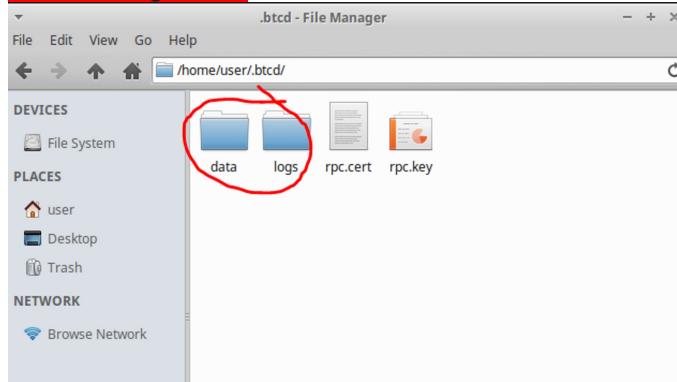


# Simnet logins

Thursday, April 18, 2019 5:22 PM

How to restart a LN node

Remove these ghost files



```
cd $GOPATH
```

```
btcd --txindex --simnet --rpcuser=kek --rpcpass=kek
```

getrawtransaction RPC

```
cd $GOPATH
```

```
btcd --txindex --simnet --reindex --rpcuser=kek --rpcpass=kek
```

From <<https://medium.com/chlunetwork/bitcoin-lightning-network-tutorial-how-to-integrate-lightning-to-a-crypto-project-f48743c8644a>>

cd \$GOPATH/dev/alice	cd \$GOPATH/dev/bob	cd \$GOPATH/dev/charlie
rm -r data log	rm -r data log	rm -r data log
Ind --rpclisten=localhost:10001 --listen=localhost:10011 --restlisten=localhost:8001 --datadir=data --logdir=log --debuglevel=info --bitcoin.simnet --bitcoin.active --bitcoin.node=btcd --btcd.rpcuser=kek --btcd.rpcpass=kek	Ind --rpclisten=localhost:10002 --listen=localhost:10012 --restlisten=localhost:8002 --datadir=data --logdir=log --debuglevel=info --bitcoin.simnet --bitcoin.active --bitcoin.node=btcd --btcd.rpcuser=kek --btcd.rpcpass=kek	Ind --rpclisten=localhost:10003 --listen=localhost:10013 --restlisten=localhost:8003 --datadir=data --logdir=log --debuglevel=info --bitcoin.simnet --bitcoin.active --bitcoin.node=btcd --btcd.rpcuser=kek --btcd.rpcpass=kek
NEW WINDOW	NEW WINDOW	NEW WINDOW
Incli --rpcserver=localhost:10001 --macaroonpath=data/admin.macaroon create	Incli --rpcserver=localhost:10002 --macaroonpath=data/admin.macaroon create	Incli --rpcserver=localhost:10003 --macaroonpath=data/admin.macaroon create

