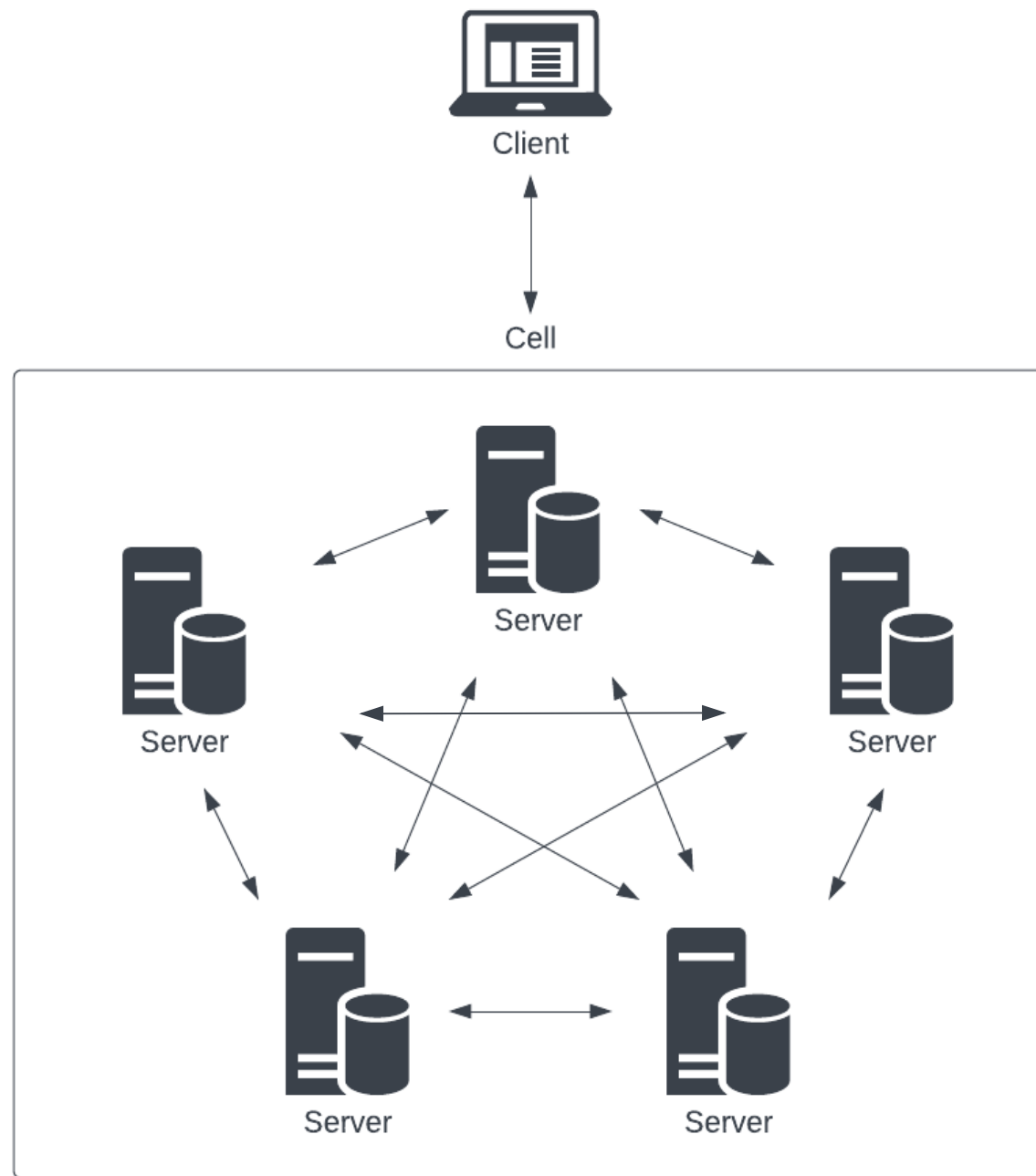
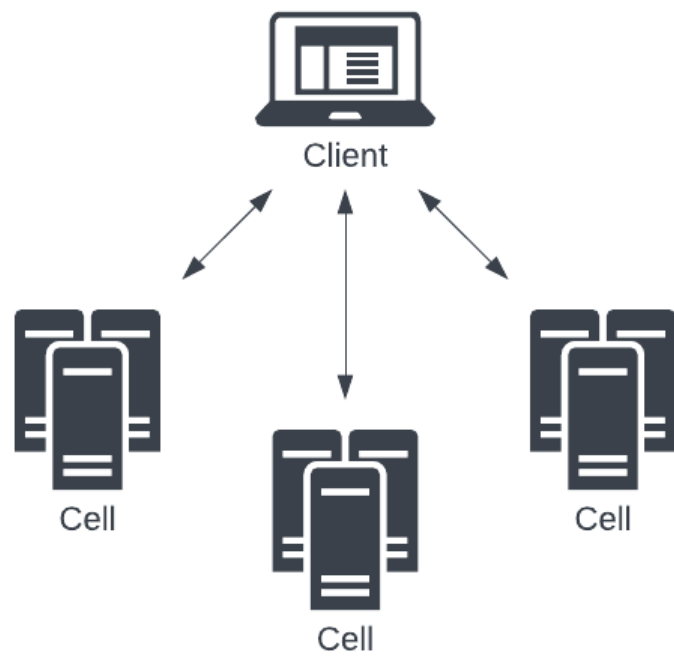
