



Overview

bareos

Philipp Storz,
bareos GmbH
& Co.KG

Introduction

What is
Bareos?

People

Building

news in stable

New in Beta

Future Project

1 Introduction

2 What is Bareos?

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What can you expect?

- 1 What is Bareos?
- 2 Who are the persons behind Bareos?
- 3 How is bareos build?
- 4 What is new in Bareos?
- 5 What is planned for the future?



Overview

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What is Bareos?

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- Networkbased multi-platform backup solution
- bacula fork
- License: AGPL
- Massive code cleanup
- Sourcecode hosted at GitHub



Why Bareos?

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Angesagte
Suchanfragen

Top Charts **Neu!**

Erkunden

Suchbegriffe

bacula

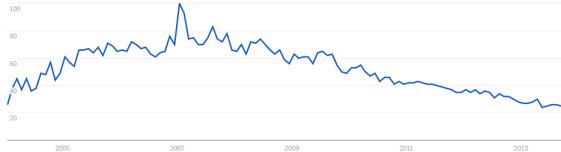
+ Suchbegriff
hinzufügen

Begrenzen auf

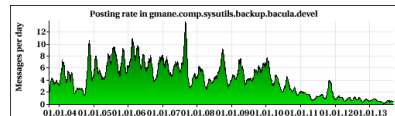
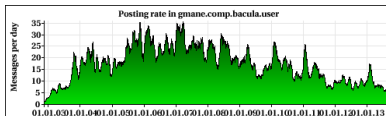
Interesse im zeitlichen Verlauf

Die Zahl 100 steht für das höchste Suchinteresse.

☐ Nachrichtenschlagzeilen ☐ Prognose



- bacula.org project leader did not accept patches
- New things only in closed source "Bacula Enterprise Edition"
- Activity of bacula community declining





Goals

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- 100% free software
- continuous development
- compatible to bacula as far as possible
- cleanup the configuration where needed



Goals 2

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- orientation on user's requirements
- offer support and subscription to business users
- fair pricemodel and good product to enable continuous development
- offer packages for all common OSe



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Who stands behind Bareos?

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■ Marco van Wieringen



■ Philipp Storz



■ Maik Außendorf



■ Stephan Dühr



■ Jörg Steffens

- Open Source affine crew
- 100% AGPL
- 100% owner-financed
- 100% made in europe
- no NSA backdoors



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Sourcecode

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■ Sourcecode on GitHub

The screenshot shows the GitHub repository page for `bareos / bareos`. The repository has 338 commits, 3 branches, 9 releases, and 9 contributors. The main repository is described as "Main repository with the code for the libraries and daemons <http://www.bareos.org>". The current branch is `master`. The commit history shows a recent commit by `pslorz` titled "SelfTest fileset added" 7 days ago. The repository also has a `gitignore` file. The right sidebar shows the repository's star and fork counts (4 stars, 4 forks) and links to the code, issues, pull requests, wiki, pulse, graphs, and network.

Commit	Author	Message	Time
SelfTest fileset added	pslorz	SelfTest fileset added	7 days ago
autoconf	pslorz	Add FreeBSD -icam to build flags.	19 days ago
debian	pslorz	Added query file also to deb packages	18 days ago
manpages	pslorz	Add missing bareos-fd cmdline flags.	3 months ago
platforms	pslorz	Fixed rights on tray-monitor.conf	7 days ago
po	pslorz	Changes from patched Bacula to Bareos.	4 months ago
scripts	pslorz	Fix problems due to replaying history to do new fork.	4 months ago
src	pslorz	SelfTest fileset added	7 days ago
test	pslorz	Try to fix travis for new pool names.	8 days ago
.gitignore	pslorz	Changes from patched Bacula to Bareos.	4 months ago

■ <https://github.com/bareos/bareos>



Sourcecode

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- Sourcecode, regressions and Docs at GitHub
- `git clone git://github.com/bareos/bareos`
- `git clone git://github.com/bareos/bareos-regress`
- `git clone git://github.com/bareos/bareos-docs`



