

# ??????? bareos ??

## ???? ?

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?? ???? ???? ???? ???? ???? ???? (Refactoring) ? ???? .

IT???? ???? ???? ???? ???? ???? , ?? ?? ???? ???? ?? .  
???? (Ransomware) ? ?? ?? , ?? ? ?? ???? ???? ???? ???? ???? ????  
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?? ?? ?? ???? .

## ????

### 1. Full Backup (????)

- ???? ?? ?? ???? ???? ???? .
- ???? ???? ???? ???? ???? , ???? ?? ?? ?? ????  
??? ? ? ???? .

### 2. Incremental Backup (????)

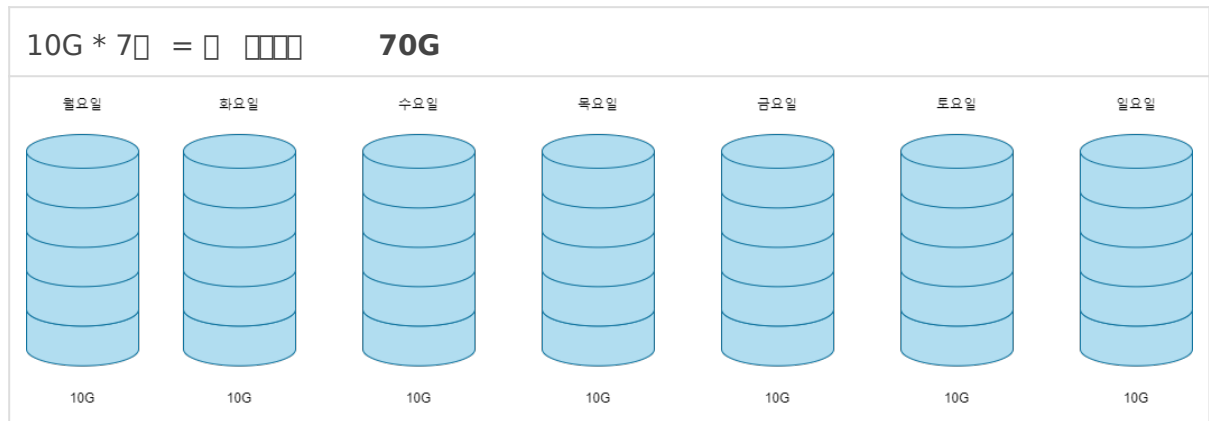
- ?? ?? ?? ?? ???? ???? ???? .
- ?? ???? ???? ???? Full backup?? ?? ???? , ????  
?? Full backup ? ???? ???? ???? ???? Full Backup??  
???? ???? ???? .

### 3. Decremental Backup (????)

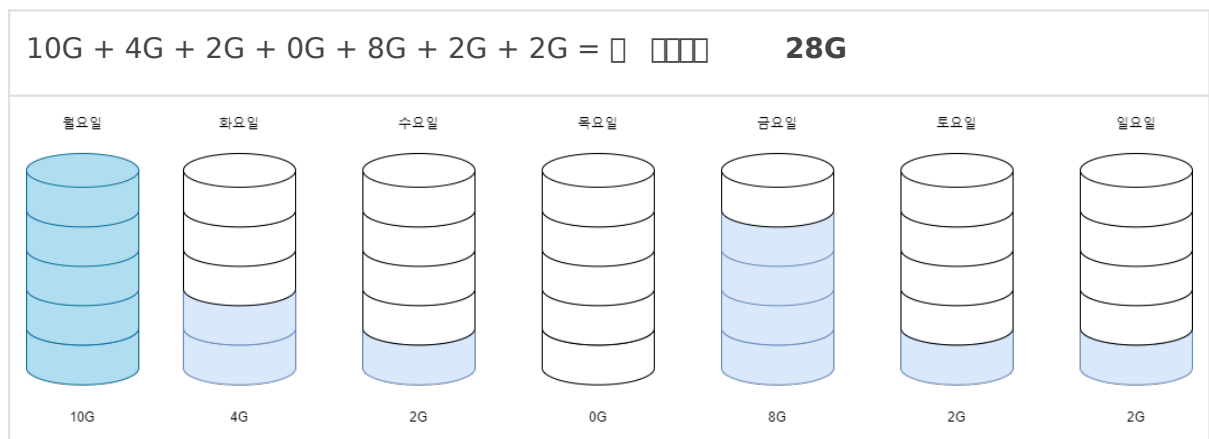
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#### 4. ?????? ?? ??