<pre>above wife keep gentle habit kick detect pledge typical nuclear pulp problem anger task fee sun uniform amateur spoon robust payment giraffe wave story</pre>	<pre>abstract tribe oval right speed stomach gentle tortoise void private kiss peace obey setup cancel marble bench scatter earn finish alien parrot gun negative</pre>	<pre>about ticket build fix elder home top stem foot couch change breeze obscure whale version midnight swallow pill plate economy alien dress assist hurdle</pre>
<pre>1. able 2. advance 3. oblige 4. settle 5. visit 6. chronic 7. accident 8. pact 9. ignore 10. injury 11. nasty 12. toe 13. flag 14. kingdom 15. great 16. guilt 17. alone 18. below 19. result 20. stamp 21. still 22. rhythm 23. rotate 24. noble</pre>	<pre>1. absent 2. sauce 3. cross 4. tattoo 5. child 6. tiny 7. auto 8. tornado 9. tube 10. pond 11. tower 12. stay 13. machine 14. suit 15. mad 16. nothing 17. economy 18. clinic 19. left 20. enrich 21. orange 22. kiwi 23. tattoo 24. number</pre>	<pre>1. about 2. conduct 3. inherit 4. holiday 5. daring 6. virus 7. name 8. glove 9. cycle 10. monster 11. pizza 12. degree 13. someone 14. medal 15. dish 16. test 17. warm 18. burden 19. moral 20. debris 21. vocal 22. solar 23. hood 24. mule</pre>
<pre>Incli-alice getinfo</pre>	<pre>Incli-bob getinfo</pre>	<pre>Incli-charlie getinfo</pre>
<pre>Incli- rpserver=localhost:10001 macaroonpath=~/gocode/dev/ali ce/data/chain/bitcoin/simnet/ad min.macaroon.create</pre>	<pre># This is the alias in the ~/.bashrc file Incli- rpserver=localhost:10002 macaroonpath=~/gocode/dev/be b/data/chain/bitcoin/simnet/ad min.macaroon.getinfo</pre>	<pre>Incli- rpserver=localhost:10003 macaroonpath=~/gocode/dev/ch arlie/data/chain/bitcoin/simnet/ admin.macaroon.getinfo</pre>
<pre>Incli-alice newaddress np2wkh</pre>	<pre>#then to control bob we type Incli-bob \$command</pre>	<pre>Incli-charlie newaddress np2wkh</pre>
<pre>Pubkey: "identity_pubkey": 026cb9d10219d0ea90c6aa4dfda0a593377697171d14e01116c553a0b40766187e</pre>	<pre>Incli-bob newaddress np2wkh</pre>	<pre>identity_pubkey": 02ba55e659f2de19bb742864eb70a8ee43822045fe7fd1765a3113a0710f15b498</pre>
<pre>alias": "026cb9d10219d0ea90c6</pre>	<pre>identity_pubkey": 0227f29b865fc0b6a1ba604aa1b0ea6582bc6259843759c60b589185a75af3cb8</pre>	<pre>alias": "02ba55e659f2de19bb74</pre>
<pre>address": rpropQBFkECHbBUzMTrJezqz5bR5oakps</pre>	<pre>alias": "0227f29b865fc0b6a1b address": rVeK6sF1obp4BvscbbCto8VpZoE6H8G6pa</pre>	<pre>address": roUKnFbycPdpDyGBnKPq7XW2pb4cYcfdB</pre>

Dave	Erin
<pre>Ind --rpclisten=localhost:10004 -- listen=localhost:10014 -- restlisten=localhost:8004 --datadir=data -- logdir=log --debuglevel=info --bitcoin.simnet -- bitcoin.active --bitcoin.node=btcd -- btcd.rpcuser=kek --btcd.rpcpass=kek</pre>	<pre>Ind --rpclisten=localhost:10005 -- listen=localhost:10015 -- restlisten=localhost:8005 --datadir=data -- logdir=log --debuglevel=info --bitcoin.simnet -- bitcoin.active --bitcoin.node=btcd -- btcd.rpcuser=kek --btcd.rpcpass=kek</pre>

Incli --rpcserver=localhost:10004 --macaroonpath=data/admin.macaroon create	Incli --rpcserver=localhost:10005 --macaroonpath=data/admin.macaroon create
source ~/bashrc	source ~/bashrc
1. able 2. advice 3. taxi 4. garage 5. rocket 6. robot 7. celery 8. fog 9. tennis 10. then 11. replace 12. turn 13. adjust 14. crew 15. good 16. object 17. another 18. domain 19. surprise 20. clerk 21. tone 22. style 23. river 24. box	1. able 2. unaware 3. echo 4. wedding 5. awesome 6. connect 7. sister 8. ranch 9. reason 10. office 11. iron 12. bracket 13. host 14. lazy 15. receive 16. cereal 17. tiny 18. magnet 19. learn 20. chaos 21. amazing 22. lazy 23. salad 24. maze
Incli-dave getinfo	Incli-erin getinfo
pubkey": "02d817f9854dfb36cf3e21a267fa48b92b51c5c92c26 00e504c5d36f8a03a8f021  alias": " 02d817f9854dfb36cf3e	pubkey": "021c6c52f44ddbada39345eb6a73d34730dd08d3da9 81c41df1c0cb61c170dfed6  alias": " 021c6c52f44ddbada393
Incli-dave newaddress np2wkh	Incli-erin newaddress np2wkh
rep2boHueWPVGzKSsdweMixYKQ8gEZPbdg	racG42YDGAh5oFkDa4xF3WmYXfg1L5rzpR
MAKE \$ FOR DAVE	MAKE \$ FOR ERIN
btcd --simnet --txindex --rpcuser=kek --rpcpass=kek --miningaddr=rgBgmPryVzATHihNZTShnEiwAArLt8izpb	btcd --simnet --txindex --rpcuser=kek --rpcpass=kek --miningaddr=rgBgmPryVzATHihNZTShnEiwAArLt8izpb
CHARLIE DOES THIS FOR EACH NODE	btcctl --simnet --rpcuser=kek --rpcpass=kek generate 400
btcctl --simnet --rpcuser=kek --rpcpass=kek getblockchaininfo   grep -A 1 segwit	btcctl --simnet --rpcuser=kek --rpcpass=kek getblockchaininfo   grep -A 1 segwit
check wallet balance from	check wallet balance from
Incli-dave walletbalance	Incli-erin walletbalance