Sourcecode Documentation

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■ Doxygen Documentation

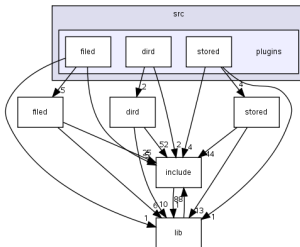
bareos

Main Page Related Pages Namespaces Classes Files

bareos > src > plugins

plugins Directory Reference

Directory dependency graph for plugins:



Directories

■ <http://regress.bareos.org/doxygen/html/>



Sourcecode Documentation

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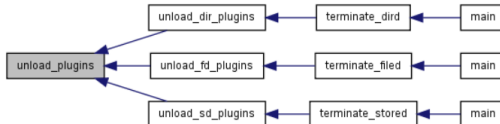
- Doxygen Documentation created daily
- <http://regress.bareos.org/doxygen/html/>
- call/caller graph
- good introduction to sourcecode

```
void unload_plugins ( alist * plugin_list )
```

Here is the call graph for this function:



Here is the caller graph for this function:





Bug- und featuretracking

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■ Mantis Bugtracker with anonymous access

Bareos Bug Tracker

Anonymous | [Login](#) | [Signup for a new account](#) 2013-09-16 10:14 CEST

[Main](#) | [My View](#) | [View Issues](#) | [Change Log](#) | [Roadmap](#) | [Repositories](#) | [Search](#) | [My Account](#)

Unassigned [^] (1 - 10 / 24)	Resolved [^] (1 - 10 / 12)
<div>0000225 Windows installer can't upgrade in place [All Projects] installer / packages - 2013-09-13 19:02</div>	<div>0000248 LSB conformity of init scripts [All Projects] General - 2013-09-06 19:18</div>
<div>0000248 LSB conformity of init scripts [All Projects] General - 2013-09-06 19:18</div>	<div>0000251 No traceback produced for sd, dir on Ubuntu 12.04 [All Projects] director - 2013-09-06 16:32</div>
<div>0000198 Implement "include directory" directive for configuration files [All Projects] General - 2013-08-27 13:36</div>	<div>0000240 Copy job definition requires unnecessary settings [All Projects] director - 2013-09-06 16:29</div>
<div>0000163 Messages Ressource does not get the correct volume in Variable %V when doing Copy jobs [All Projects] director - 2013-08-03 16:18</div>	<div>0000213 enable remote plugin into query [All Projects] file daemon - 2013-09-06 16:28</div>
<div>0000205 Allow multiple copy jobs to run at the same time [All Projects] director - 2013-07-12 17:24</div>	<div>0000236 Implementation of restore using a set of copies of an original job [All Projects] director - 2013-08-13 03:12</div>
<div>0000197 Implement a file change monitor to create a filelist for incremental backups during runtime [All Projects] file daemon - 2013-07-12 17:16</div>	<div>0000196 Plugin framework enhancements [All Projects] General - 2013-08-13 03:12</div>
<div>0000204 Windows bat hangs if there is pending console output but works after it's stopped and restarted [All Projects] bat - 2013-07-12 10:57</div>	<div>0000187 Implement auto inflation/deflation in the storage daemon. [All Projects] storage daemon - 2013-08-13 03:12</div>
<div>0000199 Plugin do backup Microsoft Sql Server (mssql) server [All Projects] file daemon - 2013-07-05 16:15</div>	<div>0000207 Implement plugin options passing [All Projects] General - 2013-08-13 03:12</div>
<div>0000123 Upgrade to full when fileset changes could be handled more intelligently. [All Projects] director - 2013-06-21 17:32</div>	<div>0000146 Add command for doing a name resolution on client. [All Projects] director - 2013-08-13 03:12</div>
<div>0000012 Implementation of Python Director Plugin [All Projects] director - 2013-06-05 13:05</div>	<div>0000163 Messages Ressource does not get the correct volume in Variable %V when doing Copy jobs [All Projects] director - 2013-08-03 16:18</div>
<div>Recently Modified [^] (1 - 10 / 165)</div>	
<div>0000225 Windows installer can't upgrade in place [All Projects] installer / packages - 2013-09-13 19:02</div>	