- Full backup

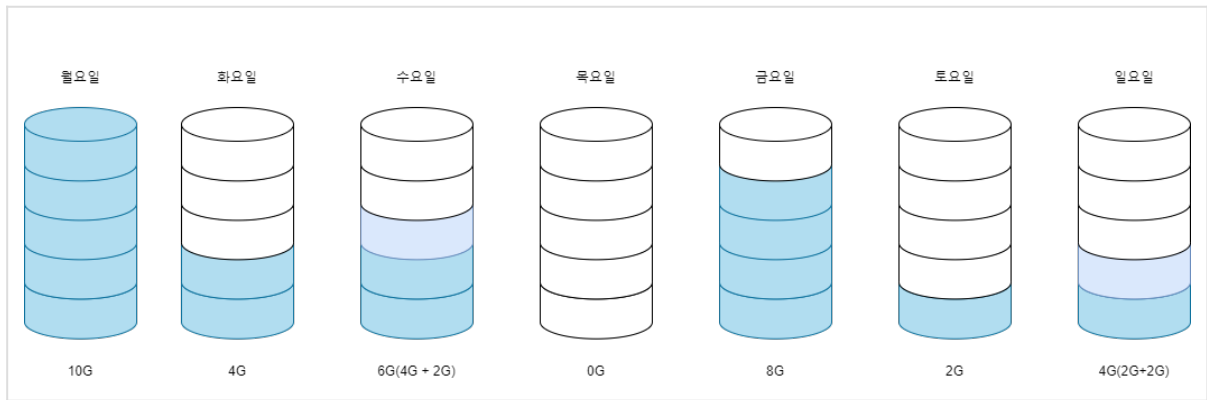


- Incremental Backup



- Dcremental Backup





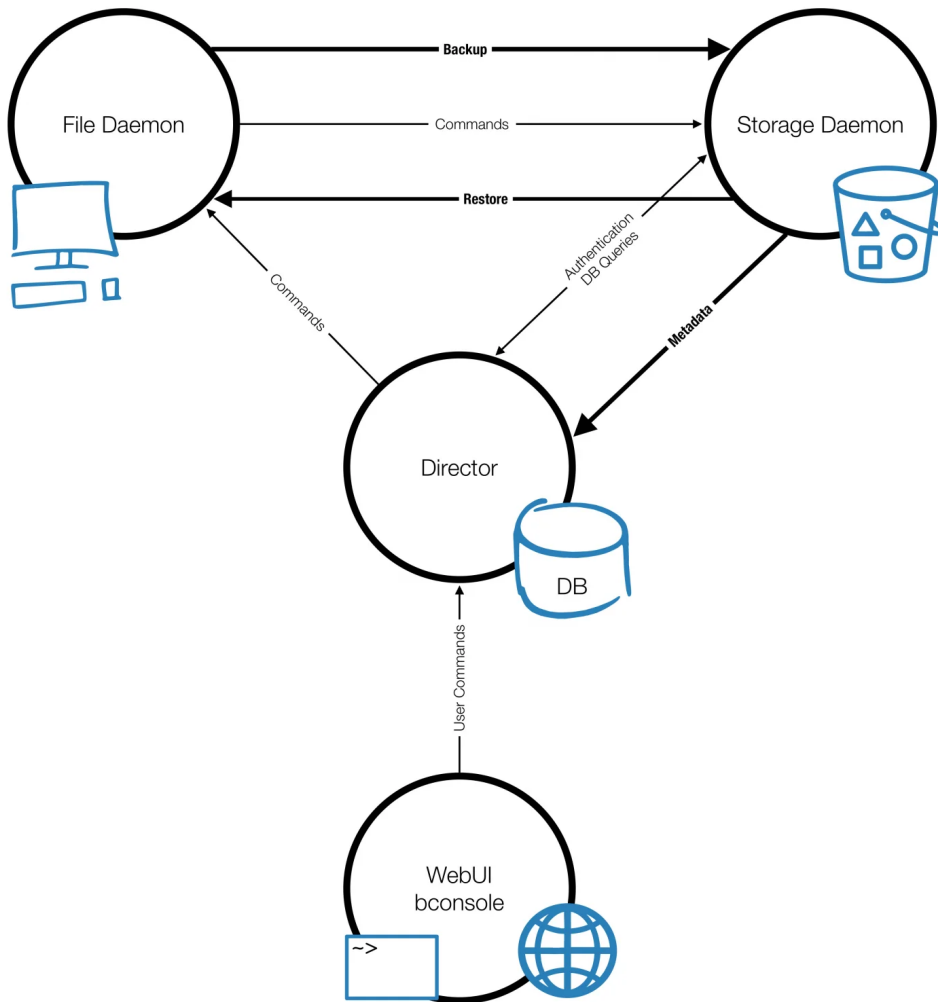
이러한 문제를 해결하기 위해, 이 글에서는 Opensource Backup 솔루션 중 하나인 Bareos을 소개합니다.

