Bacula Enterprise 2022

bacula.lat

Schedule

- Bacula LATAM & Brasil
- Bacula Systems
- Backups today
- Bacula Community versus Bacula Enterprise
- Architecture of Bacula Enterprise
- Features
- Some cases
- Pricing and purchasing models
- Services

Bacula LATAM & Brasil

- Main branch in Brazil, subsidiary in US (strong presence in Florida)

- Operating in more than 10 countries

- Exclusive software distributor in LATAM

- More than 10 years of experience with backups

- All staff officially certified by Bacula Systems

- Mission: *Provide the best and most affordable Data Backup and Restore Software*

Bacula Systems

- Created by the founder of Autodesk and developer of Bacula Community
- Specialized in backups & restores
- Main branch in Switzerland
- Own offices and distributors in America, Asia, Europe, LATAM and Oceania
- More than 2 million backup clients installed worldwide

Innovations

Benefit from Deduplication on both the client and storage side
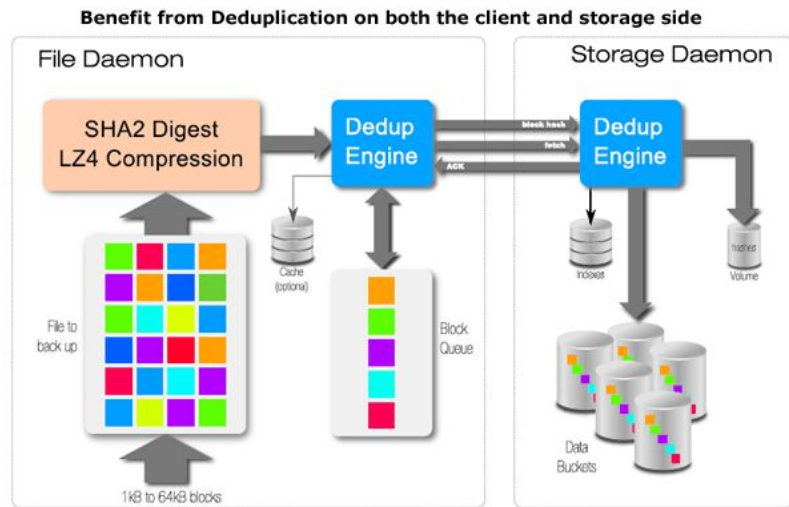
- Global deduplication (**source or storage only: Windows, Unix, Linux etc.**).

  *Up to **99%** traffic and storage reduction.*
- CBT for other Virtualizations (**RHV, XEN etc.**)
- First Plugins for **Docker, Kubernetes, Proxmox, Hadoop, PostgreSQL and MySQL**;
- Open Catalog and Backup Format (**without entrapment**);
- First to support storage driver in Object Storage (**S3, Glacier, Oracle, Google, Azure, Swift etc.**).
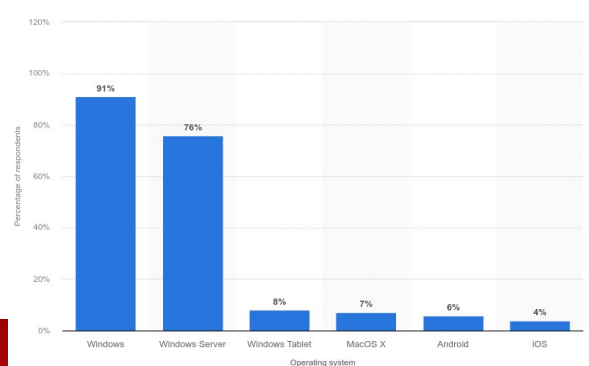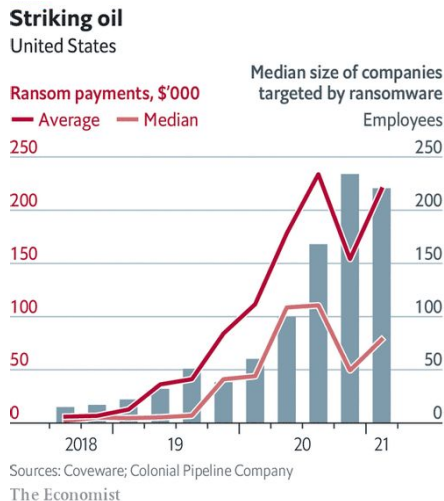
Other Benefits

- Very high scalability (few are able to backup **10,000 hosts or more**).

- Own development team, and **it's not a suite**!

- All communications automatically encrypted, with **FIPS certificate**

- Higher number of clients for platforms: **Unix, AIX, HPUX, Power, Debian, Slackware, FreeBSD, RHV, SUSE, Android, Windows, MacOS** etc.

- Most advanced Web interface on the market, not requiring **Java/Flash**. Remote agent **deploy/update** etc.
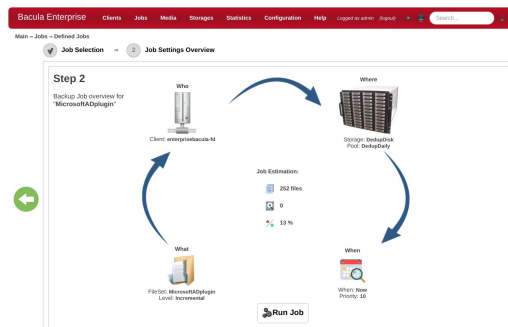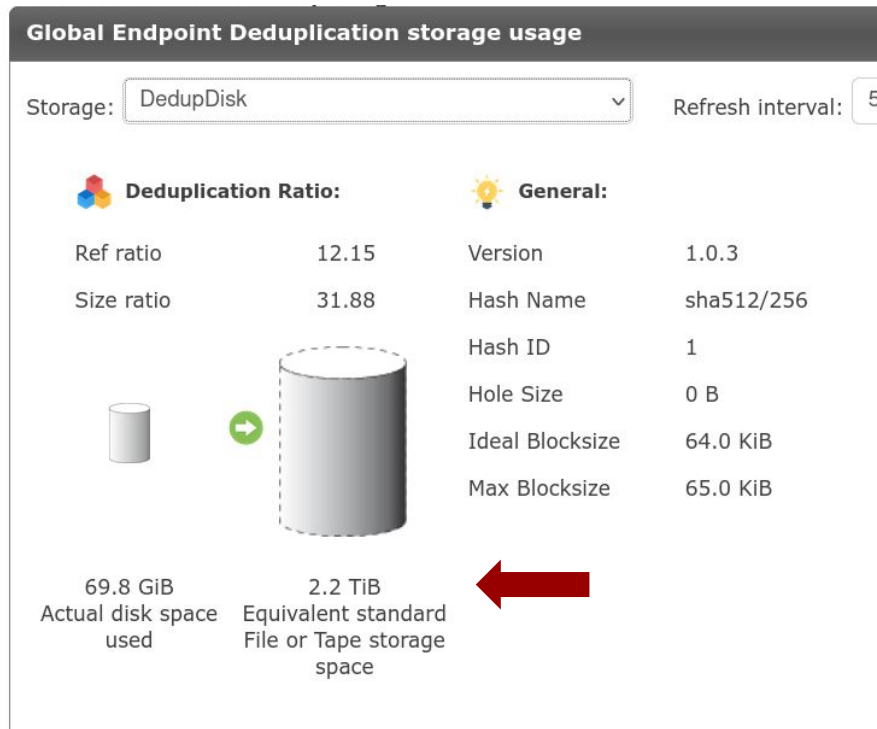
Ransomware

