

Small but Powerful

Networking

Datacenter

Storage
Systems

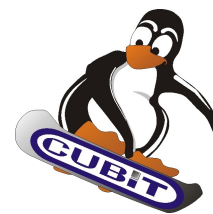
Redundancy



Experiences from designing and rolling out > 300 Debian PlugSize computers

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Agenda

Networking

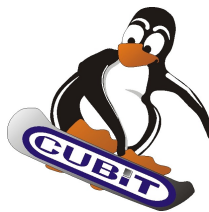
Datacenter

Storage Systems

Redundancy



- Who we are
- Mission
- The DQMS System
- Project Track and Findings
- Hardware Production
- Outcome, Resumee



Who we are - CUBiT

Networking

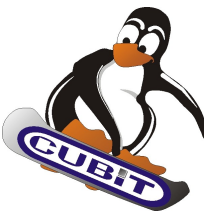
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Redundancy



- Open source for Enterprise
 - Enterprise grade support and service for open source solutions
 - Mission critical support 24x7
- Good place to work at
 - Trying to keep up startup culture
 - Stay at a comfortable size „know your colleagues“
 - Work with long-term partners
- Sustainable growth
 - Keep company size stable



CUBiT Overview

Networking

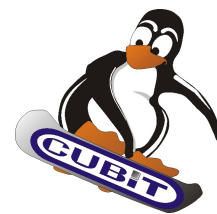
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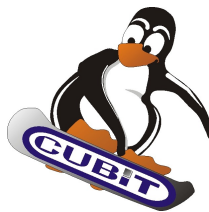
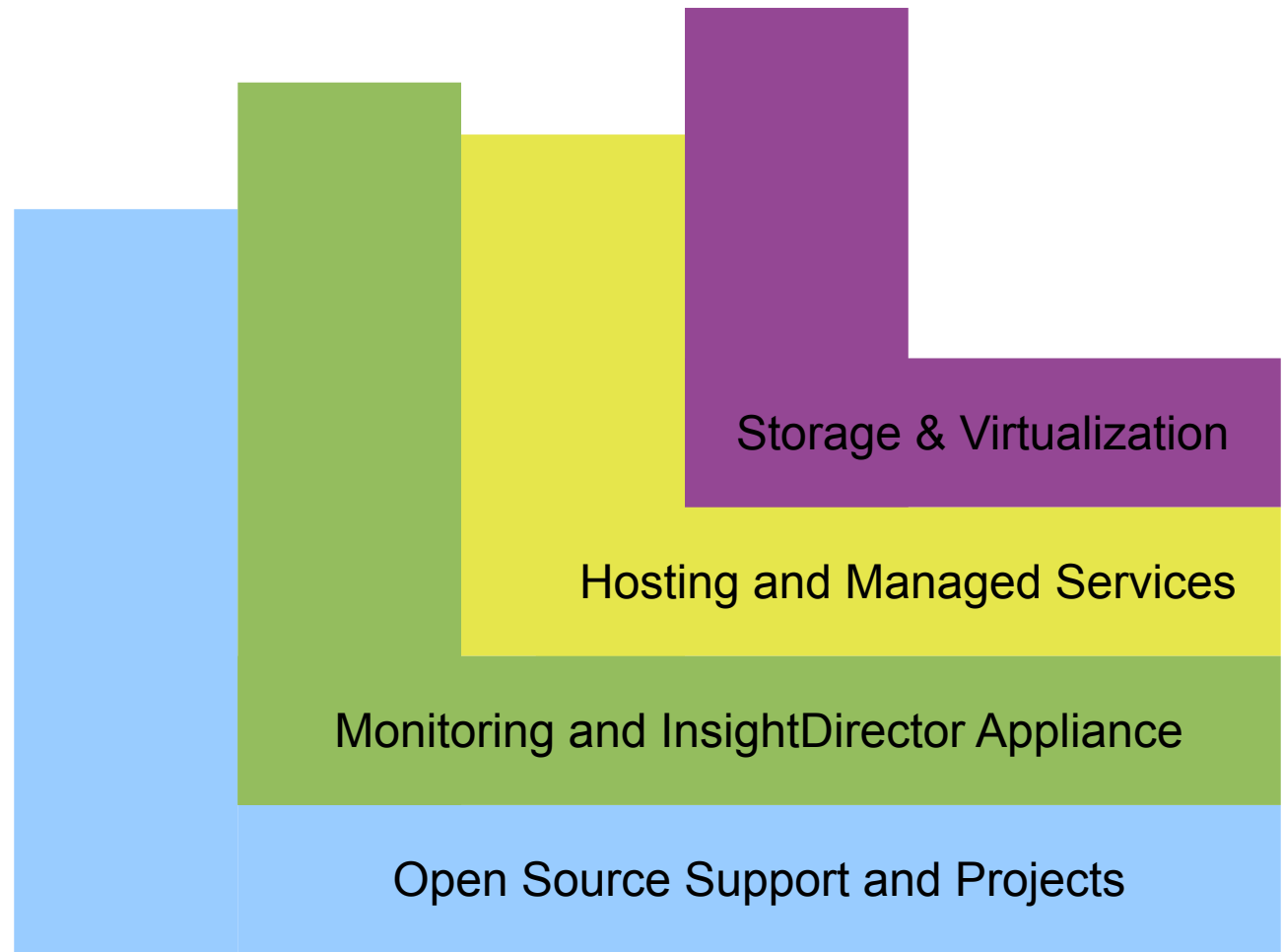
Redundancy