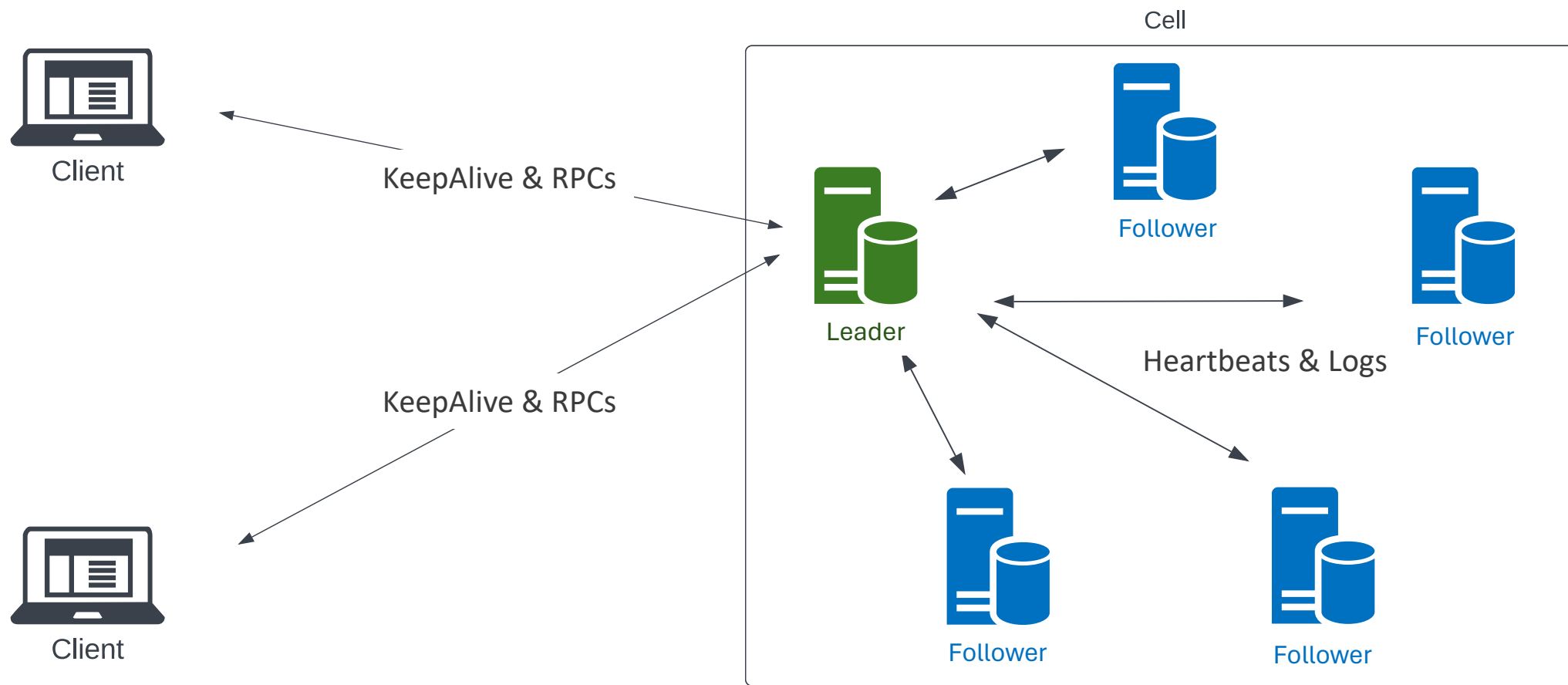