- External catalog
- Dedicated user bacula processes
- Immutable volumes
- Own socket connection
- Linux server primarily
- Native direct writing support for all **tapes, cartridges, VTL, WORM etc.** since the conception

Striking oil
United States

Ransom payments, $'000
— Average — Median

Median size of companies targeted by ransomware
Employees

Sources: Coveware; Colonial Pipeline Company
The Economist

Cryptolocker 2.0

Your personal files are encrypted

Info

Your **important files were encrypted** on this computer: photos, videos, documents , etc. You can verify this by click on see files and try to open them.

Encryption was produced using **unique** public key RSA-4096 generated for this computer. To decrypt files, you need to obtain **private** key.

The single copy of the private key, which will allow you to decrypt the files, is located on a secret server on the Internet; **the server will destroy the key within 72 hours after encryption completed.** After that, nobody and never will be able to restore files.

To retrieve the private key, you need to pay 0.5 bitcoins.

Click **proceed to payment** to obtain private key.

Your files will be lost without payment on:

11/24/2013 3:16:34 PM

Any attempt to remove or damage this software will lead to immediate private key destruction by server.

Backups Today

- Backup is the replica of any data that can be used to restore its original form [Guise]
- Challenge: in 2020, the volume of data will double each year reaching **44 zettabytes** or 44 trillion GB. [IDC]
- **Global Deduplication** and Scalability are Key Factors
- **Ransomware** reaffirms the need for backup

Global Endpoint Deduplication storage usage

Storage: DedupDisk   Refresh interval: 5

Deduplication Ratio:

Ref ratio	12.15
Size ratio	31.88

General:

Version	1.0.3
Hash Name	sha512/256
Hash ID	1
Hole Size	0 B
Ideal Blocksize	64.0 KiB
Max Blocksize	65.0 KiB

69.8 GiB Actual disk space used

2.2 TiB Equivalent standard File or Tape storage space

Backups Today

Disaster Recovery: 3 levels

- **Data.** Protecting user and application data (dumps, file copies)
- **Application.** Application continuity (PITR, CDP, plugins to provide specific features)
- **OS.** Reduce the time to recover to its minimum (VM export, CDP, snapshot of FS, Bare Metal)

Backups Today

- Backup softwares **must not be monoliths**. They must, for example, allow data mining of their metadata: "without these kind of features, a backup software becomes stagnant and is not able to grow into the environment" [Guise]

- Must have **Open Format of the Catalog and of the Backup Files**
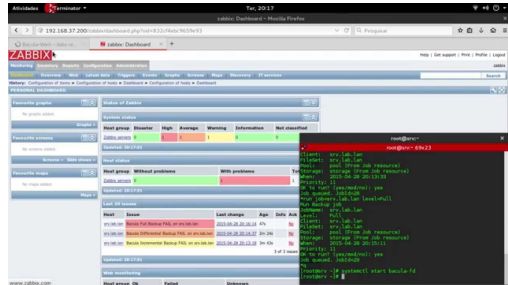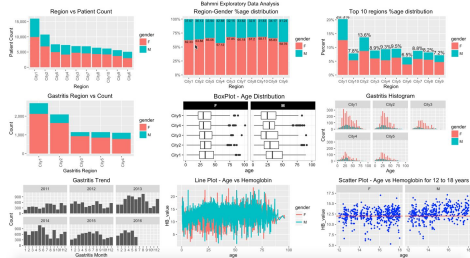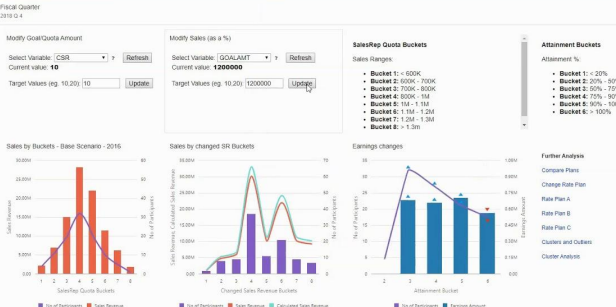
Backups Today

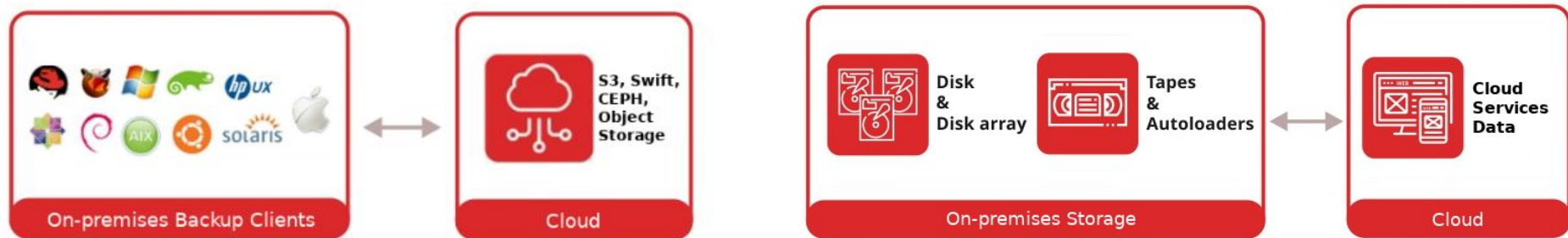Backup modernization:

