



Release 16.2 and Roadmap 2017

Agenda

1. What's new in Bareos 16.2
2. In depth: Always Incremental Backup Scheme
3. What's on the roadmap for 2017?

What's new in Bareos 16.2

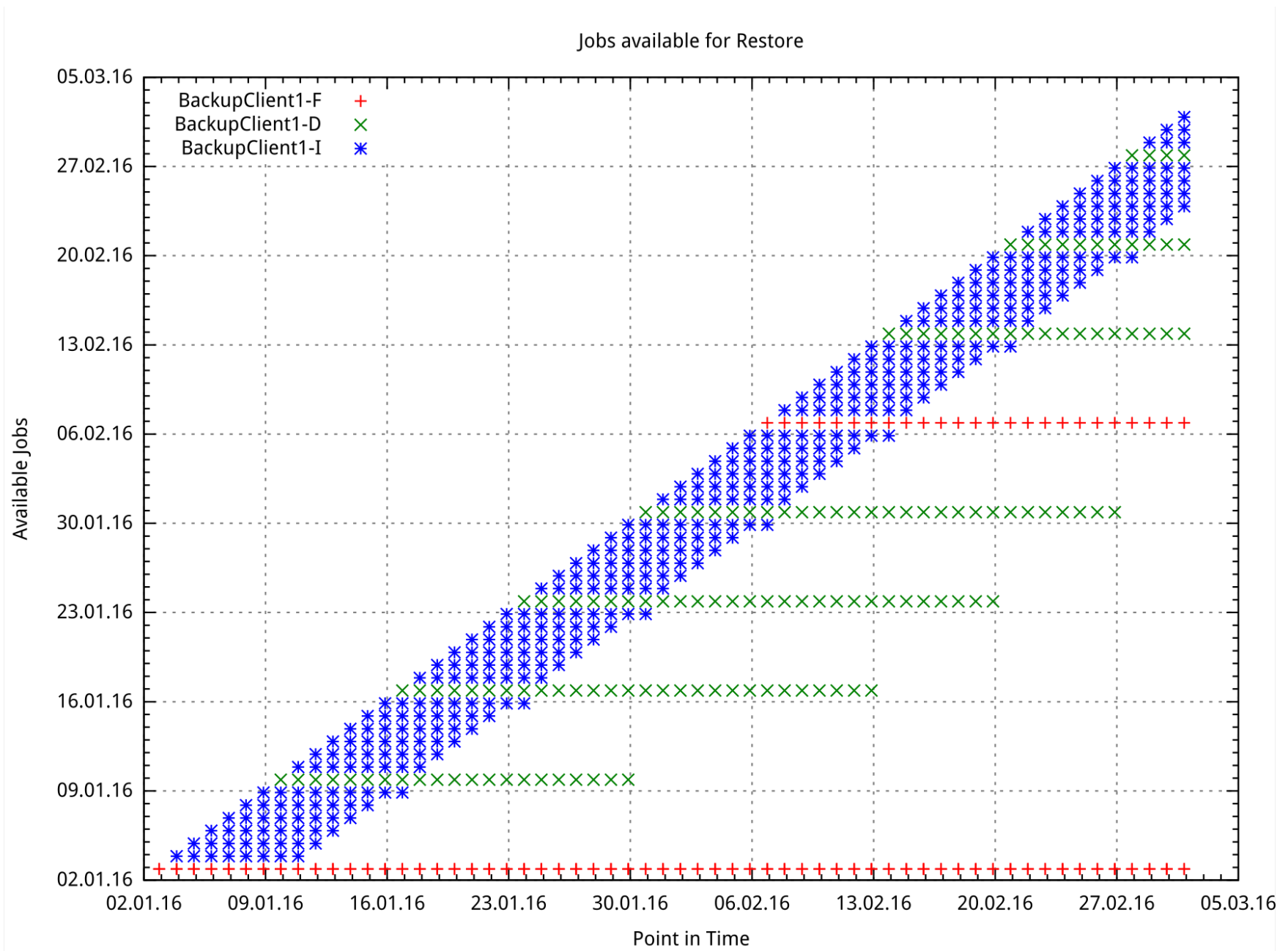
1. Always Incremental Backup Scheme
2. Client initiated connection (see dedicated presentation)
3. Enhanced ACLs: multitenancy
4. Performance Enhancements
5. News about the Web UI
6. NDMP Enhancements
7. New subdirectory configuration scheme
8. Configuration API: First steps
9. Plugins: Incremental backup und point-in-time recovery for MySQL