- Service and Solutions Provider
- Privately held limited Company in Austria (GmbH)
- Founded in 1999
- Founder is still acting as managing director
- 100% family owned
- ca. 20 FTE in Vienna and Graz



CUBiT Solutions Chart



CUBiT Solutions - OpenSource

Networking

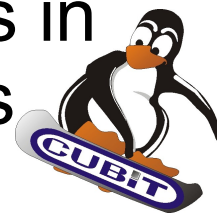
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Redundancy



- Linux high performance and clustering
 - Customers in super computing, number crunching and engineering
- Linux Systems Tuning, Planning, Sizing and operations
 - Database Systems, commercial transactional databases
- Hosting
 - Currently operating 2 datacenters in Vienna and hosting 150+ Servers



CUBiT Monitoring

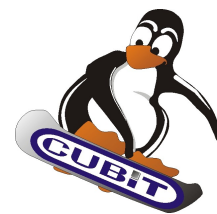
- Originally developed in 1999 for monitoring of own hosting
- Monitoring solutions since 2002
- Since 2007 own appliance „Insight Director“
- Various project spin-offs and SLA measurement appliances
- Special projects

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Mission

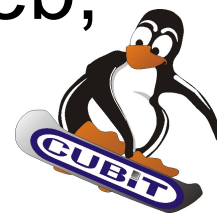
- Monitor ISP experience with test sets for residential customers
- Onsite-“on-premise“ device
- Disconnected sampling
- Monitor up to $> 100\text{MBps}$ line speed (fibre to the home)
- Centralized externally hosted results and operations database
- Replay customer use cases (web, dns, ...)

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Solution Brief – Key Facts

Networking

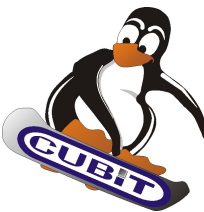
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Redundancy



- Crisp modern hardware platform
 - With a charming form factor
- Plenty of resources
- → enables lightweight scripting
- Using field proven scheduling framework
- On premise RDBMS (sqlite)
- Extensible platform
- GigE capable



Hardware

- PlugPC form factor
- Based on Marvell SheevaPlug TM

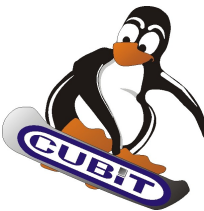


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Hard facts

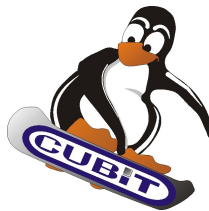
- Marvell SheevaPlug
- Plugsize PC
- Onboard gigE (not USB based)
- Big flash (512M)
- Big memory (512M)
- Powerful CPU (1,2GHz)
- USB 2.0 Host