- There must be cloud integration [Russel]
- Supporting Object Storage and BaaS are a must

Storage em Nuvem

On-premises Backup Clients ↔ **Cloud** — S3, Swift, CEPH, Object Storage

On-premises Storage (Disk & Disk array, Tapes & Autoloaders) ↔ **Cloud** — Cloud Services Data

Cloud 1 (Cloud Services Data, S3, Swift, CEPH, Object Storage) — Backup — **Cloud 2** (Cloud Services Data, S3, Swift, CEPH, Object Storage)

Cloud 1 (Cloud Services Data) ↔ **Backup Cloud** — S3, Swift, CEPH, Object Storage
Cloud 2 (Cloud Services Data) ↔ **Backup Cloud**

Bacula

- 4° more popular backup software worldwide
- C/C++, High Portability
- Focused in sustainability, performance and scalability
- Suitable to any company size

Bacula Community versus Bacula Enterprise

Community

- General Public License (GPL)
- Open Source
- Community packages and/or compiled by user
- User must develop plugins and/or scripts
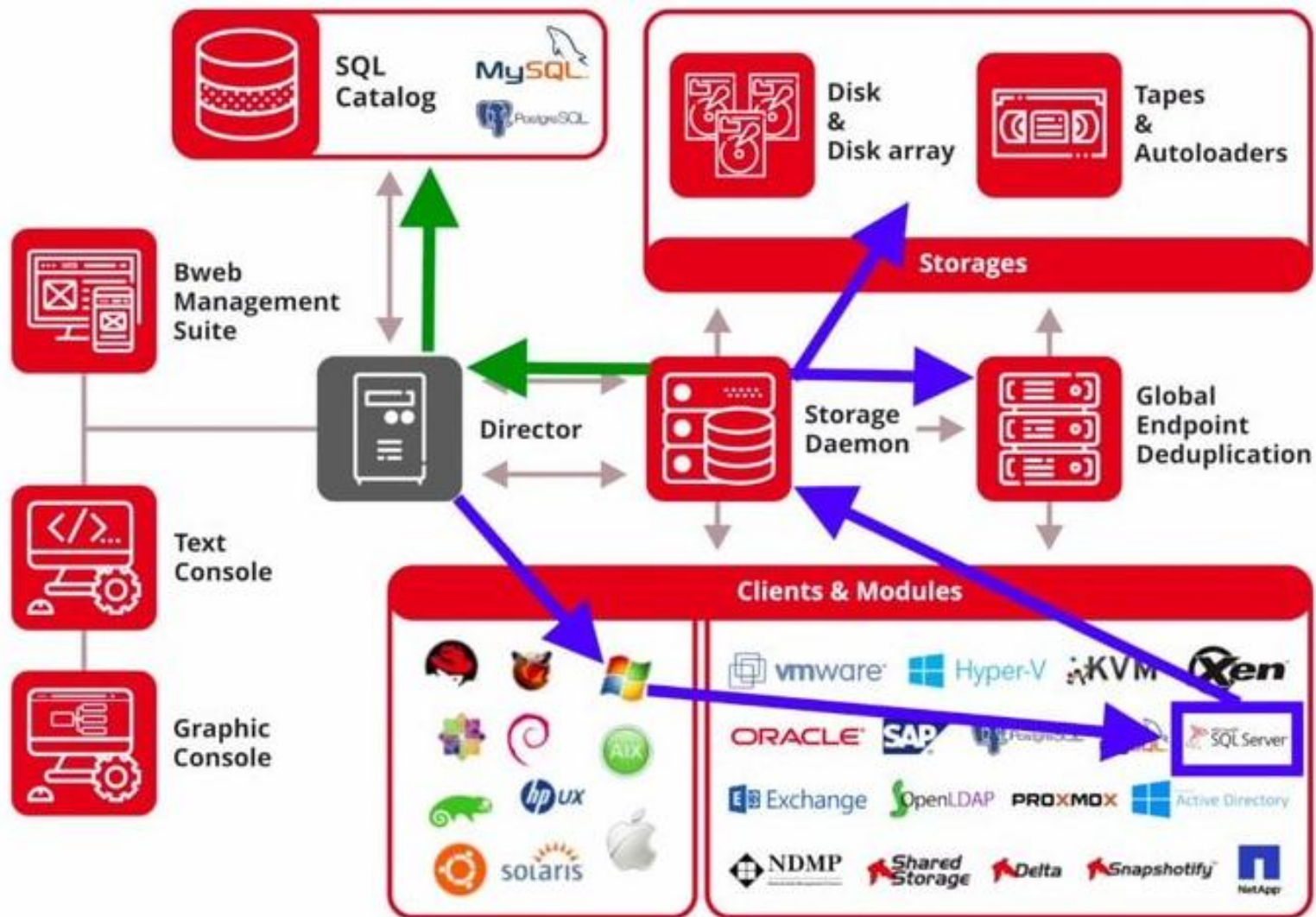- Open catalog and backup files formats

Enterprise

- Paid licensing
- Proprietary code
- Packages approved by the developer
- Technical support provided by the developer
- Easy-to-use advances graphical interface (BWeb)
- More than 30 plugins available
- Global deduplication and storage-side only options
- Open catalog and backup files formats

Bacula Enterprise versus Backup Leaders (Gartner)

	Plugins	Cloud Support	BaaS	Price
BACULA ENTERPRISE	**30**	**Yes**	**Yes**	**Low**
COMMVAULT	22	Yes	Yes	Very high
NETBACKUP	14	Yes	No	Alto
SPECTRUM	10	No	No	Very high
EMC	9	No	No	Very high
VEEAM	7	No	Yes	Low
ARCSERVE	4	Yes	Yes	Medium