In depth: Always Incremental Backup Scheme

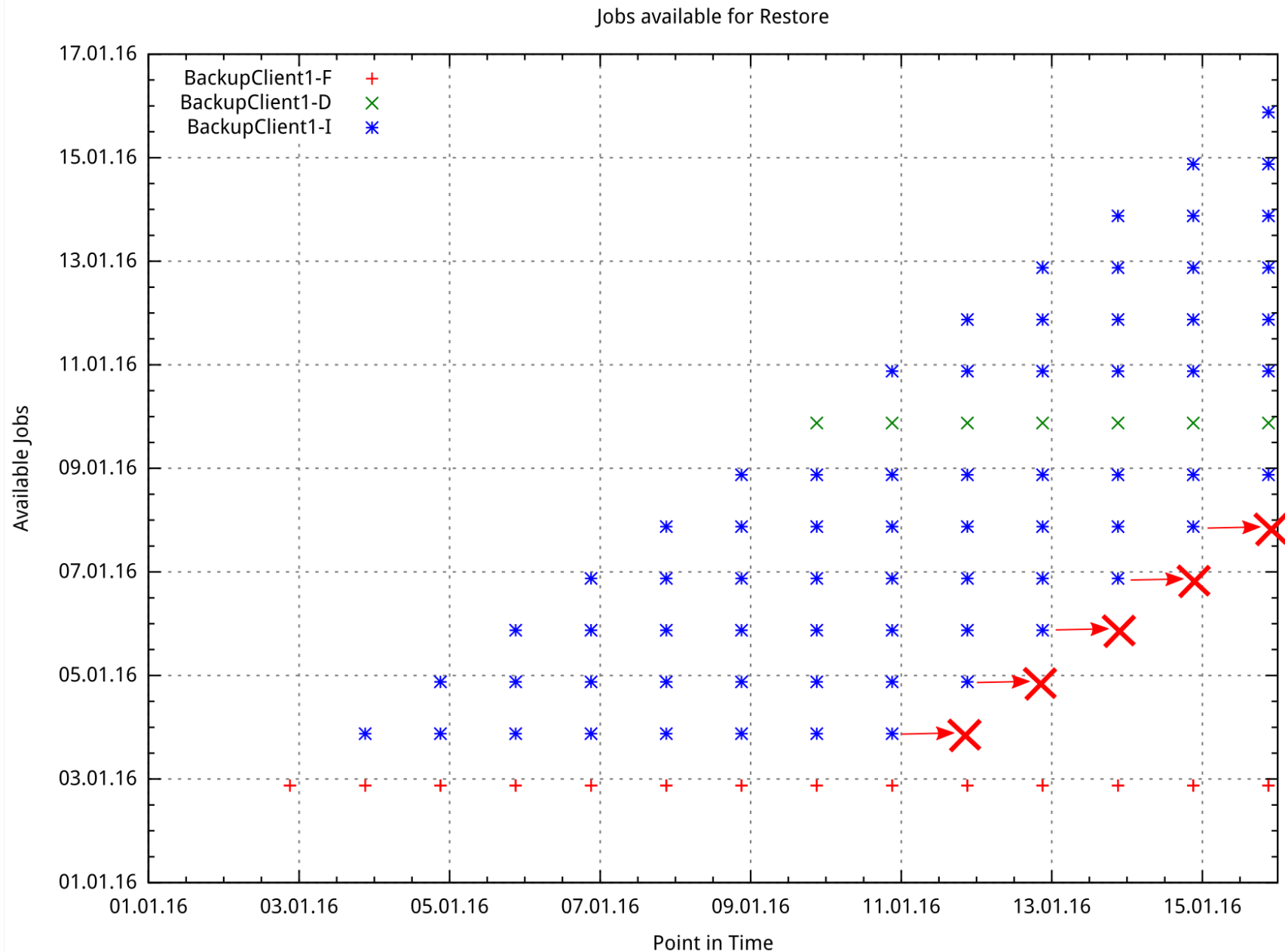
Conventional backup scheme

1. daily incremental backups kept for one week
2. weekly differential backups kept for three weeks
3. monthly full backups kept for half year

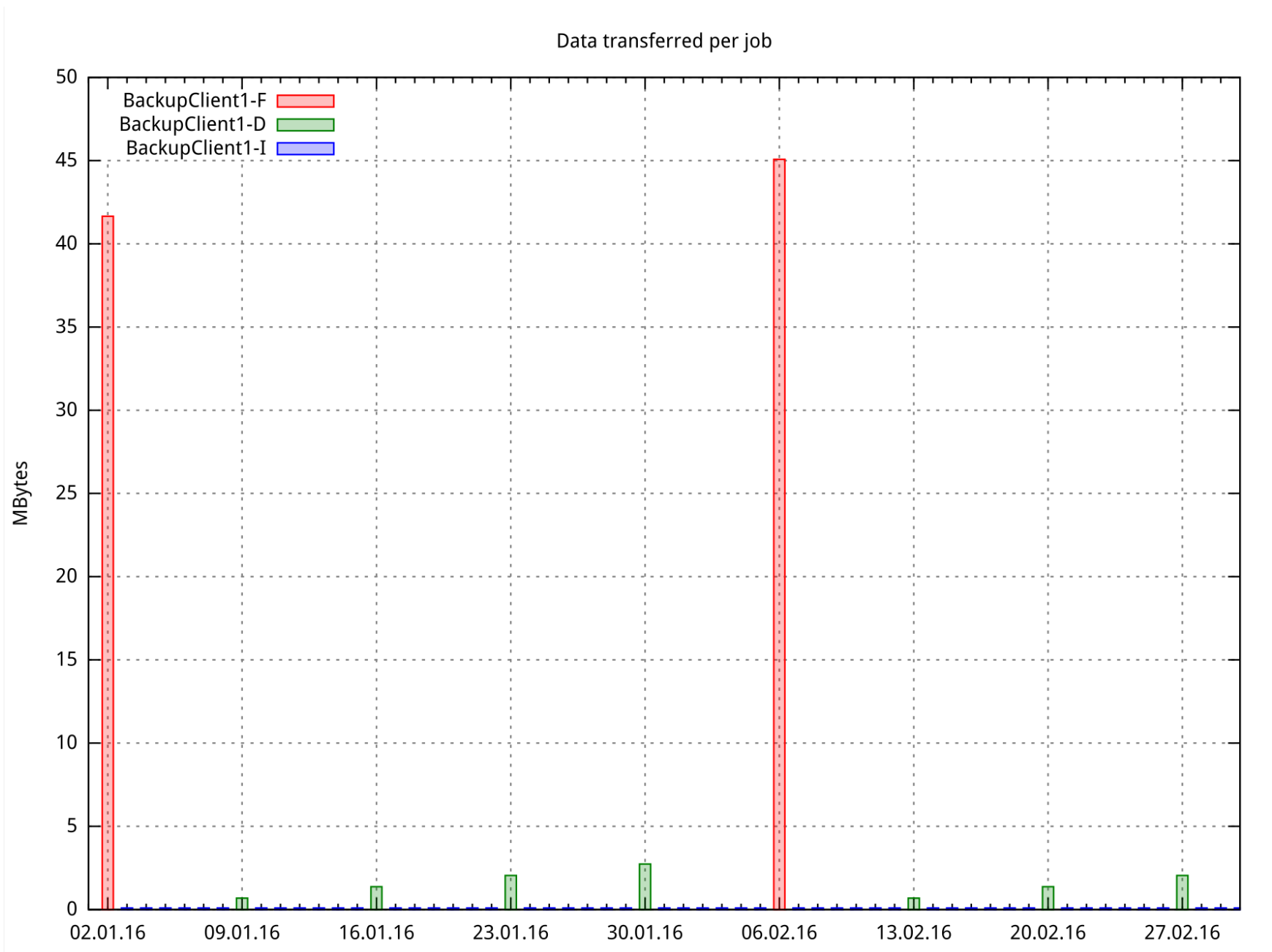
Job availability for conventional backup scheme