Java-based Implementation of Google's Chubby Lock Service using Raft Consensus Algorithm



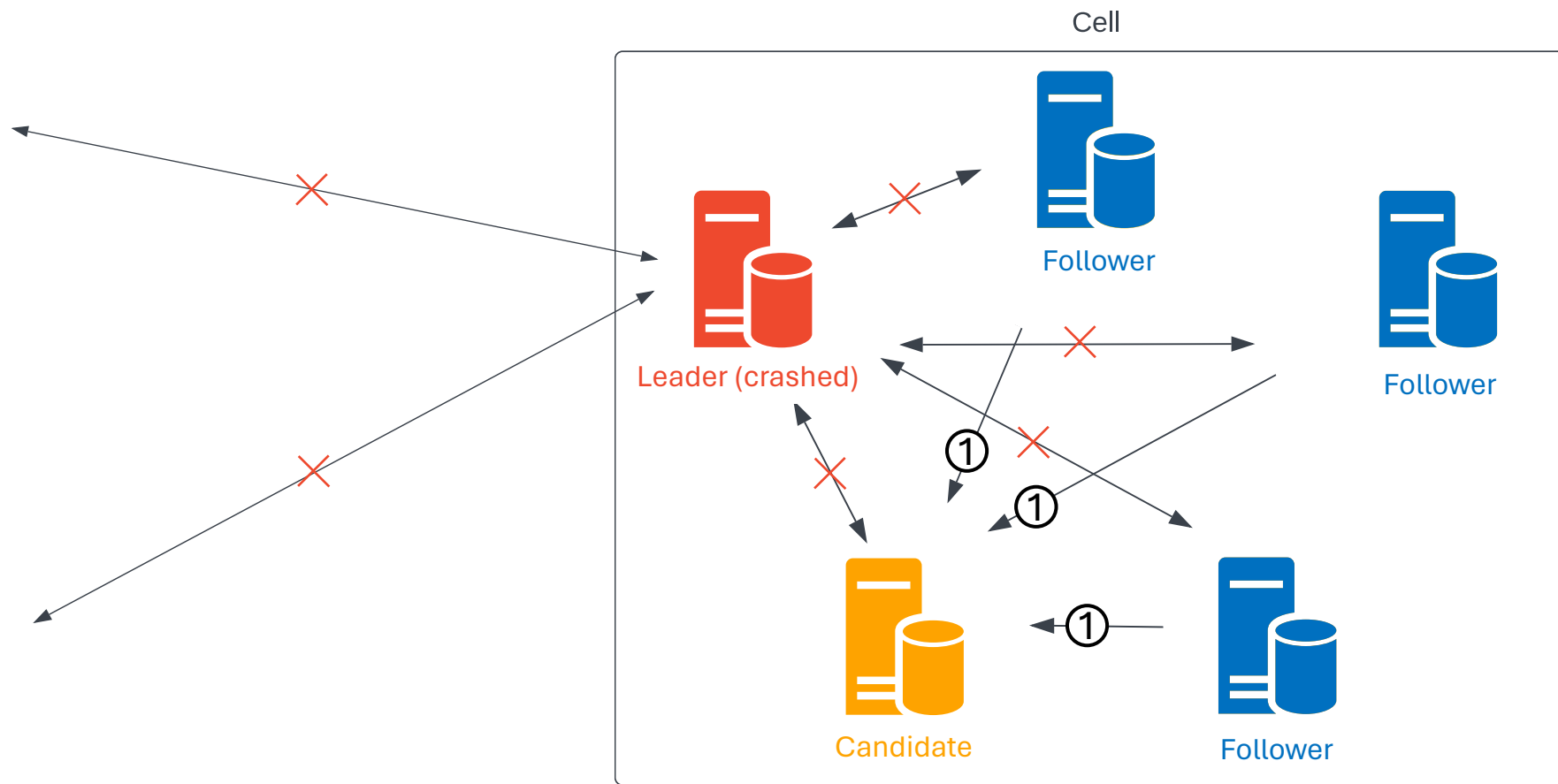




Client



Client





Client



Client