SQL Catalog — MySQL, PostgreSQL

Disk & Disk array

Tapes & Autoloaders

Storages

Bweb Management Suite

Text Console

Graphic Console

Director

Storage Daemon

Global Endpoint Deduplication

Clients & Modules

vmware, Hyper-V, KVM, Xen

ORACLE, SAP, SQL Server

Exchange, OpenLDAP, PROXMOX, Active Directory

NDMP, Shared Storage, Delta, Snapshotify, NetApp

Solaris, HP UX, AIX
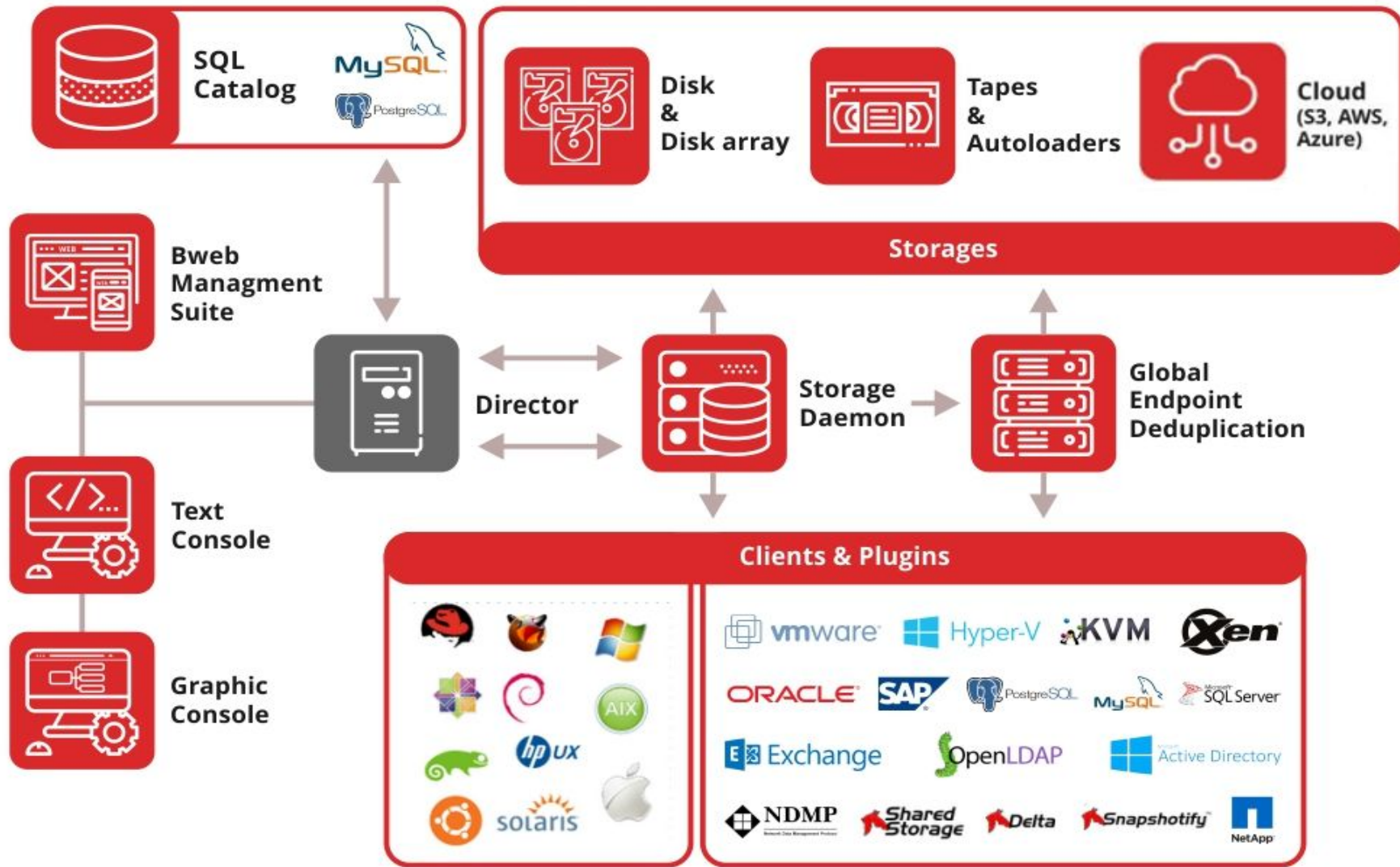
Director (Backup Server, master)

- Central manager of all jobs and of the authentication of the services

- Allows scheduling, setting configuration, retention times, politics, etc

★ Scalable (more than 10.000 clients)

★ Can be virtualized

★ Focused in automation

★ Auto recovers from disasters

Storage Daemon (storage node)

- ★ No data volume charges

- ★ Cloud S3, Swift, CEPH etc.

- ★ Internal and external disks, RDX

- ★ Auto loaders, tape libraries, and VTL

- ★ Infinite Storage Daemons linked to the same Director

- ★ Deduplication on the storage side through software or hardware

- ★ Different software compression levels

- ★ Scalability: more than 500 backup clients per Storage Daemon

- ★ **Storage Cluster**

- ★ **Integrated Backup Appliance**

File Daemon
(cliente de backup)

BACULA

Bacula Systems

- ★ Secure Authentication (password or encryption key)
- ★ FIPS compliant

- ★ Global Deduplication
- ★ Minimum Configuration
- ★ Legacy OS
- ★ Low impact
- ★ Scripts before and after Jobs

