



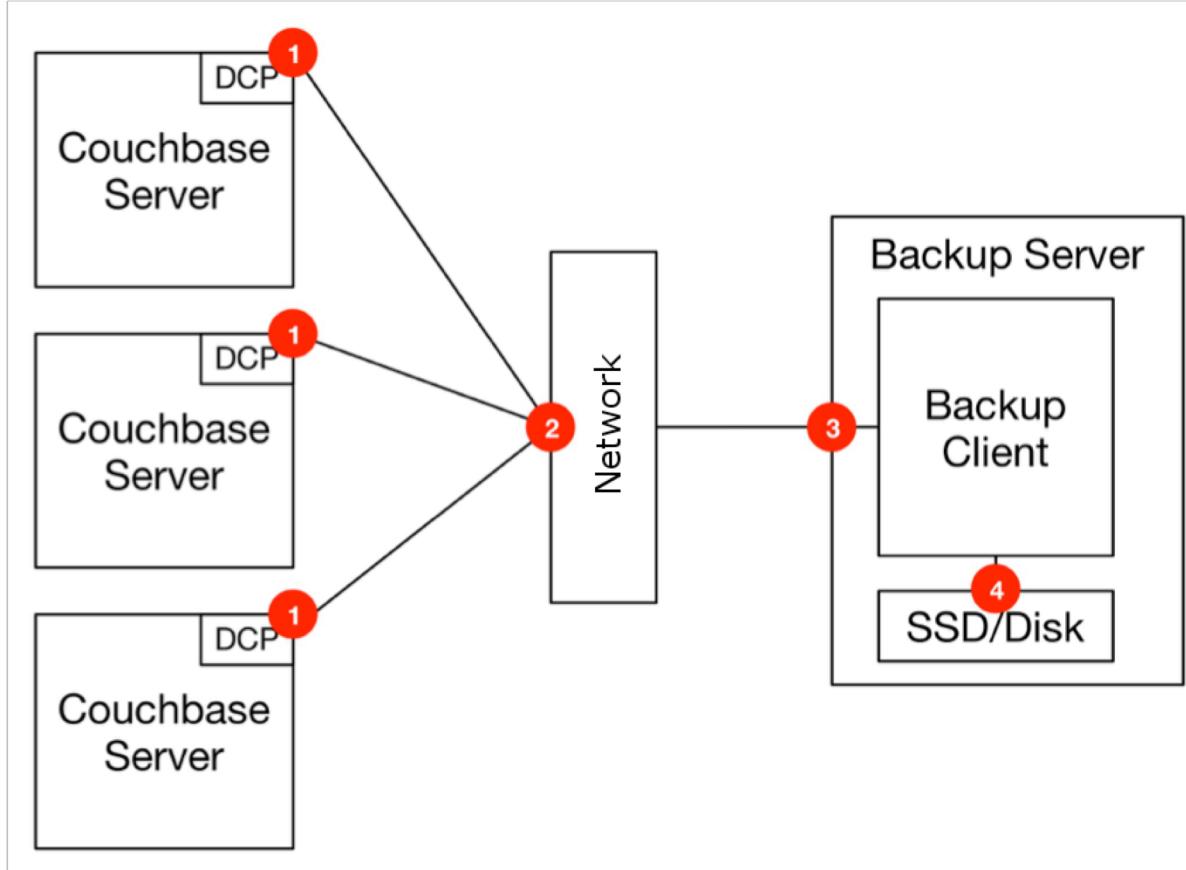
Couchbase

Architecture and Administration Basics

Backup and Restore



Couchbase Backup Architecture



- Backup client on a separate machine
- Streaming from memory
- Transparent and resilient to cluster topology changes
- Backup from memory
- Efficient incremental backups due to DCP