■ <http://bugs.bareos.org/>



Bug- und featuretracking

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- Bugs und Features are followed here
- Feature Process
 - regression test
 - documentation
 - publishing

Feature Process

regression created, documentation written, published



Regression Tests

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■ cdash regression tests

Login

All Dashboards

Monday, September 16 2013 08:17:46 UTC



Bareos

Dashboard

Calendar

Previous

Current

Project

No file changed as of Sunday, September 15 2013 - 22:00 UTC

Show Filters

Advanced View

Auto-refresh

Help

Nightly

Site	Build Name	Update			Configure		Build		Test			Build Time
		Files	Error	Warn	Error	Warn	Error	Warn	Not Run	Fail	Pass	
dassIT-bareos-regression-bacula-regression-sles10-32	13.3.0-01Aug13-mysql-suse-10	0	0	0	3	5	0	0	0	130	8 hours ago	
PlanetsCommunications-bareos-iaetus	13.3.0-01Aug13-postgresql-SunOS-solaris-5.11	0	0	0	0	10	0	0	0	113	1 hour ago	
dassIT-bareos-regression-bacula-regression-centos5-32	13.3.0-01Aug13-sqlite3-centos-5.9	0	0	0	0	17	0	0	0	130	6 hours ago	
PlanetsCommunications-bareos-iaetus	13.3.0-01Aug13-sqlite3-SunOS-solaris-5.11	0	0	0	0	10	0	0	0	113	2 hours ago	
dassIT-bareos-regression-bacula-regression-centos5-64	13.3.0-01Aug13-mysql-centos-5.9	0	0	0	0	17	0	1	1	129	4 hours ago	
dassIT-bareos-regression-bacula-regression-centos5-32	13.3.0-01Aug13-mysql-centos-5.9	0	0	0	0	17	0	1	1	129	3 hours ago	
dassIT-bareos-regression-bacula-regression-centos6-64	13.3.0-01Aug13-mysql-centos-6.3	0	0	0	0	17	0	1	1	129	8 hours ago	
dassIT-bareos-regression-bacula-regression-centos6-32	13.3.0-01Aug13-mysql-centos-6.3	0	0	0	0	17	0	1	1	129	6 hours ago	
dassIT-bareos-regression-bacula-regression-sles11-32	13.3.0-01Aug13-mysql-suse-11	0	0	0	3	17	0	1	1	129	6 hours ago	
dassIT-bareos-regression-bacula-regression-centos5-64	13.3.0-01Aug13-postgresql-centos-5.9	0	0	0	0	18	0	1	1	129	3 hours ago	

■ <http://regress.bareos.org>



Regression Tests

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130 tests passed.

Name	Status	Time
changer:incremental-changer	Passed	20s 700ms
changer:two-pool-changer	Passed	6m 8s 620ms
changer:two-volume-changer	Passed	1m 11s 850ms
changer:vol-duration-changer	Passed	1m 25s 260ms
disk:2drive-2job-test	Passed	1m 36s 780ms
disk:2drive-3pool-test	Passed	2m 32s 510ms
disk:2drive-concurrent-test	Passed	2m 50s 820ms
disk:2drive-incremental-2disk	Passed	20s 360ms
disk:2drive-swap-test	Passed	1m 56s 460ms
disk:accurate-test	Passed	6m 44s 230ms
disk:acl-xattr-test	Passed	54s 460ms
disk:action-on-purge-test	Passed	3m 5s 510ms
disk:allowcompress-test	Passed	1m 50s 20ms
disk:allowed-jobcommand-test	Passed	47s 850ms
disk:allowed-scriptdir-test	Passed	10s 330ms
disk:auto-label-test	Passed	1m 8s 880ms
disk:backup-bareos-passive-test	Passed	1m 9s 700ms