BWeb

- ★ Browser Plug-in free (e.g. Java/Flash)
- ★ Audit of all transactions
- ★ Self-restore profile
- ★ Client groups management
- ★ ACLs (users and profiles)
- ★ Media and storage management
- ★ Monitoring, statistics and reports modules
- ★ Plugins Operations
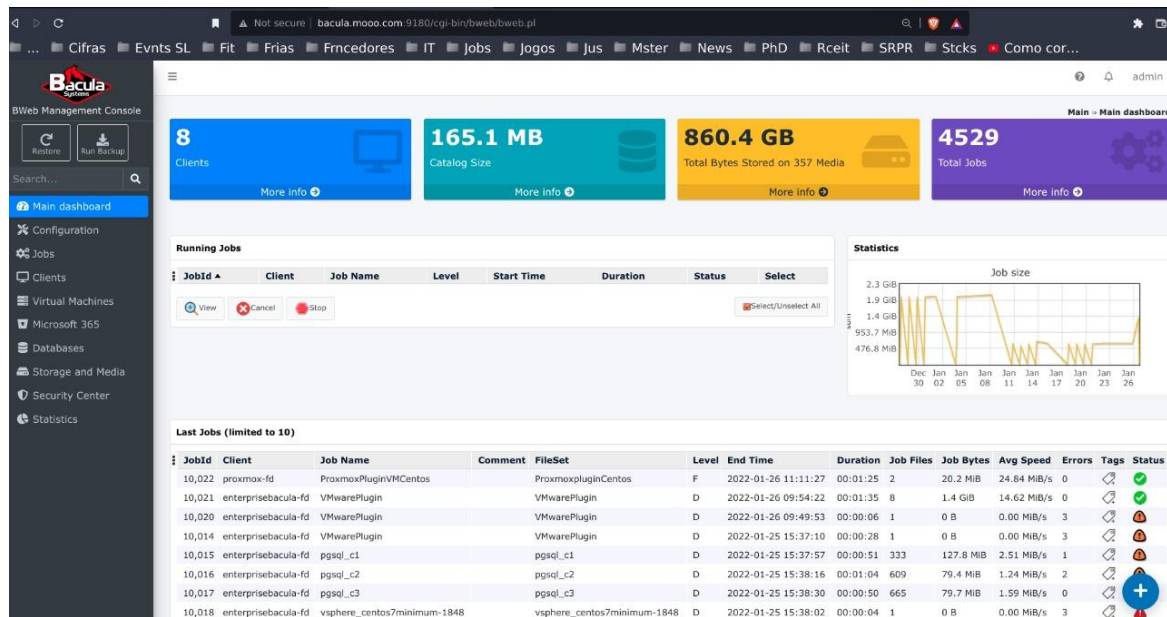
BWeb
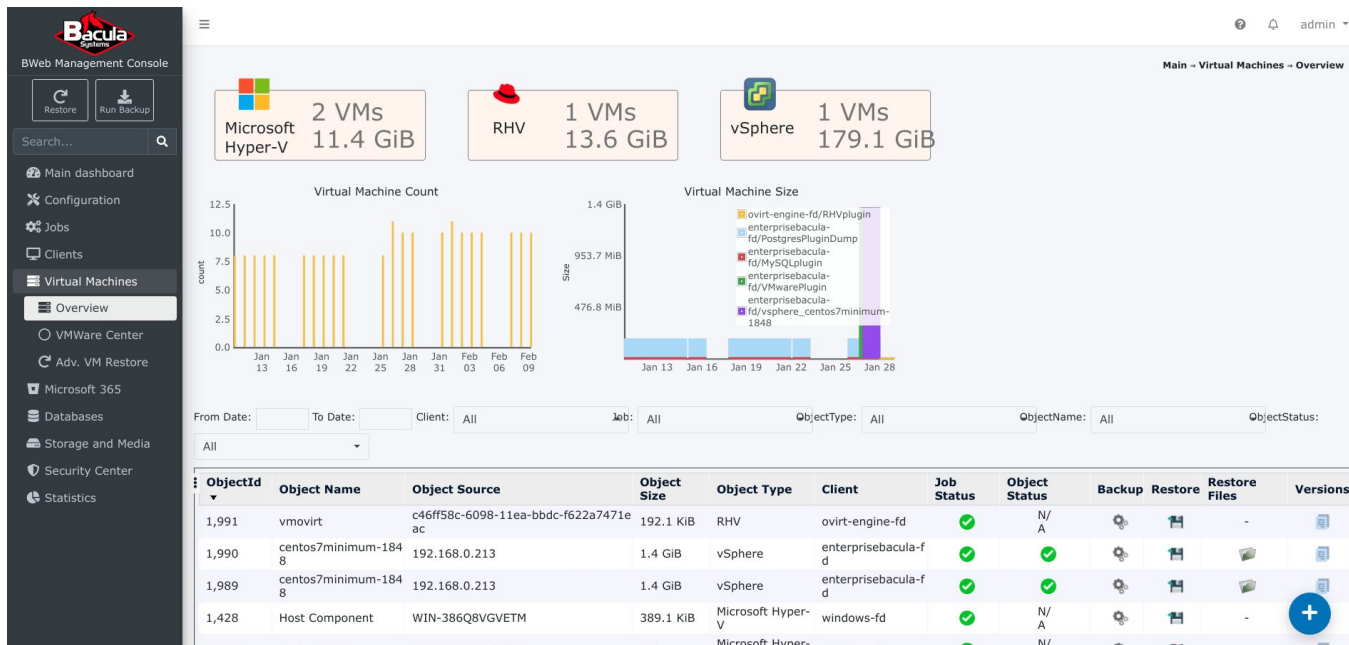
- ★ 100% graphical operation
- ★ User-centered design
- ★ Few clicks operations
- ★ Integration with AD/LDAP
- ★ Backup clients configuration and deployment

Running job OraclePlugin.2019-01-07_22.29.58_21 on oracle-fd

Job Name:	OraclePlugin.2019-01-07_22.29.58_21 (2,774)
Processing file:	/@ORACLE/cdb1/APEX_040200/user.sql
Speed:	72 B/s
Files Examined:	8
Files Backed up:	8
Bytes done:	
Files done:	
Bytes:	1,748

Cancel Stop Set Bandwidth

Job Report: OraclePlugin on oracle-fd (2774)

Set Order

```
2019-01-07 22:29:50 oracledb-fd JobId 2774: DIR and FD clocks differ by -9 seconds, FD automatically compensating.
2019-01-07 22:30:00 enterprisebacula-dir JobId 2774: Start Backup JobId 2774, Job=OraclePlugin.2019-01-07_22.29.58_21
2019-01-07 22:30:00 enterprisebacula-dir JobId 2774: Using Device "FileChgr1-Dev2" to write.
2019-01-07 22:30:00 enterprisebacula-dir JobId 2774: FD compression disabled for this Job because AllowCompress=No in Storage resource.
2019-01-07 22:30:00 enterprisebacula-sd JobId 2774: Volume "DedupDaily-74" previously written, moving to end of data.
2019-01-07 22:30:00 enterprisebacula-sd JobId 2774: Ready to append to end of Volume "DedupDaily-74" size=1,922,059
```

Main → Clients → Clients → Client Status

Client status

Client: enterprisebacula-fd

Version:	10.2.1 (03 December 2018)
Uname:	x86_64-redhat-linux-gnu-bacula-enterprise,redhat,Enterprise release
Client Started:	2019-01-07 22:22:49
Running Jobs:	0/5
No. Jobs:	1425
No. Bytes:	12.9 GB
No. Files:	97637
No. Errors:	194
File/Job Retention:	1 year / 1 year
AutoPrune:	No
Plugins:	

Set Bandwidth Set Debug Edit Disable Client

Job Duration : 'enterprisebacula-fd/all'
Job Rate : 'enterprisebacula-fd/all'
Job status rating
JobBytes sum : 'enterprisebacula-fd/all'

Fatal error
Canceled by user
Completed successfully

Running Jobs

No job running on the Client.