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Hard and Software

Networking

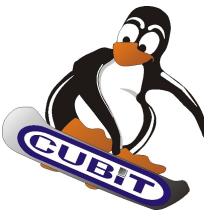
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Redundancy



- Hardware plentiful
- Runs standard Debian/Ubuntu Linux Distro
- Standard based software
 - Not embedded „shrink to fit“ platform
 - → easily extendable
 - → low cost of integration of additional software / tools
 - → runs complete open source stack and available tools



Toolchain and Architecture

Networking

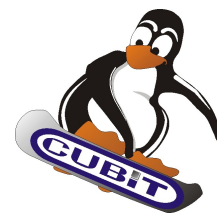
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Redundancy



- Lightweight developing solution
- Only Scripting / post 3G languages used (perl, bash, ...)
- Low development efforts
- Featureset is influenced by customer
- Built on years of experience
- → will reuse existing measurement appliance probe code



Systems Architecture

Networking

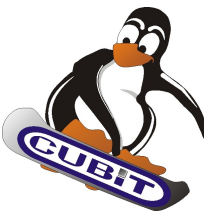
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- Client / Server Application
- Server hosted at CUBiT in Vienna
- Measurement servers might also be provided
- → Overview of Client / Server transaction protocol handshake follows (basic operation states overview – in german)



Client Request

Networking

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Redundancy



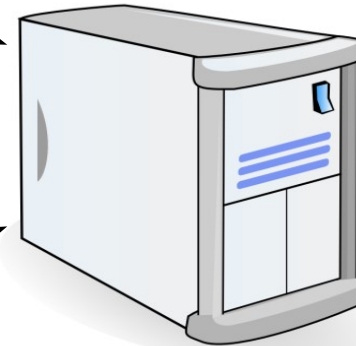
PlugPCs

- Sammeln regelmäßig Daten
- Senden Ergebnisse an Server



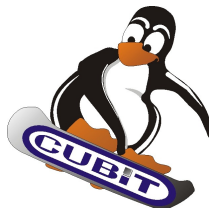
Server

- Prüft Client ID
- Führt gewünschte Aktion aus
- Trägt Daten in Datenbank ein
- Sendet Response zurück

