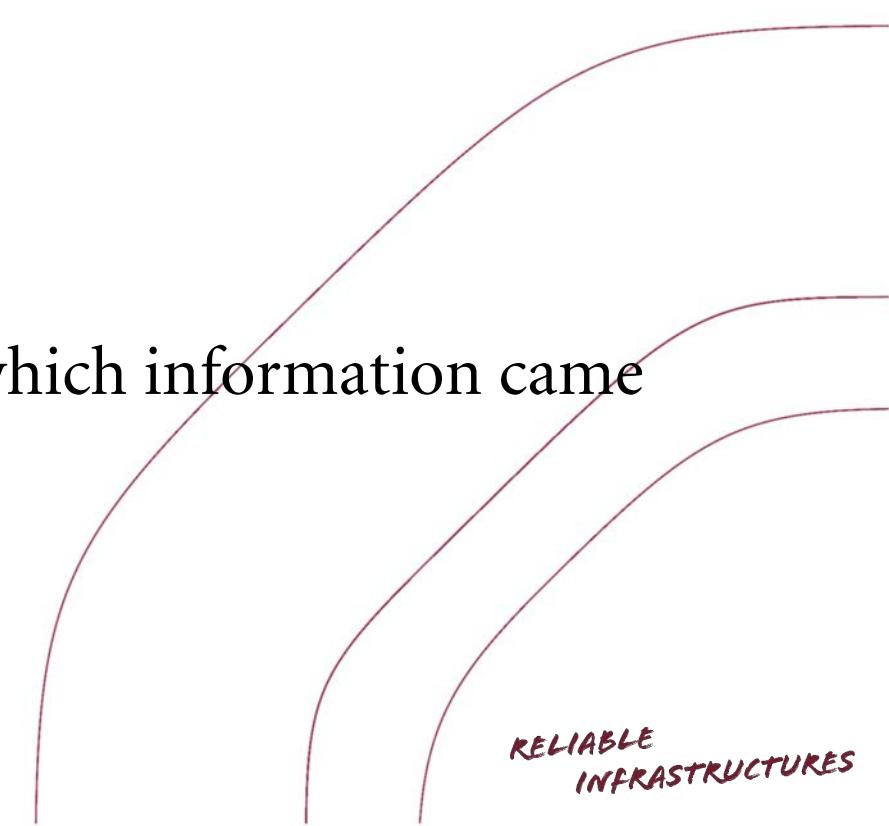
- <https://github.com/idb-project/>
- Ubuntu 14.04 or 16.04
- Ruby 2.2 (via rvm...)
- Apache + mod-passenger
- MySQL
- OpenLDAP
- Redis



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# Roadmap

- 1.6.0 - released last week
  - AGPLv3
- Throughout 1.6.x
  - Software <-> Maschine-Mapping
  - Cloud-Provider finalisation
  - Visibility through which adapter which information came



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# Roadmap

- 1.7.0
  - Integration with UCS
  - Nedi
  - Oxidized
- 1.8.0
  - i18n
  - Multitenancy



# Roadmap

- Configuration and administration via BackOffice Module
- Adapter via plugin architecture
- And a whole new perspective on things



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# Adapters we have in mind

- SUSE Machinery Adapter
- opsi
- Nedi
- oxidized



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# The infamous (almost) last page

- Thanks to the organizers for Ubucon!
- Thanks for inviting me!



# and thank YOU for listening

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