KeepAlive & RPCs

KeepAlive & RPCs

Cell



Leader (crashed)



Follower



Follower



Leader

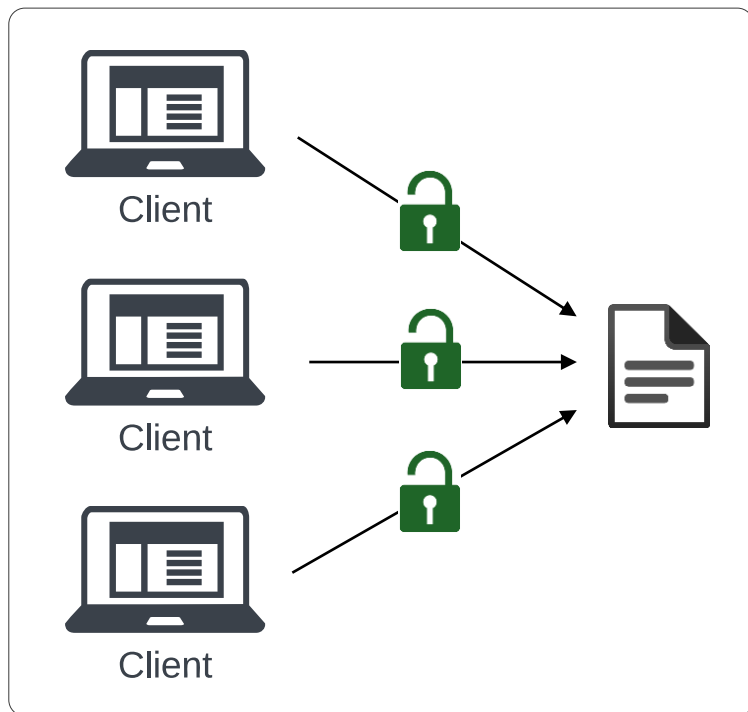
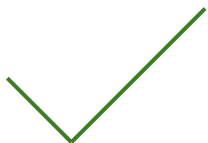