Job history loss for conventional backup scheme



Data being moved in conventional backup scheme



Problems with conventional backup scheme

1. Full data is copied over the network in regular intervals
2. Identical Data is copied from client multiple times
3. Job history loss caused by retention expiry

always incremental backup scheme

- Basic concept
 - Only changes are copied from the clients - always incremental
 - Existing data from the client is consolidated with the new incremental information (keep history)
 - The consolidation happens without client interaction
 - Minimized number of incrementals is kept to have a defined change history

Two main tasks:

1. Incremental backup job is run every night during the backup window
2. Consolidation job consolidates during the day

How to configure always incremental Backup Job

```
Job {  
  Name = BackupClient1  
  ...  
  Accurate = yes  
  Always Incremental = yes  
  Always Incremental Job Retention = 7 days  
}
```

Consolidation Job

```
Job {  
  Name = "Consolidate"  
  Type = Consolidate  
}
```

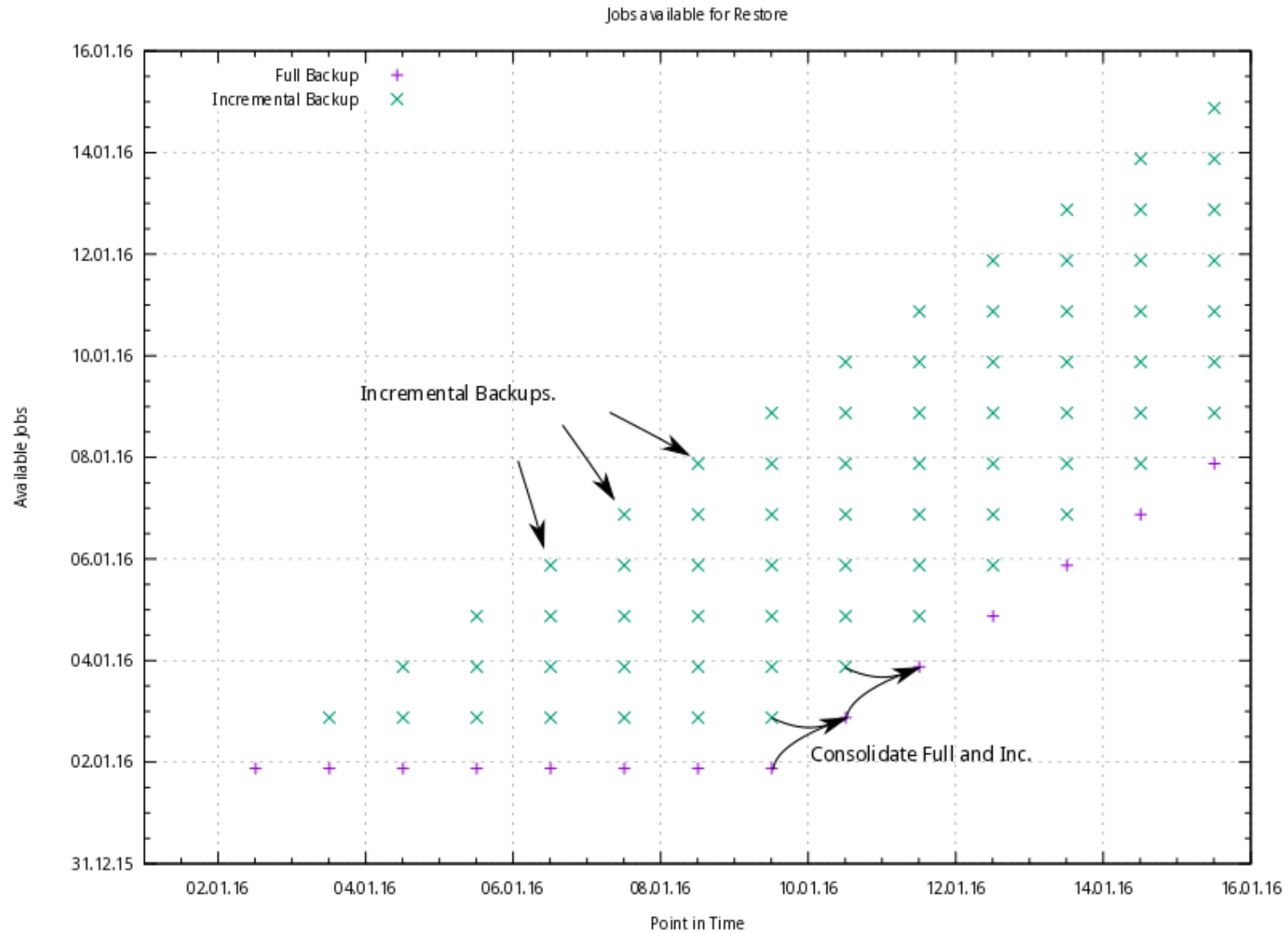
The Backup Job

- runs an incremental backup during the backup window
- *Always Incremental* directives configure behaviour
- *accurate* Backup to notice file deletion