Bareos은, Backup을 위한 다양한 플랫폼을 지원하며, 다양한 OS에서 실행 가능합니다. 이 글에서는 Bareos을 소개합니다.

## Bareos ??

- 2000년 1월, 이 글에서는 Opensource Backup인 Bacula를 Fork하여 OSS Backup인 Bareos을 만들었습니다.
- Bacula는 AGPL v3 + 커널을 사용하며, Bareos는 AGPL v3을 사용합니다. ([Bacula vs Bareos](#))
- Bacula는 다양한 플랫폼을 지원하며, Bareos는 B2B를 위한 플랫폼을 지원합니다. 2011년, Bareos는 Forking되었습니다.
- Linux(Centos/Ubuntu/Suse/Debian), Windows 등 다양한 OS에서 실행 가능합니다.
- '19년 6월, 이 글에서는 18.2.5 버전을 소개합니다.

## Bareos ?? ??? ???



1. Director : `tar` `tar` / `tar` / `tar` `tar` `tar`
2. sd(storage-daemon) : `tar` `tar` `tar`
3. fd(file-daemon) : `tar` `tar` `tar` `tar`
4. bconsole : `tar` `tar` ( `tar` `tar` `tar` `tar` `tar` )
5. webui : `tar` `tar` / `tar` job `tar` `tar` `tar` ( `tar` `tar` `tar` `tar` `tar` )

## Bareos????

### 1. Director ????

- Director `tar` `tar` `tar` `tar`

```
$> wget https://download.bareos.org/current/EL_7/bareos.repo
/etc/yum.repos.d/bareos.repo
$> yum install bareos bareos-director bareos-common bareos-database-mysql -y
```

- DB ( )

```
$> /usr/lib/bareos/scripts/create_bareos_database mysql
$> /usr/lib/bareos/scripts/make_bareos_tables mysql
$> /usr/lib/bareos/scripts/grant_bareos_privileges mysql
```

- DB

```
$> cat /etc/bareos/bareos-dir.d/catalog/MyCatalog.conf
Catalog {
  Name = MyCatalog
  dbdriver = "mysql"
  dbname = "{{ DB }}"
  dbuser = "{{ DB }}"
  dbpassword = "{{ DB }}"
  dbsocket=/tmp/mysql.sock
}
```

- Director → SD

```
$> cat /etc/bareos/bareos-dir.d/storage/File.conf
Storage {
  Name = File
  Address = {{ SDIP }}
  Password = "{{ SD  }}" // SD  0
  Device = FileStorage1
  Device = FileStorage2
  Maximum Concurrent Jobs = 2
  Media Type = File
}
```

- 

```
#  (  ,  config ...)

: /etc/bareos/bareos-dir.d/job/{{  }}.conf
```

```
$> cat /etc/bareos/bareos-dir.d/schedule/{{{{ {{ {{ }}.conf

Schedule {
  Name = "{{ {{ {{ {{ }}"
  Run = Full  mon at 01:00          #Full {{ {{ {{ {{ {{ {{
  Run = Incremental tue-sun at 01:00  #Incremental {{ {{ {{ {{ {{ {{
}
```

- **Client**    **FileSet**

```
Client {
  Name = {{ {{ {{ {{ {{ {{
  Description = "Client resource of the Director itself."
  Address = localhost
  Password = "{{ {{ {{ {{ {{ {{ {{ {{          # password for FileDaemon
}
```

- **FileSet**    **Job**

```
FileSet {
  Name = "{{ {{ {{ {{ {{ {{ {{
  Include {
    Options {
      compression=lz4  #{{ {{ {{ {{ {{
      signature=SHA1   #{{ {{ {{ {{ (sha1 / md5 {{ {{ {{
      Sparse = yes
    }
    File = "/usr/sbin"  #{{ {{ {{
    File = "/etc/bareos/"
    File = "/etc/bareos-webui/"
  }
}
```

- **Job**    **JobDef**

```
$>
Job {
  Name = "{{ {{ {{ {{ {{ {{ {{
  JobDefs = "{{ {{ {{ {{ {{ {{ {{ {{
```

```
Client = "{{ {{ .Values.client }} }}"
}
```

- Job Defs

```
$>
JobDefs {
  Name = "{{ {{ .Values.jobdefs }} }}"
  Type = Backup
  Level = {{ {{ .Values.level }} }}
  Client = {{ {{ .Values.client }} }}
  FileSet = {{ {{ .Values.fileset }} }}
  Schedule = "{{ {{ .Values.schedule }} }}"
  Storage = File
  Messages = Standard
  Pool = {{ {{ .Values.pool }} }}
  Priority = 10
  Write Bootstrap = "/var/lib/bareos/%c.bsr"
}
```