TO GIVE them MONEY RESTART BTCD

MONEY for Alice		
Btcd- close it down completely ctrl+c or Open a new		

```
2019-04-27 01:13:11.756 [INFO] SYNC: Sync manager shutting down
2019-04-27 01:13:11.756 [INFO] AMGR: Address manager shutting down
2019-04-27 01:13:11.756 [INFO] SRVR: Server shutdown complete
2019-04-27 01:13:11.756 [INFO] BTCD: Gracefully shutting down the database...
2019-04-27 01:13:11.756 [INFO] BTCD: Shutdown complete
User@CU-CS-VM:~$
```

```
cd $GOPATH  
btcd --simnet --txindex --rpcuser=kek --rpcpass=kek --  
miningaddr=rpropQBFECHbBUzMTRJeqz5bR5oakbps
```

## Mine blocks

Open a new tab in btcd window miner window  
mine 400 blocks, in her miner window like so:

```
btccctl --simnet --rpcuser=kek --rpcpass=kek generate 400
```

check segwit from alice's wallet

```
btcctl --simnet --rpcuser=kek --rpcpass=kek getblockchaininfo | grep -A 1 segwit
```

check alice's wallet balance from alice wallet

## Incli-alice walletbalance

```
alice miner
File Edit View Terminal Tabs Help
alice LND x alice wallet x alice miner
"1252122ea4d98390f572a8ae17ca09c654dd424d6ea0f0fdb1bbd8eecc3dd0",
"043432fbdb4951ed8t1466125ebd451a759ca92bf7fd0659eef957b38205cd02",
"29277cecc09785b2f17a9eae071cdcb6d37faae2f148ca8f59919322",
"47864bd0a736c832dc655bd7815933f18a5646a150ad1fbaf1f6fd4ec2195",
"10'a5c6a5ba5bad72643b2e66e871cdcb6d37faae2f148ca8f59919322",
"5c148e14d34b4975f29ce17a07ea8145be2fe478eaaf22665630ed8df9958b8",
"288ae16857d5e98bf21a7621d162b82d45ede32c162663b54a89ed46608",
"3188613009d3224e0947afe7927395a7386f4083b79f853394d94db9cb",
"2db1d841d90bd5b571f01b7c50fc254aa38138997f798e272d6f9091c72b1c16",
"3940e4277c6b6e735ab6d786e6032bb8ac18aba5dc731d065c05ed9f60e3"
]
user@cu-cs-vm:~/.gocode/dev/alice$ btccctl --simnet --rpcuser=kek --rpcpass=kek
btblockchaininfo | grep -A 1 segwit
Error creating a default config file: open /home/user/.btcdb/.btcdb.conf: no such
file or directory
    "segwit": {
        "status": "active",
user@cu-cs-vm:~/.gocode/dev/alice$ lncali-alice walletbalance
{
    "total_balance": "4600000000000000",
    "confirmed_balance": "4600000000000000",
    "unconfirmed_balance": "0"
}
```