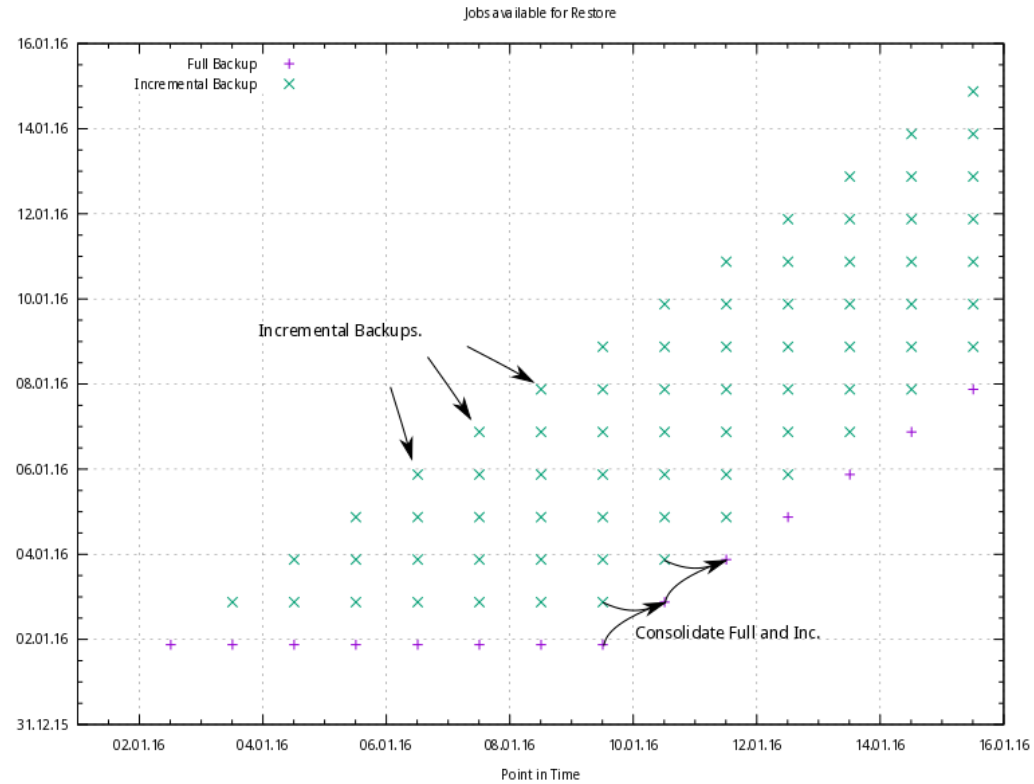
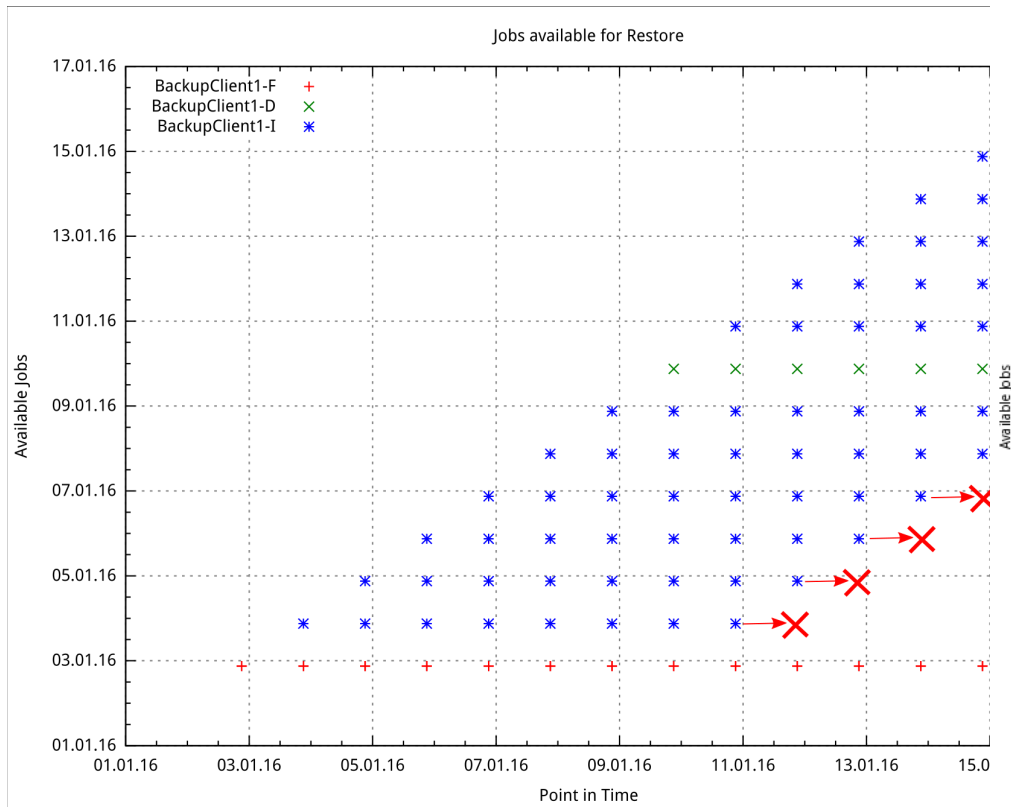
The Consolidation Job

- Loops over all Backup Jobs
- Starts virtual backups according to *Always Incremental* settings

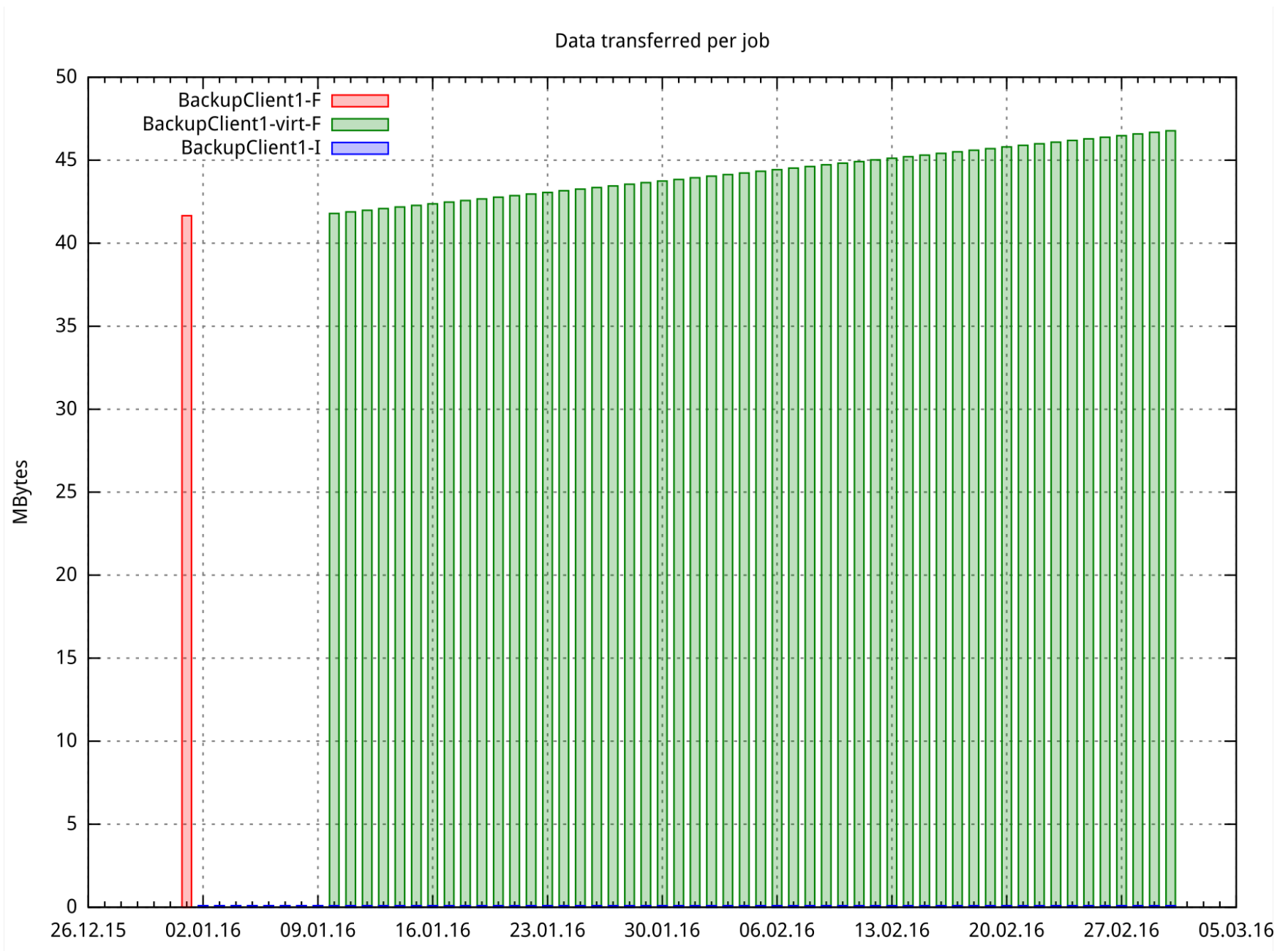
Job availability with always incremental backup scheme



