

Backup Of Scale

Bareos Active Client And Puppet

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Globalways AG

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Introduction



- 22 years old
- Since 2015 linux system engineer
- CBO (Chief Backup Officer)
- tobias.gross@globalways.net

Globalways AG

- ISP in Stuttgart
- 3 data centers
- Large fiber network
- Project hosting

Environment:

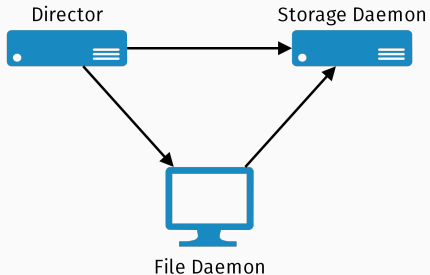
- Many private customer networks
- Puppet (95%+ coverage)
- Large ceph cluster
- Mainly virtualized machines

Goals:

- No port forwarding
- Zero configuration backup
- Transport encryption
- Fully puppet managed

Networking

Standard Client

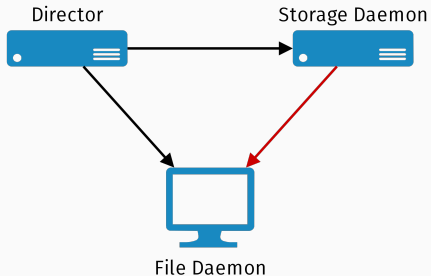


- Default mode
- Control channel initiated by director
- Data channel initiated by file daemon

Pro

- Simple configuration

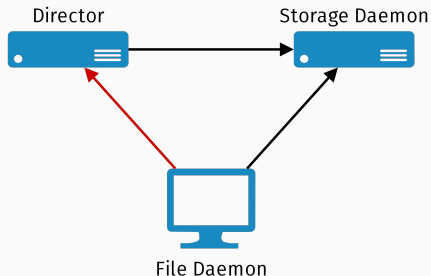
Passive Client



- Passive mode (since bareos 13.2)
- Control channel initiated by director
- Data channel initiated by storage daemon
- Passive = yes

Pro

- Client needs no DNS
- Client can be firewalled completely

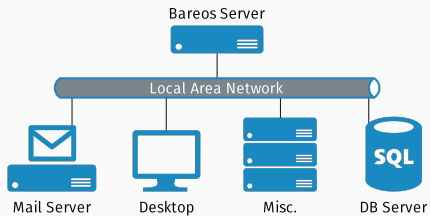


- Active mode (since bareos 16.2)
- Control channel initiated by file daemon
- Data channel initiated by file daemon
- Connection from client to director = yes

Pro

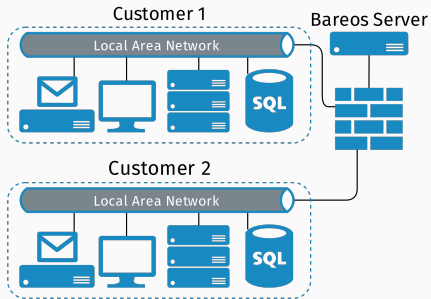
- Director/SD needs no knowledge about client network
- Director/SD needs no DNS
- **No port forwardings needed**

Simple Network

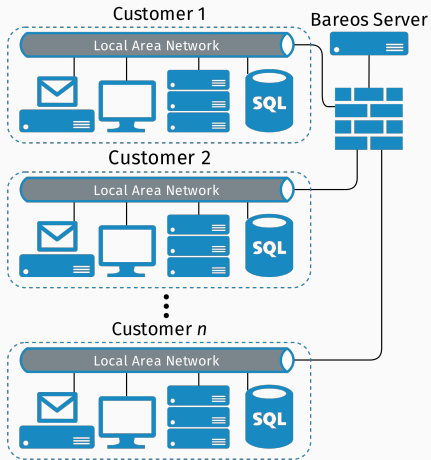


- Every client mode suitable
- Default mode least configuration

2 Networks

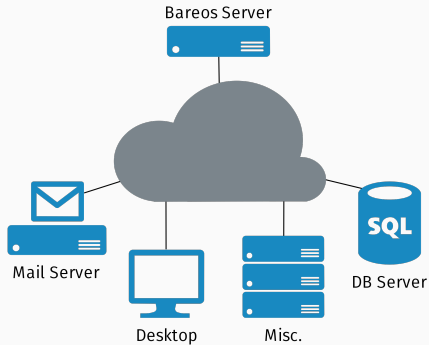


- Clients behind NAT
- Central bareos server
- Standard and passive maybe suitable
- Active client needs no port forwarding



- Clients behind NAT
- Central bareos server
- Standard and passive not suitable
- Active client needs no port forwarding

Unknown Networks



- Default mode not possible
- Passive mode not possible
- Active mode works

Use transport encryption and verify peer when using unknown networks!