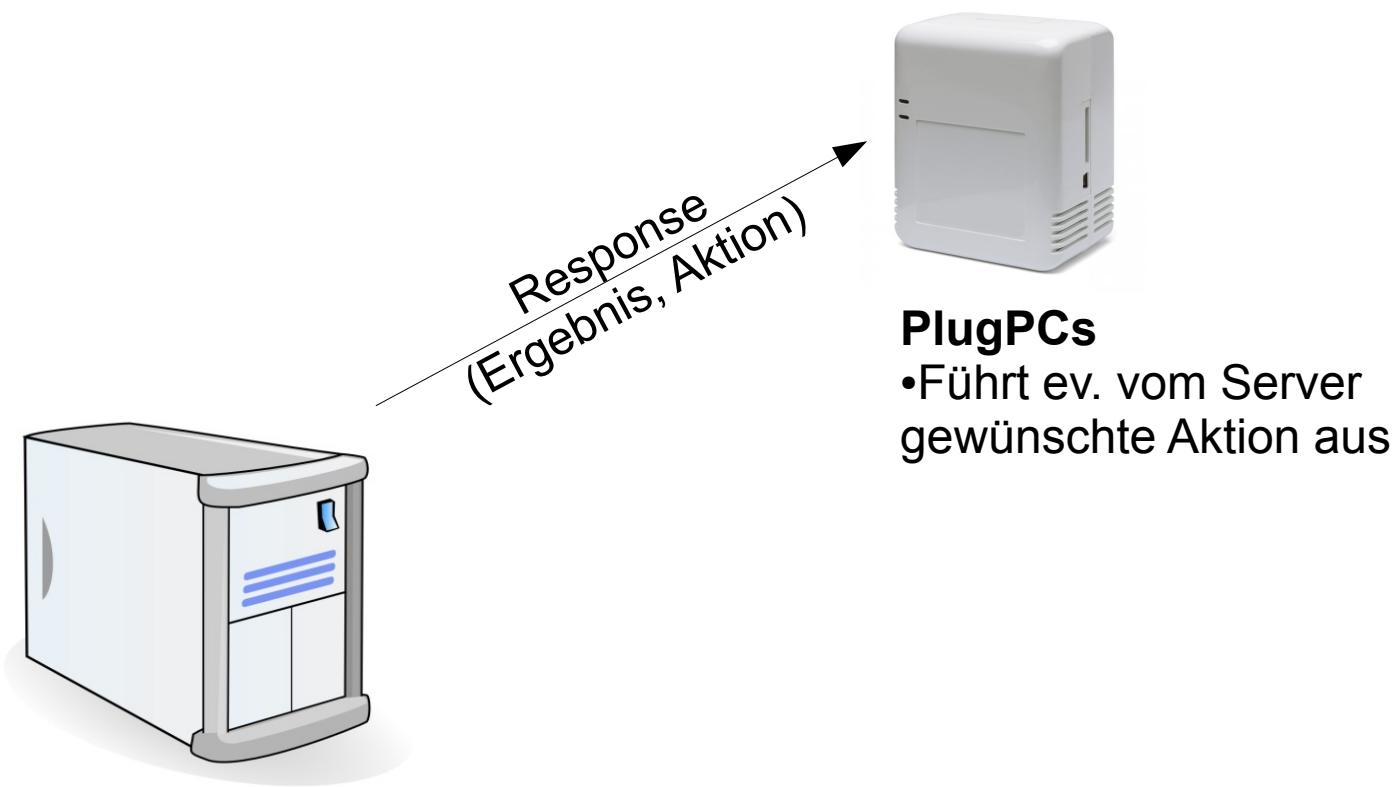


Request
(Aktion, Parameter)

Request
(Aktion, Parameter)



Server Response

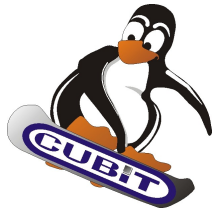


Server

- Verarbeitet Daten vom Client
- Formuliert eine Response
 - Ergebnis (Success/Failure)
 - Clientseitige Aktion

PlugPCs

- Führt ev. vom Server gewünschte Aktion aus



Genereller Ablauf

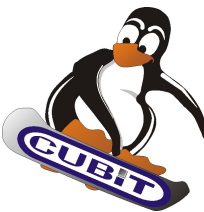
- Der Client sendet Request an den Server.
 - Requests enthalten immer die MAC-Adresse des Clients (Client ID)
- Der Server bearbeitet Request und antwortet an den Client
- Der Client führt eventuell vom Server gewünschte Aktion aus

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Server Action: HTTP/FTP Test

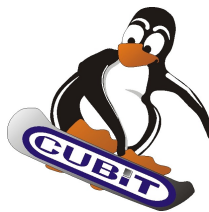
- Der Client holt URLs aus der beim Update übermittelten Liste
- Der Client lädt die Datei herunter und misst die Zeit (Millisekunden)
- Die Daten werden an den Server übermittelt
- Der Server prüft ob die Daten gültig sind und trägt diese in die Datenbank ein

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Server Action: Iperf Test

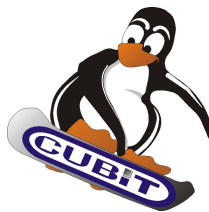
- Der Client liest die IP-Adresse des Iperf Servers aus der Konfigurationsdatei
- Der Client startet einen Iperf Test auf den Iperf Server
- Die Daten (Bits/Sekunde) werden an den Server übermittelt
- Der Server prüft die Daten auf Gültigkeit und trägt diese in die Datenbank ein

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RDBMS as Solution

Networking

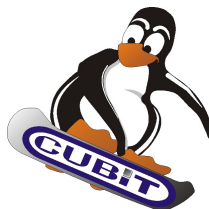
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- MySQL Database with open layout
- Easy Web Interface to manage daily task
- Local on-premise SQL (SQLite or MySQL/embedded) for offline result caching
- Customer can run SQL queries against relational model