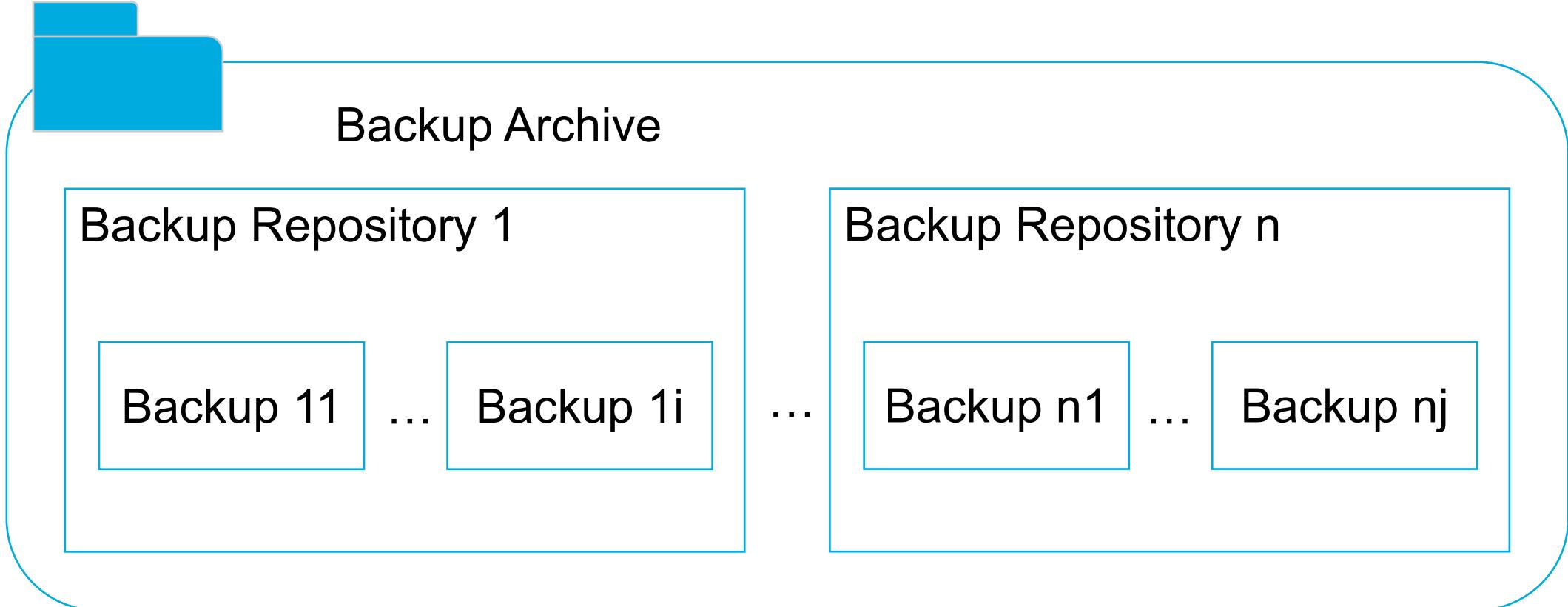
cbbackupmgr Tool

cbbackupmgr [<command>] [<args>]

backup	Backup a Couchbase cluster
compact	Compact an incremental backup
config	Create a new backup configuration
help	Get extended help for a subcommand
list	List the archive contents
merge	Merge incremental backups together
remove	Delete a backup permanently
restore	Restore an incremental backup