- 130 regression tests
- are being run on the sourcecode nightly
- xen vms and solaris
- thanks to mhvtl also tape- and changertests



Package creation

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■ Open Build Service

obs

Bareos Build Service > Projects > bareosmaster > Overview

psstoz | Home Project | Logout

Overview Repositories Monitor Requests Users Subprojects Advanced

Backup Archiving Recovery Open Sourced Experimental

1 build error

Bareos master branch.

Create patchinfo Edit description Delete project

Packages (5)

Search:

- bareos
- bareos-docs
- libfastlz
- lzo
- mhvti

Showing 1 to 5 of 5 entries

Create package Branch existing package

Build Results

CentOS_5	i586	succeeded: 4 disabled: 1
	x86_64	succeeded: 4 disabled: 1
CentOS_6	i586	succeeded: 4 disabled: 1
	x86_64	succeeded: 4 disabled: 1
Debian_6.0	i586	succeeded: 4 disabled: 1
	x86_64	succeeded: 4 disabled: 1
Debian_7.0	i586	succeeded: 4 disabled: 1
	x86_64	succeeded: 4 disabled: 1
Fedora_17	i586	succeeded: 4 disabled: 1
	x86_64	succeeded: 4 disabled: 1
Fedora_18	i586	succeeded: 3 disabled: 2
	x86_64	succeeded: 3 disabled: 2
Fedora_19	i586	succeeded: 3 disabled: 2

■ internal Buildsystem based on OBS



Package building

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- Open Build Service
- 8 x 2 BuildJob Worker
- Distributions (32 und 64Bit)
 - RHEL und CentOS 5/6
 - Debian 5/6
 - Fedora 16-19
 - SLES11 - SP3
 - Univention 3.1
 - Ubuntu 10.04, 12.04
 - OpenSUSE 11.4-12.3
- Windows cross-compiled
- real 32 / 64Bit programs
 - filedaemon + dlls
 - bconsole
 - bat
 - NSIS installer
 - OPSI package