# MONEY FOR BOB

Close or stop btcd and reopen it

```
cd $GOPATH
```

```
btcctl --txindex --simnet --rpcuser=kek --rpcpass=kek --miningaddr=rVeK6sF1lobp4BvscbbCto8VpZoE6H8G6pa
```

mining window like so:

```
btccctl --simnet --rpcuser=kek --rpcpass=kek generate 400
```

check segwit from bob's wallet

```
btccctl --simnet --rpcuser=kek --rpcpass=kek getblockchaininfo | grep -A 1 segwit
```

check bob's wallet balance from any wallet

## Incli-hob walletbalance

MONEY for Charlie

Btcd- close it down completely  
Open a new window

cd \$GOPATH

btcd --simnet --txindex --rpcuser=kek --rpcpass=kek --  
miningaddr=roUKnFbycPdpDyGBnKPq7XW2pb4cYcfdB

Miner window

mine 400 blocks, new mining window like so:

btcctl --simnet --rpcuser=kek --rpcpass=kek generate 400

check segwit from charlie's wallet

btcctl --simnet --rpcuser=kek --rpcpass=kek getblockchaininfo | grep -A 1 segwit

check charlie's wallet balance from any wallet

Incli-charlie walletbalance

## CONNECTING THE PEER TO PEER NETWORK

Open a channel from alice to bob

User	In wallet you are connecting to	In wallet you are connecting from			
alice wallet	Incli-bob getinfo	Incli-alice connect 0227f29b865fc0b6a1ba604aa1b0ea6582bc62598 43759c60b589185a75af3cb8@localhost:10012			
		Incli-bob connect 0231e1f53b03c17687ef40a4e7fe8ad3ddcb53723 2fb20f88d9ead7d908336391@localhost:10011			

Check connection

User	In wallet you are connecting to	In wallet you are connecting from		
bob		Incli-bob listpeers		
alice	Incli-alice listpeers			



Open a channel from bob to charlie

User	In wallet you are connecting to	In wallet you are connecting from			
bob wallet	Incli-charlie getinfo	Incli-bob connect 0263009c90eca398e2664525baf8b43c5f31655ddaf b43a3dd50842b4c136f23d6@localhost:10013			

Check connection (bob should have 2 peers)

User		In wallet you are connecting from		
charlie		Incli-charlie listpeers		

Check connection

User	In wallet you are connecting to	In wallet you are connecting from		
bob		Incli-bob listpeers		
charlie	Incli-charlie listpeers			

Check connection (bob should have 2 peers)

User		In wallet you are connecting from		
bob wallet		Incli-bob listpeers		

## SENDING PAYMENTS

open a channel from Alice to Bob (alice is funding it)

Alice is paying Bob

(someone has to block 6 mines and someone must be earning a mining reward)

btcd --testnet --rpcuser=kek --rpcpass=kek generate 6

From <<https://dev.lightning.community/guides/installation/>>

### Open a channel

User	Who will be in the channel	Person who is funding	Person you are paying	Mine 6 blocks	
alice	Alice and bob	alice	bob		
Alice wallet		<pre>Incli-alice openchannel --node_key=0227f29b865fcb0b6a1ba604aa1b0ea6582bc6259843759c60b589185a75af3cb8 --local_amt=20000</pre> <p>This is bob's pubkey</p> <pre>"funding_txid": 2bffd58c9ceaa7dc7fee20ec09d823176181a45cac49ffa3c6c6919c7310d80</pre>		<pre>user@cu-cs-vm:~/gocode/dev/alice\$ lncli-alice openchannel --node_key=038205ebb13bf0e8f242c53c0e851e83c5019beacfaef8cc4d9b02b3f7c567d75d --local_amt=100000 00 No command 'alices' found, did you mean: Command 'alice' from package 'alice' (universe) alices: command not found user@cu-cs-vm:~/gocode/dev/alice\$ lncli-alice openchannel --node_key=038205ebb13bf0e8f242c53c0e851e83c5019beacfaef8cc4d9b02b3f7c567d75d --local_amt=1000000 {     "funding_txid": "da43eed74c5ccc1945e9e2f00e6f98f32ed48992752cb896a1b9427f79c985b" } user@cu-cs-vm:~/gocode/dev/alice\$</pre>	
Anyone's miner window				<pre>btcd --testnet --rpcuser=kek --rpcpass=kek generate 6</pre>	
Alice wallet		<pre>Incli-alice listchannels</pre> <pre>893902953447424</pre>			