- Pool

```
$>
Pool {
  Name = {{ {{ .Values.pool }} }}
  Pool Type = Backup
  Recycle = yes # Recycle files
  AutoPrune = yes # Prune files Pool write files
  Volume Retention = 30 days # Retention
  Maximum Volume Bytes = 100G # Max Volume Bytes
  Maximum Volumes = 100 # Max Volumes
  Label Format = "{{ {{ .Values.labelformat }} }}" # Pool Label
  Purge Oldest Volume = yes
}
```

## 2. SD??

- `yum` `install`

```
$> yum install bareos-storage -y
```

- `SD` `storage`

```
$> cat /etc/bareos/bareos-sd.d/storage/bareos-sd.conf
Storage {
  Name = {{ SD }}
  Maximum Concurrent Jobs = 20
}
```

- `Director` `password`

```
$> cat /etc/bareos/bareos-sd.d/director/bareos-dir.conf
Director {
  Name = {{ Director }}
  Password = "{{ SD password }}"
}
```

- `device` `FileStorage`

```
$> cat /etc/bareos/bareos-sd.d/device/FileStorage.conf

Device {
  Name = FileStorage1
  Media Type = File
  Archive Device = /backup <-- {{ path }}
  LabelMedia = yes;                # lets Bareos label unlabeled media
  Random Access = yes; <-- HDD {{ yes/no }} (tape {{ yes/no }})
  AutomaticMount = yes;
  RemovableMedia = no;
  AlwaysOpen = yes;
  Maximum Concurrent Jobs = 10
}
```

### 3. FD??



### 1. 패키지 설치

```
$> yum install bareos-filedaemon bareos-fd -y
```

### 2. FD 설정

```
$> cat /etc/bareos/bareos-fd.d/client/myself.conf
Client {
    Name = {{hostname}}
    Maximum Concurrent Jobs = 20
}
```

### 3. Director 설정

```
$> cat /etc/bareos/bareos-fd.d/director/bareos-dir.conf
Director {
    Name = {{ Director Host }}
    Password = "{{ Director Host password }}"
}
```

## ?? ?? ??

1. /etc/bareos/bareos-dir.d/webui/bconsole 파일을 생성하고, webui 파일을 생성한다
2. Webui → Jobs → Run  
  1. Job : 선택
  2. Client : 선택
  3. Fileset : 선택
  4. Storage : File (선택)
  5. Pool : 선택
  6. Level : 선택 (Full / Incremental)
  7. Priority : 선택
  8. When : 선택 (선택)
3. Jobs → Show
4. 선택

# ?? ?? ??

## 1. Restore 1 1

- Client : 1 1
- Backup Jobs : 1 1 job
- Merge all client fileset : 1 1 1 1 1 1 1 1 ( 1 1 1 1 1 1 )
- Merge all related jobs to last full backup of selected backup job : 1 1 1 1
- Restore to client : 1 1 1 1
- Restore job : 1 1
- replace files on client : 1 1 1 1 1 1 1
- 1. always : 1 1 1 1
- 2. never : 1 1 1 1
- 3. if file being restored is older than existing file : 1 1 1 1 1 1 1 1
- 4. if file being restored is newer than existing file : 1 1 1 1 1 1 1 1
- Restore location on client : 1 1 1 1

## 2. 1 1 1 1 1

## Appendix#1. / ??

	Community Edition	Bareos Subscription
	Packages	
Previous major releases	(Source code only)	Subscription repository
Current major release	Community repository	Subscription repository
Development binaries	<a href="https://download.bareos.org/next/">https://download.bareos.org/next/</a>	
	Community	
Mailing list	<a href="#">bareos-users</a>	
	Support	
Basis	—	3 incidents, service level: not guaranteed
Standard	—	10 incidents, service level: 2 business days
Advanced	—	20 incidents, service level: next business days
Premier	—	50 incidents, service level: 4 h during business hours
Global	—	Unlimited number of incidents, response time: 1 hour, 24/7
	Development	
Source code	<a href="#">GitHub</a>	
Issue tracker	<a href="https://github.com/bareos/bareos/issues/">https://github.com/bareos/bareos/issues/</a>	
New features	<a href="#">Join in</a>	<a href="#">Co-Funding</a>

## Reference

- [Bareos \[ \] \[ \] \[ \] \[ \]](#)
- [Bareos Github](#)

Revision #13

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