Terminated Jobs

Main → Statistics → Statistics

Options

Level
Any

Status
OK

Age
This week

Size
Width: 800
Height: 600

Clients
enterprisebacula-fd
hyperv-fd
mssql-fd
oracle-fd
ovirt-engine-fd
proxmox-fd
test
test-fd

Job Name
BackupImages
BackupVideo
BaculaAdmTask
BaculaAudio
BaculaCatalog
BaculaConfigurations
BaculaFileCompression
HyperVPlugin
LDAPplugin
MicrosoftADplugin
mssqlBacula
MSSQLPluginCluster
MySQLplugin
NewJob
OraclePlugin

Groups
databases
hypervisors

Current graph

Reset Zoom

Main → Clients → Clients

Overview

Client Version
Version
unknown
10.0.2
10.0.8
10.2.1

Client Os
Os
unknown
debian
redhat
64-bit

Clients

	Name▲	Select	Desc	Auto Prune	File Retention	Job Retention
	enterprisebacula-fd		10.2.1 (03Dec18) x86_64-redhat-linux-gnu-bacula-enterprise,redhat,Enterprise release	0	365 days	365 days
	hyperv-fd		10.0.2 (30May18) Microsoft (build 9200), 64-bit,Cross-compile,Win64	0	365 days	365 days
	mssql-fd		10.0.8 (22Oct18) Microsoft (build 9200), 64-bit,Cross-compile,Win64	0	365 days	365 days
	oracle-fd		10.0.2 (30May18) x86_64-redhat-linux-gnu-bacula-enterprise,redhat,	0	365 days	365 days
	ovirt-engine-fd		10.0.2 (30May18) x86_64-redhat-linux-gnu-bacula-enterprise,redhat,	0	365 days	365 days
	proxmox-fd		10.0.2 (30May18) x86_64-pc-linux-gnu-bacula-enterprise,debian,9.0	0	365 days	365 days
	test			0	365 days	365 days
	test-fd		10.0.2 (30May18) x86_64-redhat-linux-gnu-bacula-enterprise,redhat,	0	365 days	365 days

Last Jobs Current Jobs View Groups Status Set Bandwidth Set Debug Status Edit Groups Delete Add Edit Network Test

Panel 1 — Edit Fileset VMwarePlugin

Bacula Enterprise — Configuration

Workset | Clients | Jobs | FileSets | Schedules | Pools | Consoles | Storages/Autochangers | Messages | Logged as admin (logout)

Actions

- View Who Depends On It
- Set Default Linux Options
- Set Default Windows Options
- Add Filter

Edit Fileset VMwarePlugin Cancel | Save | Copy | Delete

Fileset Name: VMwarePlugin *
Description:
Enable VSS: ☑
Ignore Fileset Changes: ☐
Enable Snapshot: ☐

Include:
Add Include list
[Compression Dedup Signature] Plugin= index

Exclude:

Current Changes

Help

To get help about Directives, click on the Directive label and the

VMware resource browser

Path: /ha-datacenter/VMS

- .
- ..
- ☐ centos7minimum
- ☐ teste-restore

Cancel | Apply selection

Panel 2 — Storage Overview

Bacula Enterprise

Clients | Jobs | Media | Storages | Statistics | Configuration | Help | Logged as admin (logout) | Search...

Storage Overview

Set Debug | Network Test | Storage: DedupDisk | Refresh: 30 seconds | Device: --------- | Media Type: --------- | Device Type: --------- | Device Status: ---------

Legend: Queued | Progress | Done | Error | Cancelled | Unknown

Uploads — No upload transfer available
Downloads — No download transfer available

Device: Single Device
Device Details:
Device Type: Cloud
Media Type: CloudAWS
Device Status: Not running (Idle)
Cache (Free/Total): 272.81 GB / 369.98 GB
Status: Cloud Status

Device Name▲	Status	Loaded	Volume Name	Slot	Running Jobs/Max. Jobs	Speed
AWS	-	-	-	-	0/20	-

Autochanger: FileChgr1
Device Details:
Device Type: Dedup
Media Type: Dedup
Device Status: Not running (Idle)
Space (Free/Total): 272.81 GB / 369.98 GB

Device Name▲	Status	Loaded	Volume Name	Slot	Running Jobs/Max. Jobs	Speed
FileChgr1-Dev1	-	-	-	-	0/5	-
FileChgr1-Dev2	-	-	-	-	0/5	-

Autochanger: FileChgr2
Device Details:
Device Type: File

Panel 3 — Dedup Usage

Bacula Enterprise

Clients | Jobs | Media | Storages | Statistics | Configuration | Help | Logged as admin (logout) | Search...

Main → Statistics → Dedup Usage

Global Endpoint Deduplication usage

Storage: DedupDisk | Refresh interval: 5 minutes

Deduplication Ratio:
Ref ratio: 6.63
Size ratio: 14.13

34.2 GiB Actual disk space used
482.8 GiB Equivalent standard File or Tape storage space

General:
Version: 1.0.3
Hash Name: sha512/256
Hash ID: 1
Hole Size: 4.0 MiB
Ideal Blocksize: 64.0 KiB
Max Blocksize: 65.0 KiB

Statistics:
Transaction: 2476
Hash Count: 1,205,527
Ref Count: 7,994,509
Ref Size: 482.8 GiB
Dedupengine Errors: 0
Containers Errrors: 0

Containers statistics
Chunk Used: 1,205,527
Chunk Allocated: 1,889,390
Disk Space Used: 34.2 GiB
Disk Space Allocated: 71.4 GiB
Container Sum Bitarray Capacity: 33.0 MiB
Read Chunk: 0
Calc Hash: 784
Update Refcnt: 0
Query Hash: 2138
New Hash: 681

Vacuum:
Start Time: 2018-10-29 17:14:48
End Time: 2018-10-29 17:14:55
Orphan Addr: undefined
Ref Count: 0
Ref Size: 0 B

Global Endpoint Deduplication storage containers

ID▲	Block Used	Block Capacity	Unused Disk Space	Disk Space	Bitarray Capacity	Usage	Usage Map
1	3	4	1024 B	8.0 KiB	524288	75%	
2	6,483	9,551	6.0 MiB	18.7 MiB	524288	67%	7 033000 053088
3	10,941	13,774	8.3 MiB	40.4 MiB	524288	79%	80 060 3 999
4	10,628	12,865	8.7 MiB	50.3 MiB	524288	82%	3 15 09999
5	5,574	7,063	7.3 MiB	34.5 MiB	524288	78%	6 3 361799