Continuous Integration

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■ CI based on Jenkins

S	W	Name	Letzter Erfolg	Letzter Fehlschlag	Letzte Dauer
		Bareos 12-4-centos6@fresh	6 Tage 18 Stunden - #217	10 Tage - #213	15 Minuten
		Bareos 12-4-client-only-centos6@fresh	6 Tage 18 Stunden - #205	3 Monate 11 Tage - #155	3 Minuten 54 Sekunden
		Bareos 12-4-client-only-debian@fresh	6 Tage 19 Stunden - #188	6 Tage 18 Stunden - ssh	7 Minuten 54 Sekunden
		Bareos 12-4-client-only-debian@fresh	6 Tage 17 Stunden - #31	Unbekannt	3 Minuten 37 Sekunden
		Bareos 12-4-client-only-fedora17@fresh	6 Tage 18 Stunden - #203	2 Monate 5 Tage - power on failed	17 Minuten
		Bareos 12-4-client-only-fedora18@fresh	6 Tage 18 Stunden - #204	2 Monate 22 Tage - #167	3 Minuten 58 Sekunden
		Bareos 12-4-client-only-opensuse113-64-ci-bareos-fresh	6 Tage 19 Stunden - #70	3 Monate 3 Tage - #26	4 Minuten 8 Sekunden
		Bareos 12-4-client-only-rhel6@fresh	6 Tage 19 Stunden - #165	5 Monate 10 Tage - #95	7 Minuten 26 Sekunden
		Bareos 12-4-client-only-rhel6@fresh	6 Tage 19 Stunden - #203	1 Monat 14 Tage - #182	4 Minuten 17 Sekunden
		Bareos 12-4-client-only-sles11sp2@fresh	6 Tage 18 Stunden - #225	10 Tage - ssh	3 Minuten 2 Sekunden
		Bareos 12-4-client-only-suse122@fresh	6 Tage 19 Stunden - #201	4 Monate 8 Tage - #153	7 Minuten 27 Sekunden
		Bareos 12-4-client-only-ubuntu1004-64-fresh	6 Tage 17 Stunden - #95	9 Tage 13 Stunden - #92	2 Minuten 20 Sekunden
		Bareos 12-4-client-only-ubuntu12@fresh	6 Tage 18 Stunden - #139	10 Tage - restore failed	4 Minuten 14 Sekunden
		Bareos 12-4-client-only-win7@fresh	6 Tage 19 Stunden - #112	3 Monate 3 Tage - #74	8 Minuten 21 Sekunden
		Bareos 12-4-client-only-win7@fresh-autodrive	3 Monate 3 Tage - #99	6 Tage 19 Stunden - #120	6 Minuten 11 Sekunden
		Bareos 12-4-client-only-winsys2008@fresh	6 Tage 19 Stunden - #99	1 Monat 9 Tage - ssh problem	6 Minuten 35 Sekunden
		Bareos 12-4-debian6-32	9 Tage 0 Stunden - #52	9 Tage 12 Stunden - #51	12 Minuten
		Bareos 12-4-debian6-64	3 Monate 4 Tage - #25	6 Monate 7 Tage - #20	9 Minuten 18 Sekunden
		Bareos 12-4-debian6@fresh	6 Tage 19 Stunden - #178	1 Monat 4 Tage - ssh problem	12 Minuten
		Bareos 12-4-debian7@fresh	6 Tage 17 Stunden - #32	1 Monat 1 Tag - ssh	7 Minuten 55 Sekunden
		Bareos 12-4-default-package-rhel6@fresh	6 Tage 19 Stunden - #79	Unbekannt	3 Minuten 56 Sekunden
		Bareos 12-4-fedora17@fresh	6 Tage 18 Stunden - #194	9 Tage 13 Stunden - #191	11 Minuten
		Bareos 12-4-fedora18@fresh	6 Tage 18 Stunden - #202	6 Tage 19 Stunden - #209	14 Minuten
		Bareos 13-4-opensuse113-64-ci-bareos-fresh	6 Tage 19 Stunden - #79	1 Monat 16 Tage - #45	26 Minuten

■ automatic package tests



Continuous Integration

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Jenkins Suchen

Jenkins > Bareos Master > Bareos_Master_RHEL-5-64 > [AUTO-AKTUALISIERUNG EINSCHALTEN](#)

[Zurück zur Übersicht](#)
[Statistiken](#)
[Änderungen](#)
[Arbeitsbereich](#)
[Build with Parameters](#)
[MultiKonfigurationsprojekt Löschen](#)
[Konfigurieren](#)
[Simple Parameterized Builds Report](#)
[URL Trigger Log](#)

Projekt Bareos_Master_RHEL-5-64
Prototype with new scripting framework and matrix for client-only and databases

[Beschreibung bearbeiten](#)
[Projekt deaktivieren](#)

Konfigurationsmatrix	bareos-client-only	bareos-all-daemons
void	●	●
mysql	●	●
postgres	●	●
sqlite3	●	●

Build-Verlauf (Trend)

- #2 14.09.2013 19:23:40
13.2.0 git-1378744174-746.1.e15
- #1 13.09.2013 14:35:29
13.2.0 git-1378744174-746.1.e15

[RSS aller Builds](#) [RSS der Fehlschläge](#)

[Hilf uns, diese Seite zu lokalisieren.](#) Erstelldatum dieser Seite: 16.09.2013 11:24:05 [REST API](#) [Jenkins ver. 1.526](#)

- XEN VM for every distribution
- tests for all databases
- installation of the packages from the repos
- testbackups and restores
- deinstallation



Publishing

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- repos are published via scripts
- nightly repo automatically, others manually