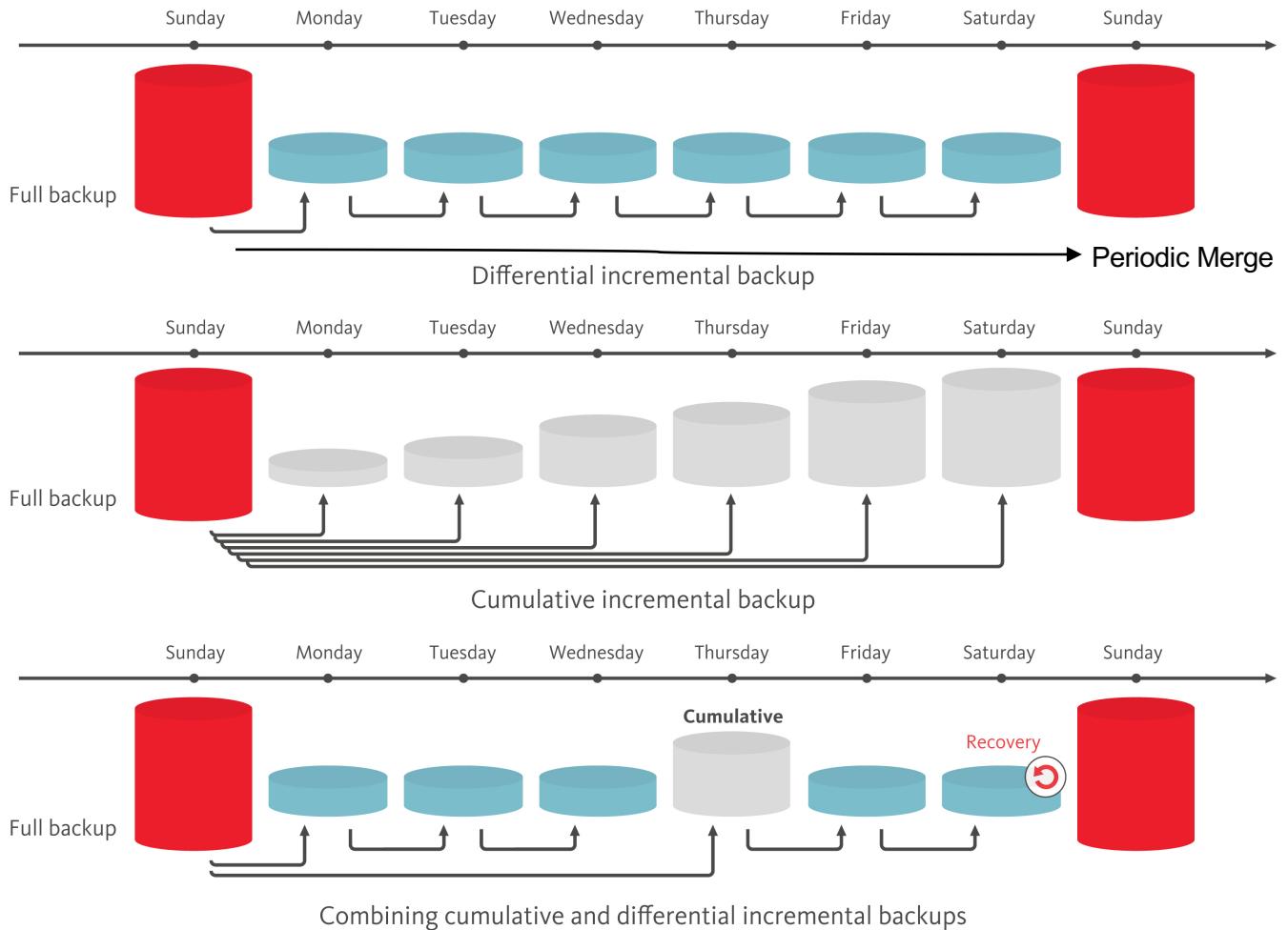
Backup Archive Structure





Backup Strategies

- **Full Backup**
 - Full Snapshot
 - Per bucket or also per node
- **Differential Incremental Backup**
 - Only changes since the last full backup
 - Created quicker
 - Takes longer to restore
 - Periodic merge
- **Cumulative Incremental Backup**
 - All changes since the last full backup
 - Takes longer than differential backups
 - Uses more disk space than differential backups
 - Faster to restore than differential backups
- **Combined**





Periodic Merge

- Initial backup is a full one
- Each following backup in the same repository is a new increment
- Increments can be merged into a new full backup