Job availability compared



Always Incremental Jobdata



Always Incremental Jobdata - Problem

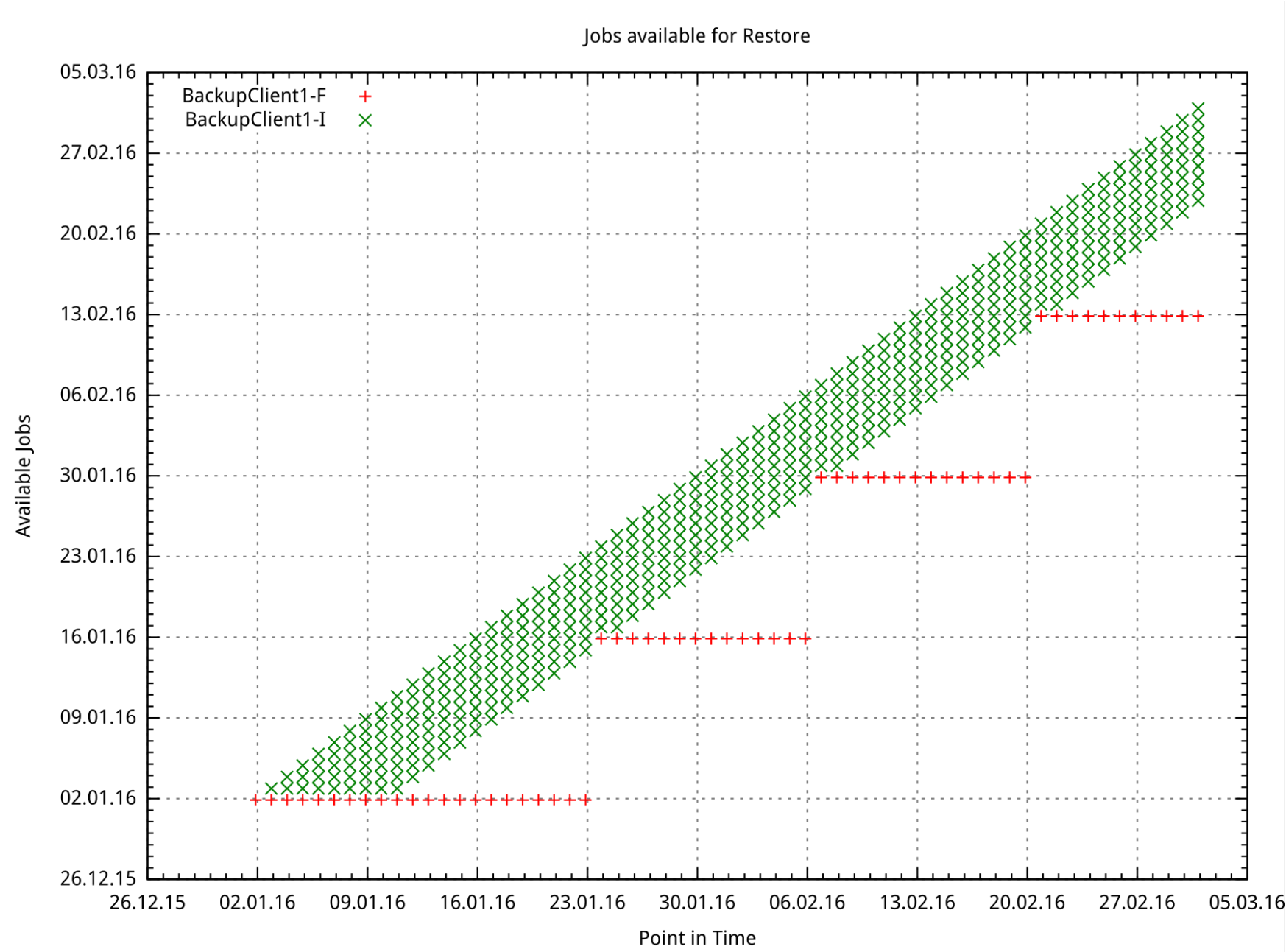
- good: minimal data from the client
- bad: Every day the consolidation runs the whole client data is moved during consolidation
- impossible for a large number of clients

