

Autumn Term 2017 Department of Computer Science



FHO Fachhochschule Ostschweiz

Motivation

Today, most individuals and small to mediu enterprises make backups on cloud enviro ments or local storage media as e.g. hard di drives or network attached storage syster (NAS).

These solutions require either high person efforts to maintain local storage media or high level of trust in a third party stora provider.

Currently, there are no backup systems available able on the market which are both easy to u and provide the user with a high level of da security and privacy.

Results

The architecture consists of backup nod which store and distribute data directly ove network connection and a client application that creates and restores backups to or from nodes. Lastly, a management system is int duced to allow users to manage multi backup nodes.

The presented prototype demonstrates the ability of our proposed architecture, introd ing a reduced feature set. The prototype create, distribute and restore unencrypt backups.

Study Project



Fabian Hauser

Redbackup: A Redundant Distributed Backup System Prototype

	Draiget Caple Ar	nroach and	l Tachnalag	
um	Project Goals, Approach and Technolog A backup system which solves this issues			
on-	cure and reliable application to create a			
disk	permit users without further domain know			
ems	figure the applica			
	To meet this re	equirements,	we furthe	
nal	comprehensive architectural design.			
or a	The subsequent implementation of an a			
age	place in the Rust	place in the Rust system programming la		
	during the cours	y 1	0	
/ail-	stable yet efficien	•	-	
use				
lata				
ιατα		client		
		[Container]		
		software on the users computer, responsible for creating and restoring backups	user interfa	
des,	[redbackup protocol]		et target nodes from [redbackup protocol]	
er a				
tion	node		management	
	[Container] manages and replicates	- sends metadata [redbackup protocol] -	[Container] orchestrates the	
rom	backup (meta-)data		configuration of the sy	
itro-		replicates to [redbackup protocol]	~	
tiple	stores chunks in notifies [e.g. method [e.g. method calls, RPC] calls, RPC]			
			> node	
e vi-	storage			
duc-	[Container]		storage	
can	persists data and preforms integrity checks			
oted				
	redbackup			

C4 Container diagram illustrating the high-level shape of the redbackup software system and how responsibilities are distributed.



Advisor Project Partner

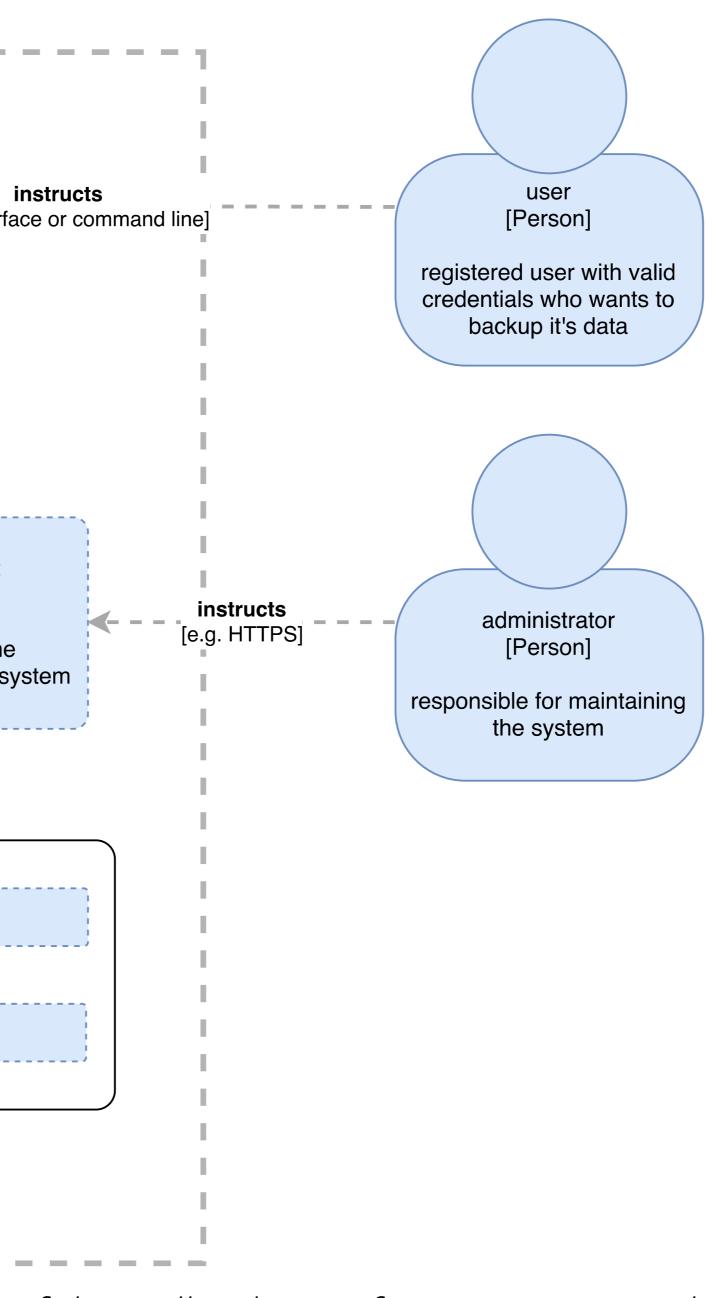
Raphael Zimmermann

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must not only provide a seand store backups, but also nowledge to install and con-