Follower

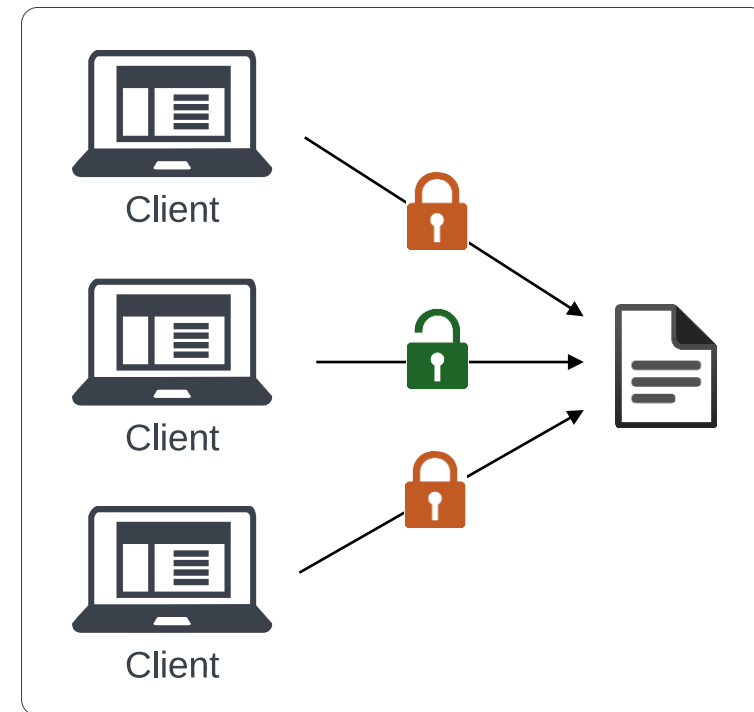
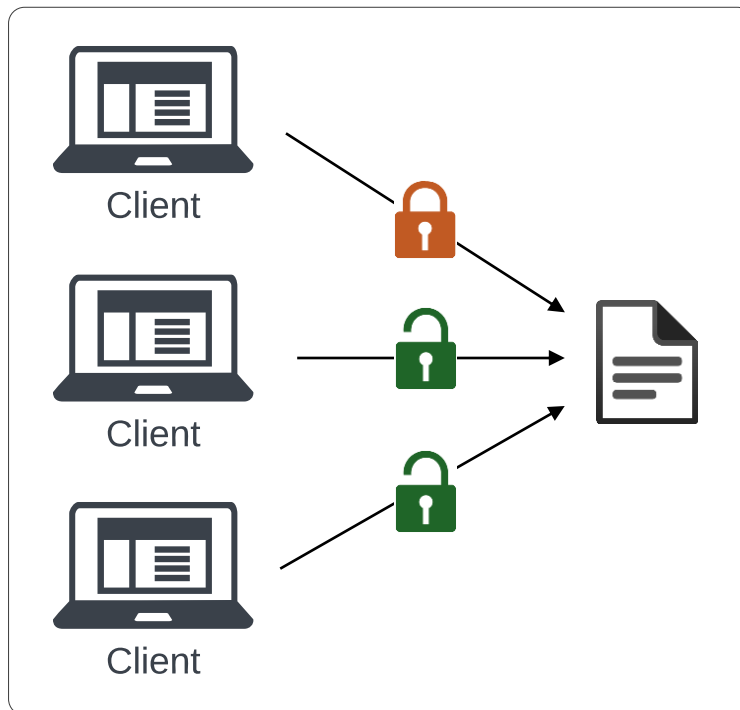
Heartbeats & Logs



Shared Lock (read)



Exclusive Lock (write / change_acl)





Shared Lock (read)