### charlie Opens a channel to bob

User	Who will be in the channel	Person who is funding	Person you are paying	Mine 6 blocks	
alice	Alice and bob	alice	bob		
Alice wallet		<pre>Incli-charlie openchannel --node_key=023e27170473048abe1bd57e8fe2ea4c5514cdb0dfa330b42e609110831c2d2d8d --local_amt=20000</pre> <p>This is bob's pubkey</p>		<pre>user@cu-cs-vm:~/gocode/dev/alice\$ lncli-alice openchannel --node_key=038205ebb13bf0e8f242c53c0e851e83c5019beacfaef8cc4d9b02b3f7c567d75d --local_amt=100000 00 No command 'alices' found, did you mean: Command 'alice' from package 'alice' (universe) alices: command not found user@cu-cs-vm:~/gocode/dev/alice\$ lncli-alice openchannel --node_key=038205ebb13bf0e8f242c53c0e851e83c5019beacfaef8cc4d9b02b3f7c567d75d --local_amt=1000000 {     "funding_txid": "da43eed74c5ccc1945e9e2f00e6f98f32ed48992752cb896a1b9427f79c985b" } user@cu-cs-vm:~/gocode/dev/alice\$</pre>	
Anyone's miner window				<pre>btcctl --simnet --rpcuser=kek --rpcpass=kek generate 6</pre>	

Alice wallet

Incli-alice listchannels

Bob makes an invoice

Make an invoice

User					
Bob wallet	Incli-bob addinvoice --amt=50		Incli-bob addinvoice --amt=50 { "r_hash": "8adf1fbef6efe606ed2bc5952314854 2d37981c43a2977f454b222ebc0a421 36", "pay_req": "lnsb500n1pwvlnx2pp53t03l0hklnq dmftck2jx9y9gtfhnqwy8g5h0az5kg3w hs9yyymqdqqcqzpgyvdn6mu74rrugje cj4sjuzv96vyrpnjsaxctujht9t4ckwj7e 5jv8lgz9rhykc4x5p7aly2vuc4n58mww amr9tez404sha3n2gwg4splj2uar", "add_index": 1 }		

Mine 6 blocks so the invoice posts

User						
Any miner terminal	btcctl --simnet --rpcuser=kek --rpcpass=kek generate 6					

Alice pays Bob on that channel

Alice sends payment

User						
Alice wallet	Incli-alice sendpayment -- pay_req=lnsb500n1pwvlex2pp5k4enx63j2mzxwq3v7mm7rp qu6symmnw3p02h5aggs7pvyyx9sv9sdqqcqzpg5qadyfc4qk93 hny53z6hxcp7dl8kha2qztp5ej8wcfnvwqm2gh45ase745v8h8 vqdgmjqrwv4twfnedvxhyh8m75m6j56zh3h63s68qqgmuap4					

Alice closes the channel with Bob

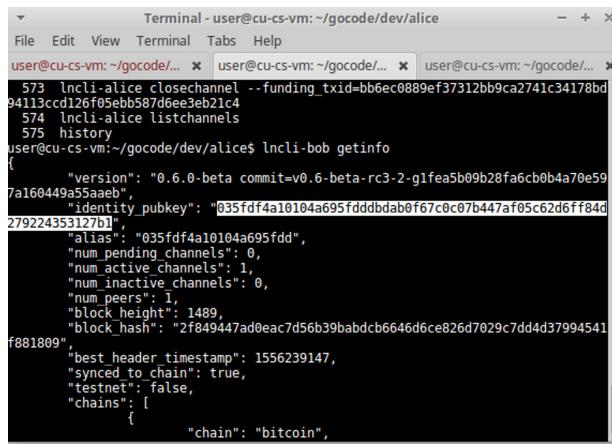
```
Incli-alice listchannels  
Incli-alice closechannel --  
funding_txid=bb6ec0889ef37312bb9ca2741c34178bd94113ccd126f05ebb587d6ee3eb21c4
```

```
Incli-alice listchannels
```