Always Incremental Jobdata - Solution

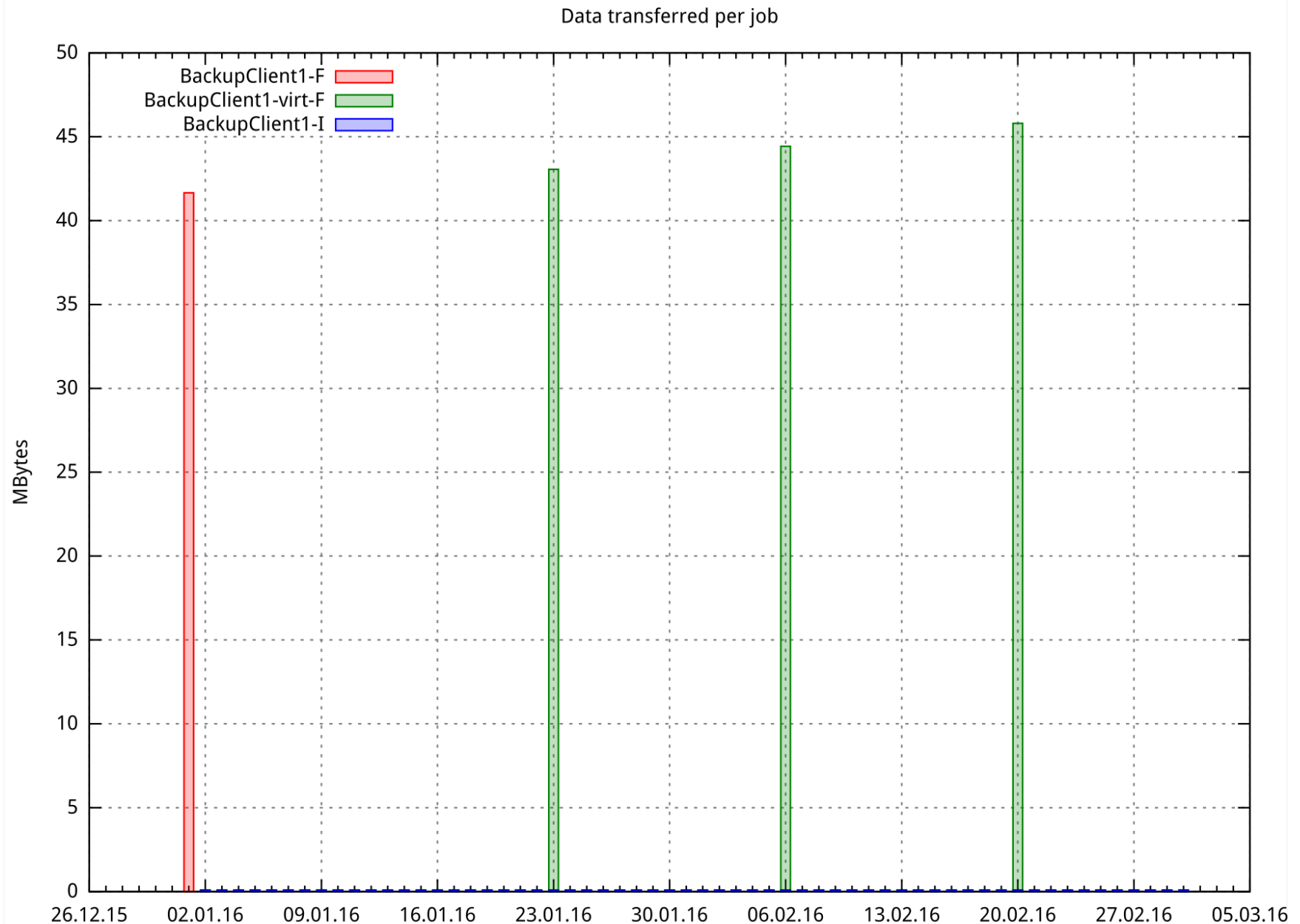
- only consolidate latest incremental during consolidation
- leave the full backup as it is during daily consolidations
- consolidate the full in longer intervals

```
Job {  
    Always Incremental Max Full Age = 21 days  
}
```

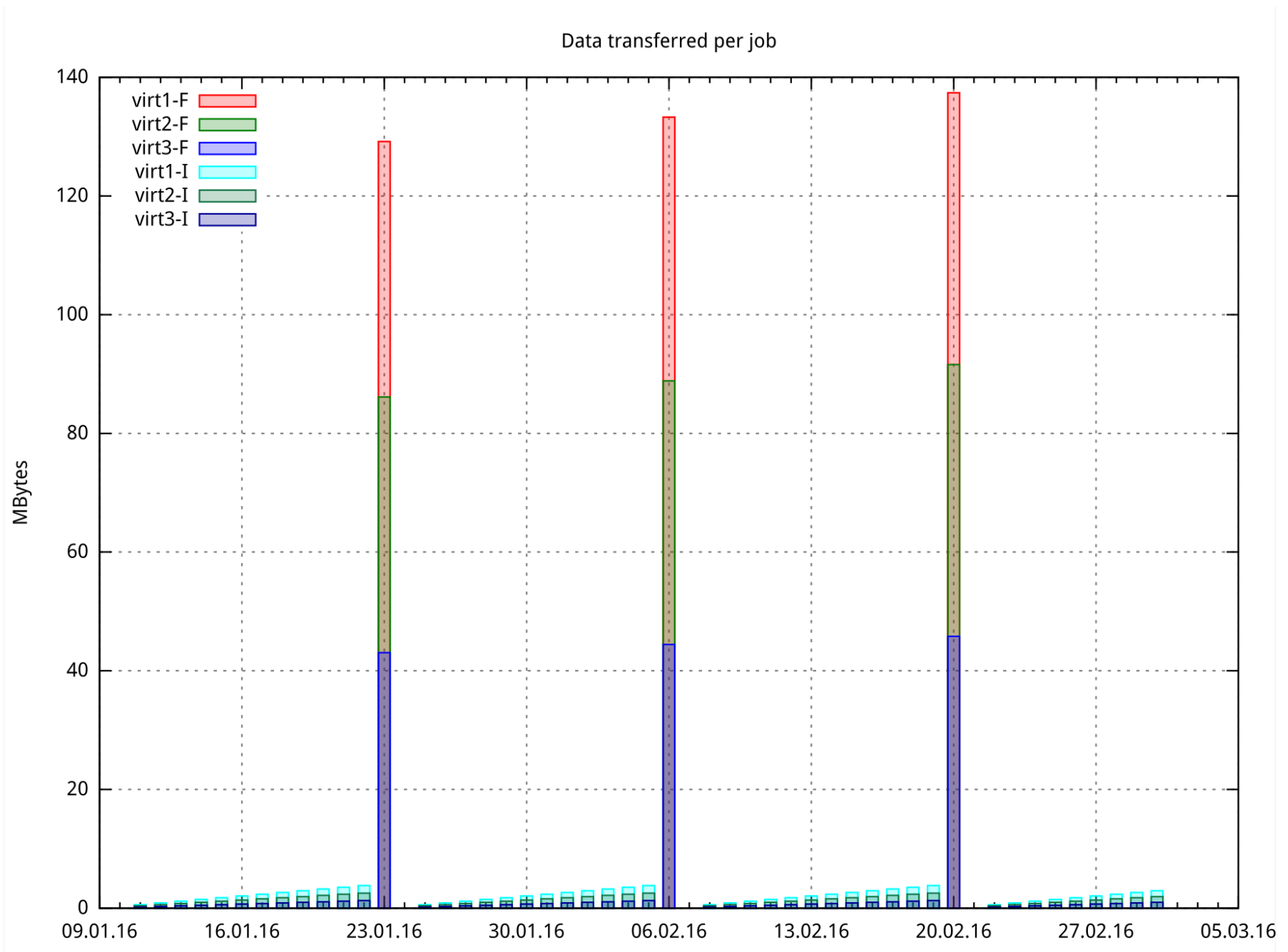
Always Incremental Max Full Age = 21 days