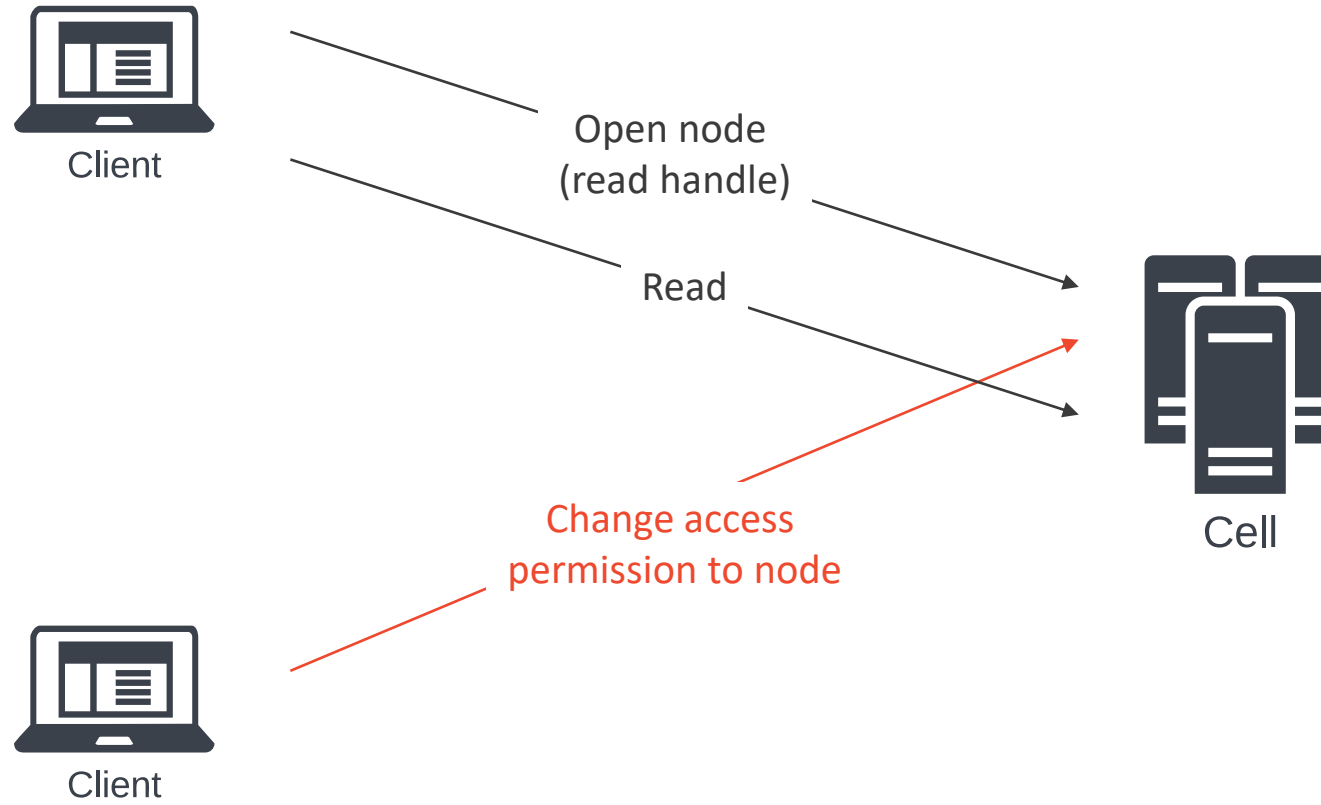
Exclusive Lock (write)