Index of /bareos/release/12.4

Name	Last modified	Size	Description
 Parent Directory		-	
 CentOS_5/	25-Jun-2013 16:53	-	
 CentOS_6/	25-Jun-2013 16:53	-	
 Debian_6.0/	25-Jun-2013 16:54	-	
 Debian_7.0/	25-Jun-2013 16:54	-	
 Fedora_16/	25-Jun-2013 16:54	-	
 Fedora_17/	25-Jun-2013 16:54	-	
 Fedora_18/	25-Jun-2013 16:54	-	
 RHEL_5/	25-Jun-2013 16:54	-	
 RHEL_6/	25-Jun-2013 16:54	-	
 SLE_11_SP1/	25-Jun-2013 16:54	-	
 SLE_11_SP2/	25-Jun-2013 16:54	-	
 openSUSE_11.4/	25-Jun-2013 16:54	-	
 openSUSE_12.1/	25-Jun-2013 16:54	-	
 openSUSE_12.2/	25-Jun-2013 16:54	-	
 openSUSE_12.3/	25-Jun-2013 16:54	-	
 windows/	25-Jun-2013 16:54	-	
 xUbuntu_10.04/	25-Jun-2013 16:55	-	
 xUbuntu_12.04/	25-Jun-2013 16:55	-	



Appliance

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■ Bareos Appliance created with Suse Studio

The screenshot shows the Suse Studio web interface for the 'bareos 64 bit nightly' appliance. The interface has a green header with the 'suse studio' logo and navigation links for 'Help' and 'Create account / Sign in'. Below the header is a search bar. The main content area features the 'bareos 64 bit nightly' title with a 5-star rating. It includes a description of the appliance as an open source backup solution, its compatibility with various operating systems, and information about its origin from the bacula project. A 'Download' section shows the appliance has been downloaded 93 times, with options for Media, Virtual, and Cloud. A 'Test drive' button with a play icon is also present. On the right, the version '2013.09.1604' is listed, along with a 'Tags' section and a list of 'Older releases' with their respective dates.

Version 2013.09.1604
Updated about 6 hours ago

Test drive

Tags
Open, Recovery, Backup, Sourced, Archiving

Older releases
Version 2013.09.1504 - 1 days old
Version 2013.09.1404 - 2 days old
Version 2013.09.1304 - 3 days old
Version 2013.09.1204 - 4 days old
Version 2013.09.1104 - 5 days old
Version 2013.09.1009 - 5 days old

■ automatic creation of the VM with nightly packages



Appliance

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bareos 64 bit nightly ☆☆☆☆☆

Published by [Philipp Storz](#) Based on [openSUSE 12.3](#) 64-bit x86
Homepage at <http://www.bareos.com>

bareos (Backup Archiving REcovery Open Sourced) is a open source backup solution.

- full-features bareos enstallation with postgres catalog
- webacula and bacula-web
- mhvtl with tapechanger
- Disk-2-Disk-2-Tape preconfigured
- Formats: Disk Image, ISO Image, Preload ISO, OVF, vmdk, vhd, XEN ,KVM



overview build process

bareos

Philipp Storz,
bareos GmbH
& Co.KG

Introduction

What is
Bareos?

People

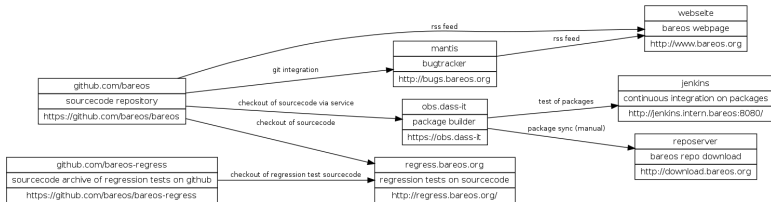
Building

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New in Beta

Future Project

■ Building and testing fully automated



■ Featuresprocess tracks tests and docs for new features



Overview

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Philipp Storz,
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Introduction