Panel 4 — Files usage

JobId▼	Client	Job Name	Comment	FileSet	Level	Start Time	Duration	Job Files	Job Bytes	Avg Speed	Errors	Status
2,784	enterprisebacula-fd	MicrosoftADplugin		MicrosoftADplugin	F	2019-01-07 23:37:41	00:00:02	252	169.8 KiB	0.10 MiB/s	0	✓

Delete | View Media | View Jobs | View Stats | View FileSet | View Usage | View File List | Run Again | Restore | Edit | Verify Data

Files usage

/ | Size | go | go back

xsad1/
DC=com/

197.3 KB

BWeb Wizards

Self-Service Backup

- Regular users may deploy and/or restore backups

- Billing and quota management

- Allows **Backup-as-a-Service - BaaS**

Plugins

- **VMware**

- **Hyper-v**

- **KVM**

- **Xen**

- **Proxmox**

- **RHEL/oVirt**

- **Nutanix**
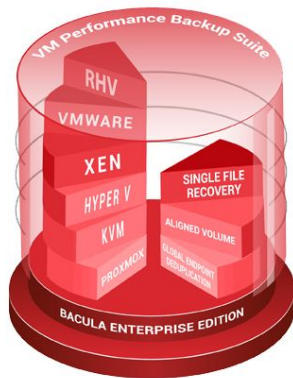

★ Clientless Backups

★ Auto-discover of new VMs

★ Differential backups on block level

★ Automatic restore of VMs

★ File level granular restore

★ Instant Recovery

Plugins

- MYSQL
- PostgreSQL
- Oracle
- SAP
- SAP Hana
- Sybase ASE
- MS SQL Server
- Active Directory
- LDAP
- MongoDB
- Hadoop
- DB2
- Cassandra

★ **Auto-discover of new databases**

★ **Parallelism**

★ **Differential e incremental backups**

★ **PITR/Archive Log**

★ **Granular and automatic restores**

★ **Clusters backups**
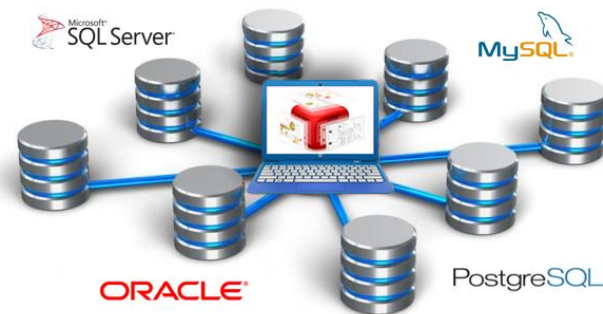
Plugins

- **CDP (File and VM* Replication)**
- **Docker, Kubernetes, OpenShift**
- **Hadoop**
- **Bare Metal Linux, Windows**
(restore and migration of full machines *physical/virtual/cloud*)
- **Zimbra, MS Exchange**
- **Sharepoint**
- **VSS**
- **Snapshot Linux**
- **Office 365**
- **bpipe**
- **Delta**
- **NDMP**
- **Shared Storage SAN**
- **Incremental Netapp**
- **Cloud (Oracle, Amazon Glacier, Google, Azure, Swift, and S3)**

Other Features
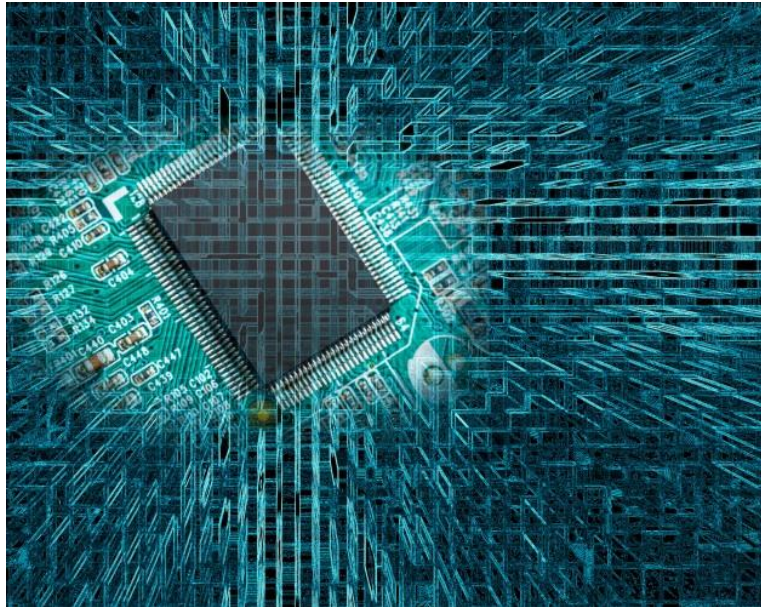
- Multi-volume backups
- Multi-backups to the same volume
- Firewall traversing and NAT - backups started by backup clients
- Incremental and differential backups
- Network traffic compression
- Copy and migration jobs
- Bandwidth limitation
- No memory leak
- Volumes automated recycle
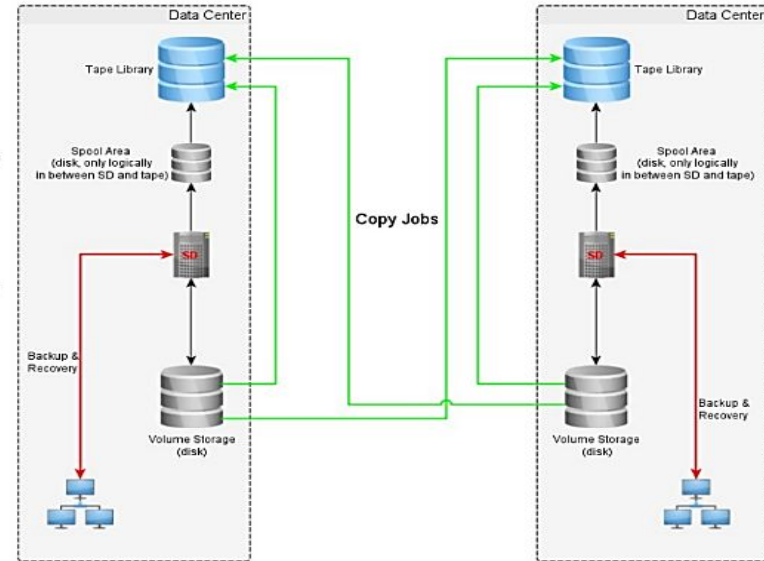- GFS and other backup strategies compliant
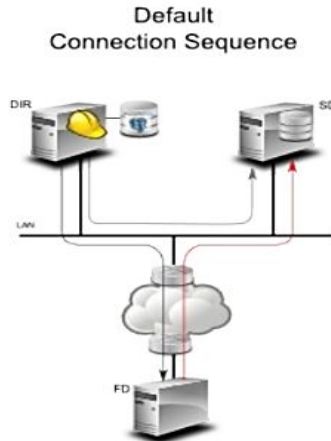
Exclusive Features