Sunday:	Config Backup Repo	(0 backups in backup repo)	
Sunday:	Backup 1	(1 backup in backup repo)	Full
Monday:	Backup 2	(2 backups in backup repo)	
Tuesday:	Backup 3	(3 backups in backup repo)	
Wednesday:	Backup 4	(4 backups in backup repo)	Increment
Thursday:	Backup 5	(5 backups in backup repo)	
Friday:	Backup 6	(6 backups in backup repo)	
Saturday:	Backup 7	(7 backups in backup repo)	
Sunday:	Backup 8	(8 backups in backup repo)	
Sunday:	Merge 1-7	(2 backups in backup repo)	Merge
Monday:	Backup 9	(3 backups in backup repo)	
Tuesday:	Backup 10	(4 backups in backup repo)	
Wednesday:	Backup 11	(5 backups in backup repo)	
Thursday:	Backup 12	(6 backups in backup repo)	
Friday:	Backup 13	(7 backups in backup repo)	
Saturday:	Backup 14	(8 backups in backup repo)	
Sunday:	Backup 15	(9 backups in backup repo)	
Sunday:	Merge 7-14	(2 backups in backup repo)	



Full/incremental Backup

- Initial backup is a full one
- Each following backup is a new increment
- A new full one means to create a new repository

Sunday:	Config Backup Repo 1	(0 backups in backup repo)	
Sunday:	Backup 1	(1 backup in backup repo)	Full
Monday:	Backup 2	(2 backups in backup repo)	
Tuesday:	Backup 3	(3 backups in backup repo)	
Wednesday:	Backup 4	(4 backups in backup repo)	Increment
Thursday:	Backup 5	(5 backups in backup repo)	
Friday:	Backup 6	(6 backups in backup repo)	
Saturday:	Backup 7	(7 backups in backup repo)	
Sunday:	Config Backup Repo 2	(0 backup in backup repo)	
Sunday:	Backup 8	(1 backups in backup repo)	Full
Monday:	Backup 9	(2 backups in backup repo)	
Tuesday:	Backup 10	(3 backups in backup repo)	
Wednesday:	Backup 11	(4 backups in backup repo)	
Thursday:	Backup 12	(5 backups in backup repo)	
Friday:	Backup 13	(6 backups in backup repo)	
Saturday:	Backup 14	(7 backups in backup repo)	
Sunday:	Create Backup Repo 3	(0 backups in backup repo)	
Sunday:	Backup 15	(1 backup in backup repo)	Full



Full Backup only

- Each new full backup means to create a new repository

Sunday:	Config Backup Repo 1	(0 backups in backup repo)	
Sunday:	Backup 1	(1 backup in backup repo)	Full
Monday:	Config Backup Repo 2	(0 backups in backup repo)	
Monday:	Backup 2	(1 backup in backup repo)	
Tuesday:	Config Backup Repo 3	(0 backups in backup repo)	Full
Tuesday:	Backup 3	(1 backup in backup repo)	
Wednesday:	Config Backup Repo 4	(0 backups in backup repo)	
Wednesday:	Backup 4	(1 backup in backup repo)	
Thursday:	Config Backup Repo 5	(0 backups in backup repo)	
Thursday:	Backup 5	(1 backup in backup repo)	
Friday:	Config Backup Repo 6	(0 backups in backup repo)	
Friday:	Backup 6	(1 backup in backup repo)	
Saturday:	Config Backup Repo 7	(0 backups in backup repo)	
Saturday:	Backup 7	(1 backup in backup repo)	
Sunday:	Config Backup Repo 8	(0 backups in backup repo)	
Sunday:	Backup 8	(1 backup in backup repo)	



Performance Recommendations

- Create frequent incremental backups
- Merge incremental backups instead of performing regular full backups
- Run backup with multiple threads, e.g. `-t 16`
- Enable value compression: `--value-compression compressed`
- Backup client is CPU intensive, DO NOT run it on a cluster node
- Run compact command after backup to save disk space

Thank you



Couchbase