What is
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People

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Windows

bareos

Philipp Storz,
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Introduction

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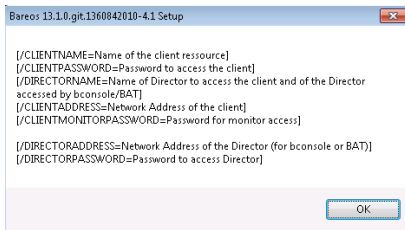
People

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- Windows Installer completely renewed
- 64 Bit packages are 100% 64 Bit Software
- tray-monitor renewed, now really shows something
- all drives
- silent install/uninstall
- MS-SQL Plugin



Configuration engine

bareos

Philipp Storz,
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& Co.KG

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Future Project

- Defaultvalues for Strings
- "Working Directory" and "Pid Directory" not needed anymore
- catalog is automatically chosen
- "Catalog = MyCatalog" not needed anymore in every client resource
- "AutoPrune = no" is now the default for clients
- "Cleaning Prefix = CLN" is default



LTO HW Encryption

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& Co.KG

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Encryption Technology

LTO tape drives, beginning with LTO Ultrium generation 4, use "AES encryption algorithm, with 256-bit keys, in GCM mode." A shorter way to say it is "AES256-GCM." Encrypting at the tape drive level can provide performance and capacity advantages for administrators. Encryption at the tape drive level allows for data compression before encryption, maximizing tape capacities, and allows high performance during backup. Encrypting using an appliance device introduces latencies that affect backup performance, and requires management of the additional device. Encrypting data at tape speed helps to avoid the need for encryption of data — and the concurrent drain on host performance.

- Standard since LTO-4
- AES256-GCM
- virtually no speed impact
- tape cannot be read without key
- complete bareos integration incl. bextract



Client Quota Support

bareos

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& Co.KG

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Future Project

- originally a patch from Mathew Ife for bacula
- was never accepted to bacula
- Client Quotas
- Hard- und Softquotas
- optionally do not count failed jobs
- if over quota no backup is possible anymore



Import/Export for tapelibraries

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Philipp Storz,
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- Libraries have import/export slots
- Tapes can be imported and exported there
- Before that had to be done manually
- with the export command this is done automatically
- import commands puts new tapes automatically in free slots
- export can be called inside of post-backup scripts



Bandwidth Limitation

bareos

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& Co.KG

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- was originally in the bacula git repo
- was announced for bacula 5.2
- after some month it "disappeared" in a commit
- was ported to bareos and improved



Console Commands

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& Co.KG

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Future Project

- **rerun**
- restart failed jobs exactly as they were configured
- **status scheduler**
- preview of future scheduler triggers
- backview possible if negative values given



NDMP

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Future Project

- NDMP Data Management Application (DMA) in Director
- NDMP Tape Agent in Storage
- TAPE AGENT / ROBOT AGENT not supported
- Backup goes directly into the SD and then on tape
- now only possible to backup and restore whole volumes



Compression

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- bacula supports gzip and LZO compression
- now also possible lzfast, lz4 und lz4hc
- full integration into bareos
- new streamtypes were defined



SD-SD Replikation

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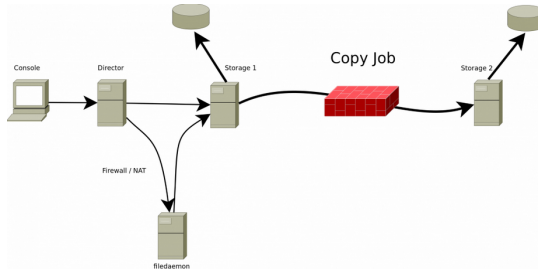
People

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- Before only copy and migration inside of one SD was possible
- Now we can copy and migrate between two SDs.
- Data can be moved or copied over the network also remotely