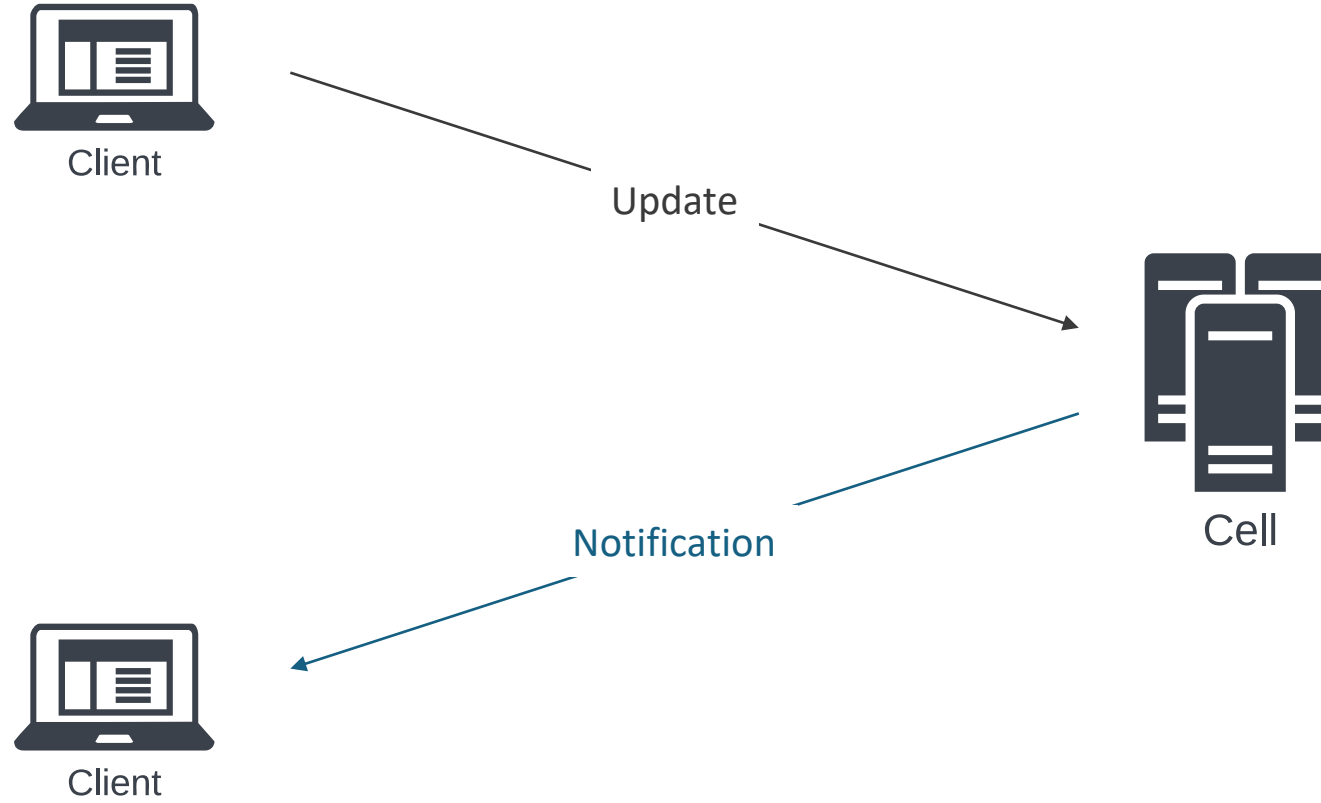
Exclusive Lock (change_acl)

Exclusive access	×	✓	✓
Open handle	✓	✓	✓
Close handle	✓	✓	✓
Read filecontent	✓	✓	✓
Read node metadata	✓	✓	✓
Write filecontent	×	✓	×
Remove node	×	✓	×
Grant permissions	×	×	✓
Change permissions names	×	×	✓