Project Track and Findings

Networking

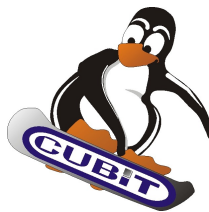
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Redundancy



- Projekt Kick-Off and definition
- First samples; initial tests and prototypes
 - → engineers require hardware
- Working with the customer to actually get the project (20-40% of work is actually pre-sales)



Taking the order – and subsequent steps

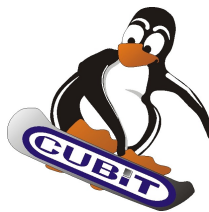
- Taking the order
- Buying Hardware
- Installing Hardware
- Creating Software
- Shipping

Networking

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Storage Systems

Redundancy



Buying the Hardware

Networking

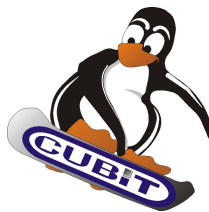
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Redundancy



- Supplier based in Anaheim, CA
- Lots of Chinese people
- Different corporate culture
- Production times and shipping
- How to send money



How to buy and pay

Networking

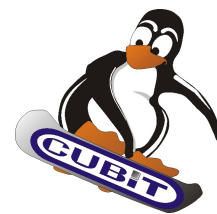
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- Payment first in USA
- How to pay
- Production time
- Customs and Shipment
- Banks, Problems and Solutions



Installation

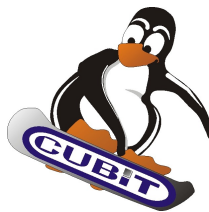
- Install in Austria required
- Each installation requires dedicated PC
- Install pods and process
 - 2 shifts
 - Labelling
 - Installment system
 - Databases and switch-work
 - USB Sticks, Storage,...
- Cooling in summer :-)

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Shipping and Rollout

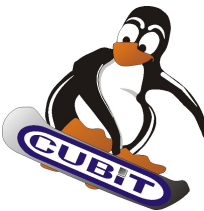
- Packaging
- Shipment
- Actual Delivery
- Reaching the Milestone
- Getting first results
- Hotfixing first Software topics
- VIP Users and statistics

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Redundancy



Takeaways 1

Networking

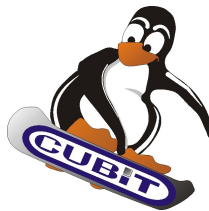
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Redundancy



- Implementing a cool monitoring project is perfectly doable in Austria
- Even small OpenSource companies need to work professional
- Have lawyers and bankers available
- Know your suppliers market, know your customers market



Takeaways 2

Networking

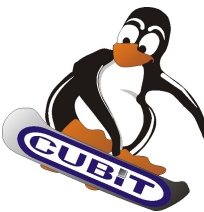
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Redundancy



- Do not under-estimate administration and project work
- Do not underestimate pre-sales to post-sales ratios
- Do not try to work on empty pockets
- Do not understate your company. Work on wordings



Takeaways 3

Networking

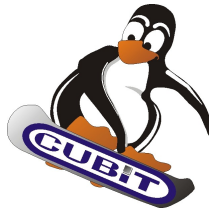
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Redundancy



- Business is complicated
- Technology is easy
- Big clients and big suppliers and customs and government/taxes tend to require handling resources
- Have people at hand to „handle things“



Takeaways 4

Networking

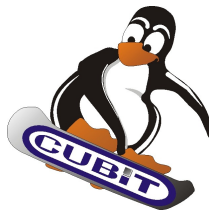
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Storage Systems

Redundancy



- Keep taxes in mind
- Keep temperature and cooling in mind
- If you ship hardware you need a hardware team as well
- Software is easier to fix than hardware
- Have online software update ready



Takeaways 5

Networking

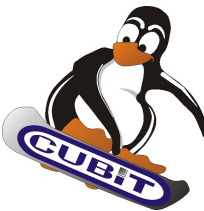
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Redundancy



- If you work professional chances are better for success
 - Learn to communicate with executives (understand what tools and browsers etc they have)
 - Plan all interfaces for mobile browsers
 - Keep humor and patience
 - Have fun!



Danke für Ihre Aufmerksamkeit!

www.cubit.at



open source for enterprise

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