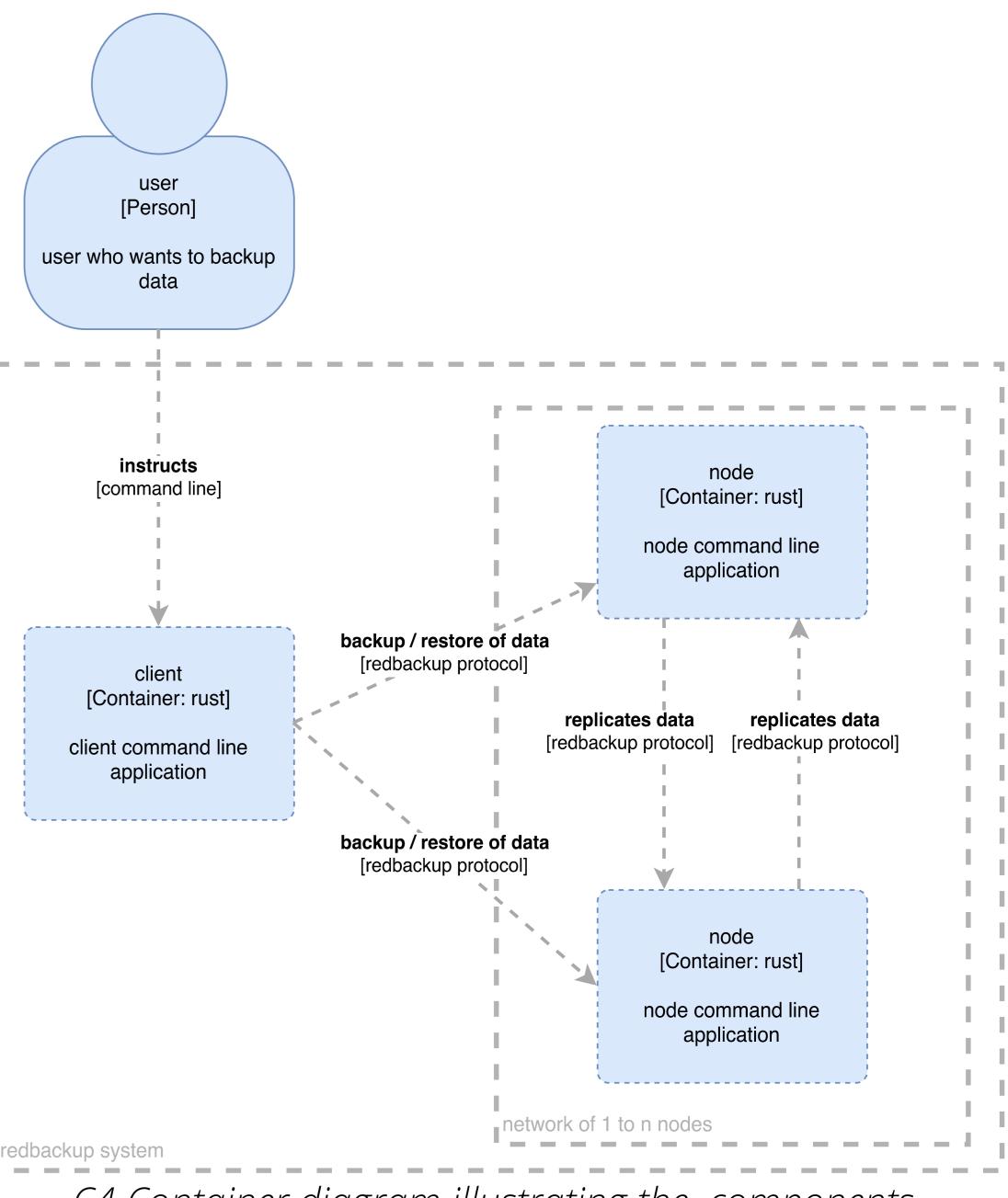
er analysed and created a

architecture prototype took language, which we learned enabled us to create a very



Prospects

To extend the prototype into a fully functional backup system, there are multiple functionalities and improvements that may be implemented. The main missing parts are backup encryption, splitting of backup data, advanced data distribution strategies and the management application. With our prototype, we demonstrate the viability of the architecture and pave the way for further implementations.



C4 Container diagram illustrating the components as implemented in the prototype