Passive Client

bareos

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& Co.KG

Introduction

What is
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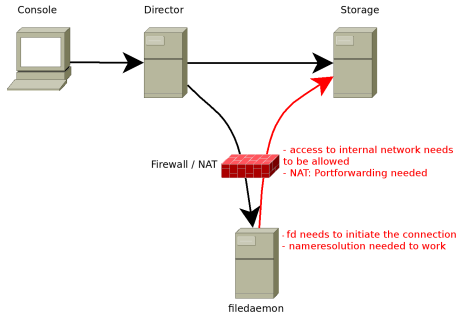
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Future Project

Kommunikation bisher:



- Before: init of data channel from FD to SD
- fd needs name resolution
- NAT/Firewall requires setup of back channel



Passive Client2

bareos

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Introduction

What is
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People

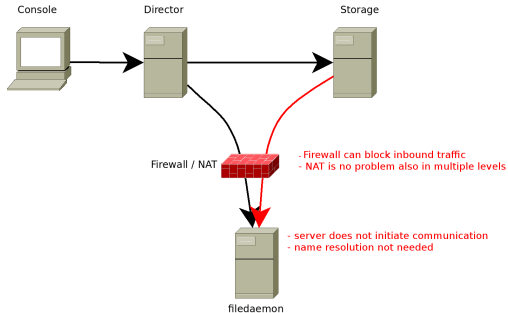
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Kommunikation mit "Passive Client":



- passive client option reverses the init of the data channel
- all problems solved



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Standard configuration

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- New standardconfiguration for Disk-Only Backup
- Help for parametrizing
- 3 Pools with preconfigured retentions
- Example filesets für Linux und Windows
- automatic labelling
- sending bootstrap per mail
- queryfile is installed



Standard configuration 2

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```
#
# Default Bareos Director configuration file for disk-only backup
# (C) 2013 Bareos GmbH & Co.KG
#
# Each configuration item has a reference number that shows
# where this property can be changed in the configuration file.
# Search for the number to find the correct line.
#
# You have to configure the following according to your environment:
#
# (#01)Email Address for bareos disaster recovery.
# Specify a mailaddress outside of your backupserver.
# There will be one mail per day.
#
# (#02)Email Address for bareos reports. (Mail Command)
# This mail address will receive a report about each backup job.
# It will be sent after the backupjob is complete.
# Has to be configured twice ("Standard" and "Daemon" Message Resources)
#
# (#03)Email Address for bareos operator. (Operator Command)
# This mail address will receive a mail immediately when the
# bareos system needs an operator intervention.
# May be the same address as in (#02)
#
# This disk-only setup stores all data into @archivedir@
#
# The preconfigured backup scheme is as follows:
#
# Full Backups are done on first Saturday at 21:00 (#04)
```

Full Backups are written into the "Full" Pool (#05)



Standard configuration 3

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- more standard configs are planned:
 - Tape Changer only
 - Disk-2-Disk-2-Tape
 - Single Tape Only



Security Enhancements

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Future Project

- Allowed Job Command
 - Before: Client can perform every bareos operation
 - Now client can only do the operations that are allowed
 - operations are: backup, restore, verify, estimate, runscript



Security Enhancements 2

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- Allowed Script Dir
 - Before: FD can execute any program/script on client
 - Now: only programs and scripts in the specified directory can be executed
 - Big security enhancement



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- Image Backup is possible via VCB
- vStorage API allows blockbased backup
- programming examples are problematic



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Future Project

- Encrypted File System (EFS)
 - needs special calls during backup
- Mountpoints: Support for VSS
 - Snapshots shall be also created of subvolumes
 - already works in lab
- Deduplicated Volumes
 - deduped files have to be opened specially, otherwise they are always 4kb
 - works in the lab



Configuration engine

bareos

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Future Project

- Persistent configuration
- Director also writes out the config
- API for configuration
- Good Webtool for administration and configuration



How to help

bareos

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- buy a Subscription / Support
- create bugreports
- write documentation
- testing
- programming
 - c/c++
 - Web