- OS bacula user bacula processes and immutable volumes

- More than 30 Plugins (hundreds of specialized features)

- Filesystems snapshot support (LVM, ZFS, etc)

- Assures data compatibility for 30 years

- Specific data removal (GPDR compliant)

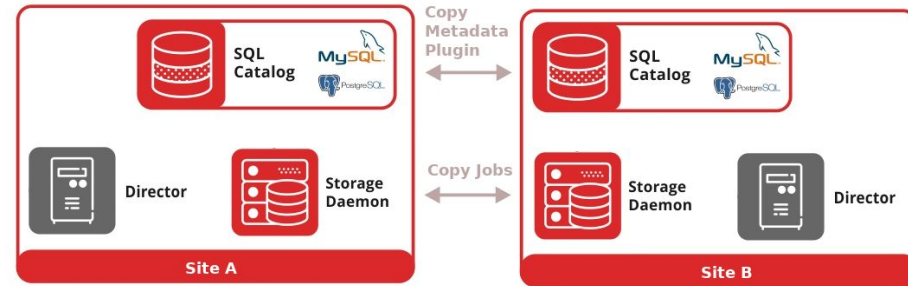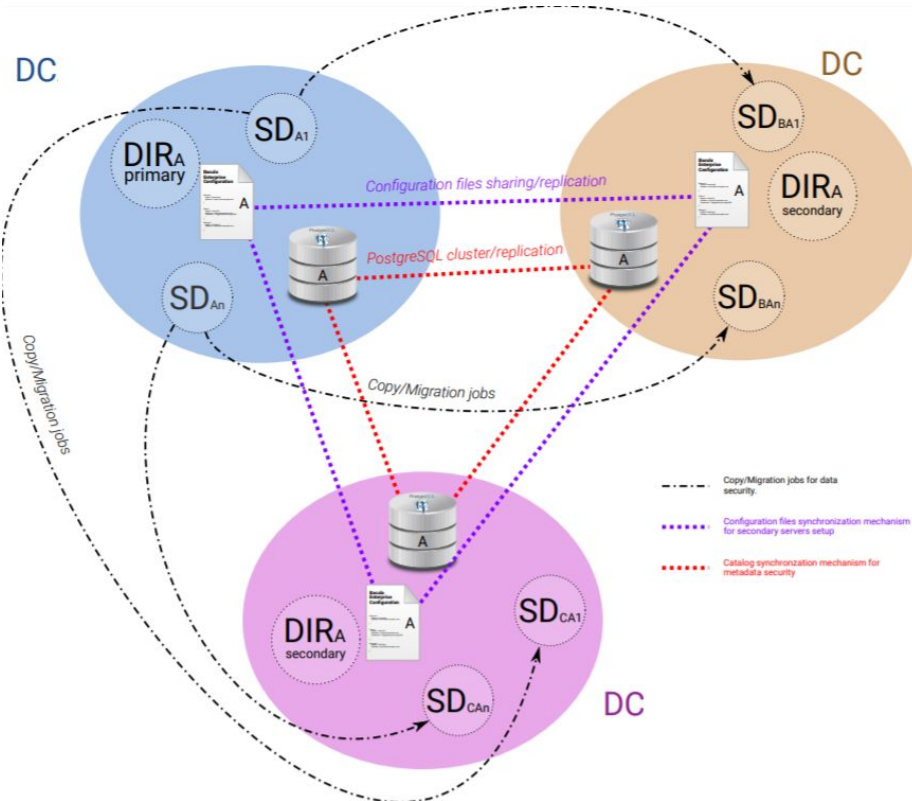- Open Catalog

- Open format backup Volume

Data Center Replication

- **Catalog Cluster, Config Replication, Copy Job with Metadata Replication or DRBD**
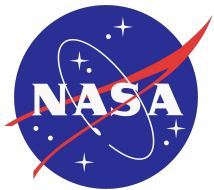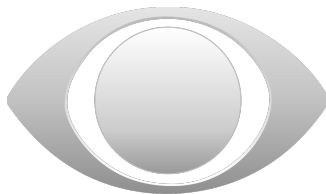
Data Center Replication

British American Tobacco · Hisense · Unimed · Grupo Prever Sul · NOVOMUNDO · POUPEX · Algar Tech · LOCAWEB · TERESINA SHOPPING · Rio Energy · Stanley Black&Decker · DATACOM · POLÍCIA CIVIL MT · ITA · Prodap · Ministério da Defesa · UNICAMP · TRT MG Tribunal Regional do Trabalho da 3ª Região · LG · Binário Cloud · NASSAU · São Geraldo · MRN Mineração Rio do Norte · OAB RJ · Ministério Público Estado de Roraima · Ministério Público do Estado da Paraíba · Câmara Municipal de Campinas · Prefeitura de Aparecida Fazendo cada vez mais · TRT 15ª

Cost Reduction

Up to 77% of economy

- Backup specialists

- Simplified licensing

- Lean structure

(1)

Backup Clients Quantity (VMs, Servers, Desktops etc.)

- Ranges

(1-25; 26-50;51-200; 201-500;

1001-2000; 2001-5000)

(2)

Plugins of choice

- Illimited use

- Fixed price

Purchase Options

(1)

Subscription

- Same licensing price every year to keep using the software and to keep guarantee (technical support and updates)

(2)

Perpetual Licensing

- Greater initial investment
- May use the last downloaded version in a perpetual way
- 20% of purchase price annually to keep guarantee (technical support and updates)

Licensing Rights

- Correctional and evolutionary updates of all purchased modules

- Bacula Systems technical support

- Exclusive download repository

- Higher levels:

  - roadmap participation and feature requests;

  - Seat on official training (Bacula Systems in Switzerland).

Adicional Services

- Certified in-company deployment

- Certified in-company training

- Complementary technical support with customized SLA

- **Advanced Training in Florida**

Bibliographical Reference

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