Firewall Configuration

Networks	Standard	Passive	Active
Simple	0	0	0
2	$2m$	$2m$	0
n	nm	nm	0
Unknown	-	-	0

Number of port forwardings needed

m : Number of clients per network

Goals:

- ~~No port forwarding~~ ✓
- Zero configuration backup
- Transport encryption
- Fully puppet managed

Configuration



puppet

**The shortest path
to better software.**

- Puppet language
- Agent/master architecture
- Facts and catalogs
- PuppetDB - exported resources

- Generalized collection of code
- One purpose per module
- `forge.puppet.com`

- Install, configure and manage director, sd, fd, bconsole and webui
- Complete mapping of configuration parameters
- Only Ubuntu and Debian (for now)
- Not yet published

```
class bareos::file_daemon::install inherits bareos {  
  if $::bareos::file_daemon_install {  
    package { $::bareos::file_daemon_package_name:  
      ensure => $::bareos::file_daemon_package_ensure,  
    }  
  }  
}
```

```
define bareos::storage_daemon::autochanger (  
    $device,  
    $changer_command,  
    $changer_device,  
    $description = undef,  
) {  
    concat::fragment{ "storage_daemon-autochanger-${title}":  
        target => $::bareos::storage_daemon_config_file,  
        content => template('bareos/storage_daemon/_autochanger.erb')  
    }  
}
```

```
Autochanger {  
  Name = <%= @title %>  
  Device = <%= @device %>  
  Changer Command = <%= @changer_command %>  
  Changer Device = <%= @changer_device %>  
  <% if @description -%>  
    Description = <%= @description %>  
  <% end -%>  
}
```

Puppet - Exported Resources

```
[...]
@@concat { $::bareos::file_daemon_config_export_target:
  tag => $::bareos::director_tag,
}
[...]
[...]
Concat <<| tag == $::bareos::director_tag |>> {
  notify    => Service[$::bareos::director_service_name],
  owner     => 'bareos',
  group     => 'bareos',
  mode      => '0600',
}
[...]
```


- Wrapper around modules
- Defaults for corporation wide setup

- Default for clients (profile::bareos::client)
- Cronjob for truncating old backups
- Zabbix monitoring
- Creates one mysql catalog per customer
- Not to be published

Goals:

- ~~No port forwarding~~ ✓
- Zero configuration backup
- Transport encryption
- ~~Fully puppet managed~~ ✓

- Password store
- Nice integration into puppet
- Moneta backend

```
String $password = trocla(  
    "${::fqdn}_bareos_fd_password",  
    'plain',  
    { length => 63,  
      charset => 'alphanumeric'})
```

Puppet - X.509 Certificates

```
String $client_cert = trocla(  
    "${::fqdn}_${director_tag}_cert",  
    'x509',  
    { ca      => "${director_tag}_ca",  
      days   => '3650',  
      'C'    => 'DE',  
      'ST'   => 'BW',  
      'L'    => 'Stuttgart',  
      'O'    => 'Globalways AG',  
      'OU'   => 'Backup',  
      'CN'   => "${::fqdn}",  
      render => 'certonly' })
```

Goals:

- ~~No port forwarding~~ ✓
- Zero configuration backup
- ~~Transport encryption~~ ✓
- ~~Fully puppet managed~~ ✓

- Key/value lookup tool for puppet
- Client configuration in yaml/json
- Merge configuration file hierarchy

classes:

- profile::bareos::client

- Installs file daemon
- Configures with default director
- Creates ssl certificates
- DB backup scripts
- Exports config for director
- Configures monitoring server

Configuration - Server

classes:

- profile::bareos::server

p::b::server::director_tag: 'dir'

p::b::server::storage_daemon_tag: 'sd'

p::b::server::mountpoint: '/mnt/bareos'

p::b::server::devices: 256

p::b::server::catalogs:

- '1337'

p::b::server::clients:

'test.example.com':

'customer_id': '1337'

'random_number': '1'

'fileset': 'windows_test.example.com'

'retention_period': '42 days'

'password': 's3cr3t!j'

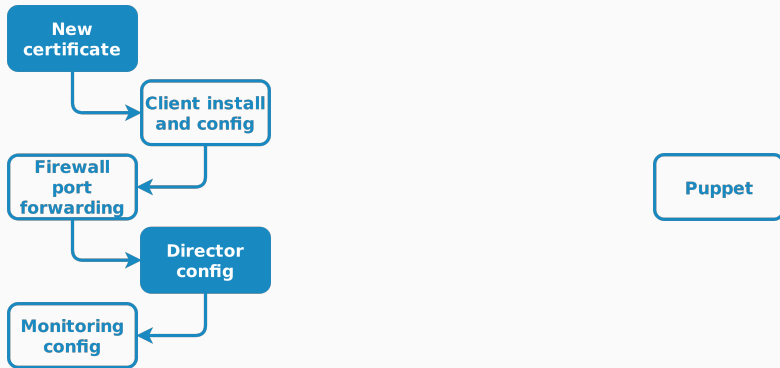
- Installs director, sd, fd, bconsole and webui
- Configures sd with 256 devices
- Creates catalogs
- Builds new ca
- Collects all exported resources
- Backups also nonpuppet clients
- Configures monitoring server

Goals:

- ~~No port forwarding~~ ✓
- ~~Zero configuration backup~~ ✓
- ~~Transport encryption~~ ✓
- ~~Fully puppet managed~~ ✓

Conclusion

Old Vs. New



Thank you!