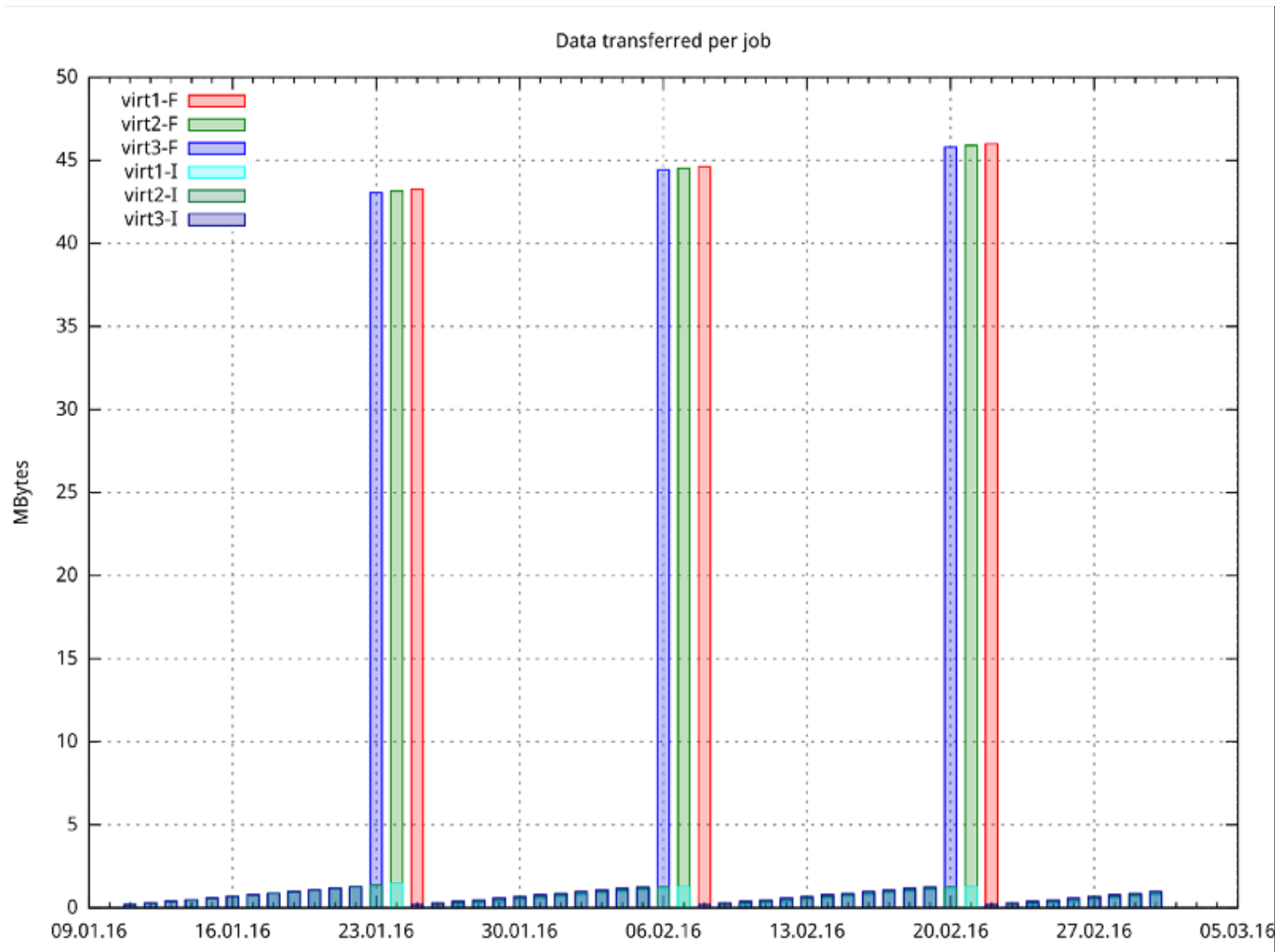
Always Incremental Max Full Age = 21 days



Always Incremental Max Full Age with multiple clients



Always Incremental Max Full Age with multiple clients and Max Full Consolidations



Always Incremental configuration overview

Backup Job

```
Job {  
  Always Incremental = yes           # enabled?  
  Always Incremental Job Retention = 7 days # how long is the job history?  
  Always Incremental Keep Number = 7      # guaranteed number of incs left?  
  Always Incremental Max Full Age = 21 days # if full is older it will be  
                                           # part of the consolidation  
}
```

Consolidation Job

```
Job {  
  Name = "Consolidate"  
  Type = Consolidate  
  Max Full Consolidations = 1 # how many consolidation jobs  
                             # with full included can be started  
}
```

Always Incremental summary

- Only incremental Backups are done from the client
 - Minimal network load
 - Minimal backup time
 - In backup window

Always Incremental summary

- Consolidation is done locally on storage
 - Outside of backup window
 - Very fast as local
 - Existing backups are consolidated into new backups
 - No holes in the backup history
- Defined incremental backup history is always available
- Adequate for File Backup, NOT for plugin Backups

Subdirectory configuration scheme

- Before
 - one configuration file per daemon:

```
/etc/bareos/bareos-dir.conf  
/etc/bareos/bareos-sd.conf  
/etc/bareos/bareos-fd.conf
```