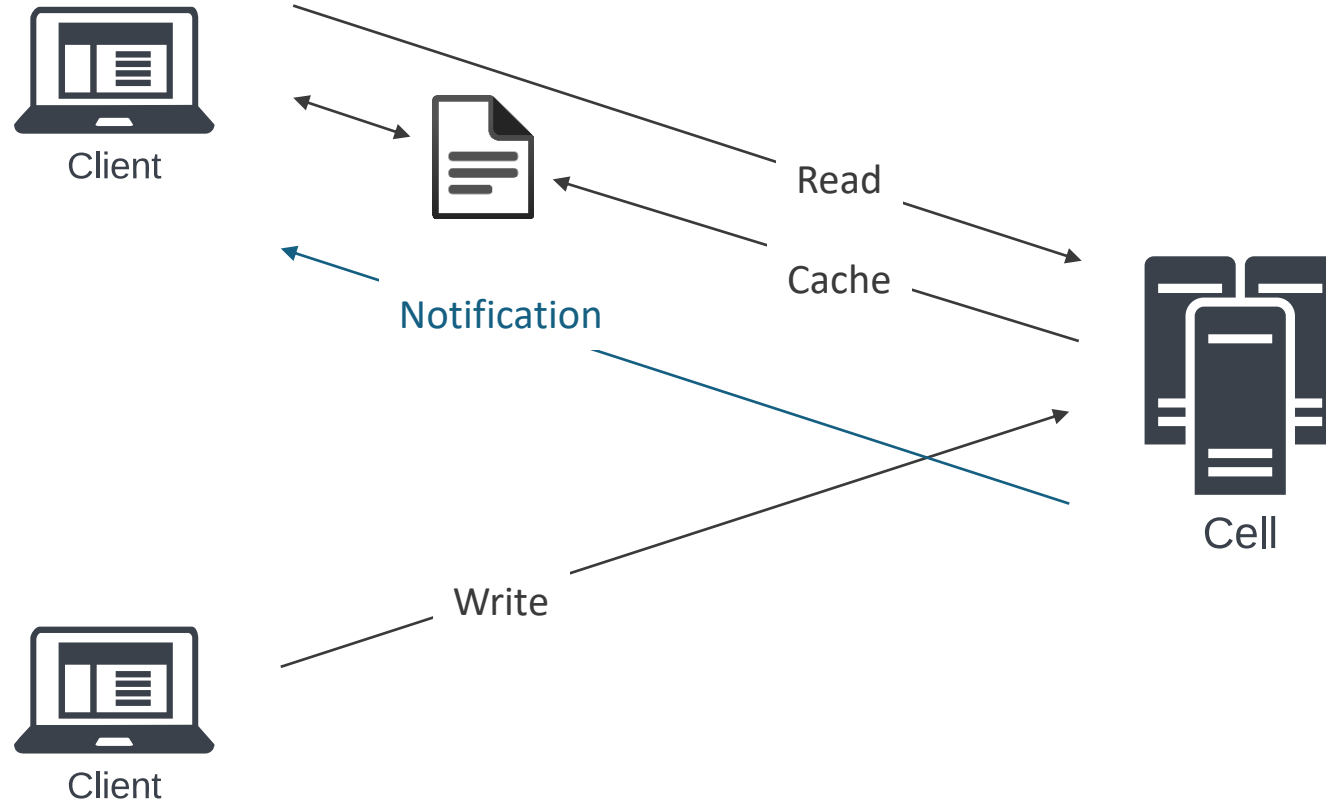
Permissions



Subscriptions & Events



Cache



Unix-like path

/ls/cellName/dir/...

Root Lock service

- Common to all name spaces

Name of the cell

- *local*
- custom

Name of dir / files

- Dir / files: called *nodes*
- Ephemeral nodes
- Permanent nodes

Namespace

Distributed KV store:

Key = path

Value = serialized node (json)

		Path	Node value
Default & Accessible	←	/	{"file_content": ... ,"metadata": { ... }}
Default & Not accessible	{	/ls	{"file_content": ... ,"metadata": { ... }}
		/ls/cellName	{"file_content": ... ,"metadata": { ... }}
		/ls/cellName/acl	{"file_content": ... ,"metadata": { ... }}
		/ls/cellName/acl/read.txt	{"file_content": ... ,"metadata": { ... }}
		/ls/cellName/acl/write.txt	{"file_content": ... ,"metadata": { ... }}
Not accessible	{	/ls/cellName/acl/change_acl.txt	{"file_content": ... ,"metadata": { ... }}
		/ls/cellName/acl/newRead.txt	["client0Name", "client1Name", ...]
Accessible	{	/ls/cellName/acl/customWrite.txt	["client0Name", "client1Name", ...]
		/ls/cellName/dir_perm/file.txt	{"file_content": ... ,"metadata": { ... }}
		/ls/cellName/dir_perm/file_tmp.txt	{"file_content": ... ,"metadata": { ... }}
		/ls/cellName/dir_tmp	{"file_content": ... ,"metadata": { ... }}
		...	...