- Configuration file contains all configuration resources
- Including additional configuration files complicated

```
@/file/to/config/file  
@|"/etc/bareos/generate_configuration_to_stdout.sh"
```

Subdirectory configuration scheme

- New
 - one configuration directory per daemon:

```
/etc/bareos/bareos-dir.d  
/etc/bareos/bareos-sd.d  
/etc/bareos/bareos-fd.d
```

- one configuration file per resource in resource type directory:

```
/etc/bareos/bareos-dir.d/pool/Differential.conf  
/etc/bareos/bareos-dir.d/pool/Incremental.conf  
/etc/bareos/bareos-dir.d/pool/Full.conf  
/etc/bareos/bareos-dir.d/director/bareos-dir.conf  
/etc/bareos/bareos-dir.d/console/bareos-mon.conf  
/etc/bareos/bareos-dir.d/storage/File.conf  
/etc/bareos/bareos-dir.d/job/BackupClient1.conf
```

- Including additional configuration files is easy,

```
/etc/bareos/bareos-dir.d/*/*.conf is automatically loaded
```

Subdirectory configuration scheme

- compatibility:
 - if */etc/bareos/bareos-dir.conf* exists, it is used
 - otherwise config subdirectories are used.

Configuration API

- Uses new configuration directory layout
- Create client via director API or bconsole

Enhanced ACL support

- Fixed inherited ACL limitations in the director
- Affects bconsole, Web UI and director API
- Full multi-tenancy support
- Definitions of rules and roles
- Users can only access and see data according to role access
- Prerequisite for web UI as self-service-portal for restore

News from the web UI

- Multi-language support
 - German
 - English
 - French
 - Russian
- Client overview shows available FD updates
- Media Handling
- Autochanger support

Autochanger View

Dashboard

Jobs

Restore

Clients

Schedules

Storages

Director

admin

Devices

Pools

Volumes

Import/Export Slots - L700

Import all

Slot	Volume	Actions
40	E01010L4	<div>Import</div>
41		
42		
43		

Drives - L700

Drive	Loaded	Volume	Actions
0			
1			

Slots - L700

Show 10 entries

Search:

Update slots

Label barcodes

Slot	Volume	Bytes	Last written	Expiration	Status	Media Type	Pool	Actions
1	E01001L4	11.14 MB	2016-08-28 23:00:05	2016-09-04 23:00:05	Full	lto	Tape	<div></div>
2	E01002L4	7.69 MB	2016-08-28 23:00:07	2016-09-04 23:00:07	Full	lto	Tape	<div></div>
3	E01003L4	10.77 MB	2016-08-28 23:00:07	2016-09-04 23:00:07	Full	lto	Tape	<div></div>
4	E01004L4	3.89 MB	2016-08-28 23:00:08		Append	lto	Tape	<div></div>
5	E01005L4	9.81 MB	2016-08-17 18:44:33	2016-08-24 18:44:33	Full	lto	Tape	<div></div>
6	E01006L4	10.13 MB	2016-08-17 18:44:33	2016-08-24 18:44:33	Full	lto	Tape	<div></div>
7	E01007L4	9.05 MB	2016-08-19 17:24:14	2016-08-26 17:24:14	Full	lto	Tape	<div></div>
8	E01008L4	10.06 MB	2016-08-19 17:19:10	2016-08-26 17:19:10	Full	lto	Full	<div></div>
9	E01009L4	9.74 MB	2016-08-19 17:24:16	2016-08-26 17:24:16	Full	lto	Tape	<div></div>
10								

First

Previous

1

2

3

4

Next

Last

Restore in Russian Language

Восстановить | sheldon.f... x +

sheldon.frank.dass-it/bareos-webui/restore/ Suchen

Панель управления Фоновое задание Восстановить Клиенты Расписание выполнения резервного копирования Запоминающие устройство Д

Клиент

amy-fd

Задания резервного копирования

(588) 2016-09-06 21:00:02 - backup-amy - Increme

Объединить все наборы файлов клиента

Да

Объединить все задания до последнего полного резервного копирования вместе

Да

Восстановить клиента

amy-fd

Задание на восстановление

RestoreFiles

Заменить файлы на клиенте

никогда

Папка восстановления на клиенте

/tmp/bareos-restores/

Выбор файла

Наименование	Размер	Дата
/	0.00 B	1970-01-01 01:00:00
etc/	8.19 KB	2016-08-18 17:59:58
.pwd.lock	0.00 B	2015-07-25 17:47:22
.updated	163 B	2015-12-10 19:27:25
DIR_COLORS	5.11 KB	2016-07-12 13:44:01
DIR_COLORS.256color	5.7 KB	2016-07-12 13:44:01
DIR_COLORS.lightbgcolor	5.13 KB	2016-07-12 13:44:01
GREP_COLORS	94 B	2016-01-12 10:51:54
NetworkManager/	4.1 KB	2016-08-03 09:44:39
X11/	66 B	2015-12-10 19:30:24
adjtime	16 B	2015-07-25 17:51:55
aliases	1.52 KB	2016-02-22 15:11:51
alternatives/	33 B	2016-08-18 17:59:33
anacrontab	541 B	2015-07-13 13:37:17
audisp/	41 B	2016-08-18 17:59:34
audit/	102 B	2016-08-18 17:59:34
avahi/	33 B	2016-04-27 16:16:34
bareos-webui/	61 B	2016-08-18 18:15:32
bareos/	4.1 KB	2016-08-18 18:00:36
bash_completion.d/	50 B	2016-06-03 14:17:54
bashrc	2.84 KB	2016-02-22 15:11:51
binfmt.d/	6 B	2016-02-01 15:04:04
chkconfig.d/	6 B	2015-11-24 12:58:51
cron.d/	20 B	2015-12-10 19:30:34

NDMP Enhancements

- Disk-To-Disk-To-Tape Support
- LMDB Backend for NDMP FileHierarchy Data (to be able to handle very large number of files)

New MySQL / MariaDB Plugin

- Uses xtrabackup from Percona
- Incremental backups for INNODB tables
- Hotbackup
- Point-In-Time Recovery

Roadmap

- NDMP: Backup to storage attached tape drives
- Performance Enhancements for large environments
- RHEV / oVirt Plugin
- Deduplication
- Enhance configuration API
- Webui
 - Use configuration API
 - Job availability Graphs
 - Performance Graphs included

Thank you