### 1st Fraud Attempt

Alice and Bob make a few transactions and Alice tries to send an earlier indexed transaction to cheat Bob

Step 1-- Alice gets Bob's pubkey  
035fdf4a10104a695fdddbdab0f67c0c07b447af05c62d6ff84d279224353127b1



A terminal window titled "Terminal - user@cu-cs-vm: ~/gocode/dev/alice". It shows the command "lncli-alice getinfo" being run, which outputs a JSON object containing Bob's pubkey and other node information.

```
573 lncli-alice closechannel --funding_txid=bb6ec0889ef37312bb9ca2741c34178bd94113ccd126f05ebb587d6ee3eb21c4
574 lncli-alice listchannels
575 history
user@cu-cs-vm:~/gocode/dev/alice$ lncli-bob getinfo
{
    "version": "0.6.0-beta commit=v0.6-beta-rc3-2-g1fea5b09b28fa6cb0b4a70e597a160449a55aaeb",
    "identity_pubkey": "035fdf4a10104a695fdddbdab0f67c0c07b447af05c62d6ff84d279224353127b1",
    "alias": "035fdf4a10104a695fdd",
    "num_pending_channels": 0,
    "num_active_channels": 1,
    "num_inactive_channels": 0,
    "num_peers": 1,
    "block_height": 1489,
    "block_hash": "2f7849447ad0eac7d56b39babdc6646d6ce826d7029c7dd4d3799451f881809",
    "best_header_timestamp": 1556239147,
    "synced_to_chain": true,
    "testnet": false,
    "chains": [
        {
            "chain": "bitcoin",
        }
    ]
}
```

Step 2-- She uses his info to fund and open a channel with Bob

```
Incli-alice openchannel --node_key=  
035fdf4a10104a695fdddbdab0f67c0c07b447af05c62d6ff84d279224353127b1 --local_amt=1000000  
user@cu-cs-vm:~/gocode/dev/alice$ lncli-alice openchannel --node_key=035fdf4a10104a695fdddbdab0f67c0c07b447af05c62d6ff84d279224353127b1 --local_amt=1000000  
{  
    "funding_txid": "2f7c110d7d187f6cc87dc93263cac8ed8cb5aad4c7679b074e098f69ca5dfb07"  
}  
user@cu-cs-vm:~/gocode/dev/alice$
```

Verify Alice and Bob have a channel between each other

```

Terminal - user@cu-cs-vm:~/gocode/dev/alice
File Edit View Terminal Tabs Help
user@cu-cs-vm:~/gocode/... x user@cu-cs-vm:~/gocode/... x user@cu-cs-vm:~/gocode/...
hd27924353127b1",
    "channel_point": "0f3d0ccddfc4d51365b41b3f7491ce00803244bccddc772141
ed24926fee1e5e:0",
    "chan_id": "1605286976618496",
    "capacity": "100000",
    "local_balance": "80950",
    "remote_balance": "10000",
    "commit_fee": "9050",
    "commit_weight": "724",
    "fee_per_kw": "12500",
    "unsettled_balance": "0",
    "total_satoshis_sent": "10000",
    "total_satoshis_received": "0",
    "num_updates": "2",
    "pending_htlcs": [
    ],
    "csv_delay": 144,
    "private": false,
    "initiator": true,
    "chan_status_flags": "ChanStatusDefault"
}
]
}
user@cu-cs-vm:~/gocode/dev/alice$
```

```

Terminal - user@cu-cs-vm:~/gocode/dev
File Edit View Terminal Tabs Help
user@cu-cs-vm:~/gocode/dev/bob x user@cu-cs-vm:~/gocode/dev
user@cu-cs-vm:~/gocode/dev$ lncli-bob listchannels
{
    "channels": [
        {
            "active": true,
            "remote_pubkey": "02f78f5744363123888a707c61eb4c0d760726d83b34c6870b
68f7dba300a7756d",
            "channel_point": "0f3d0ccddfc4d51365b41b3f7491ce00803244bccddc772141
ed24926fee1e5e:0", _____
            "chan_id": "1605286976618496",
            "capacity": "100000",
            "local_balance": "10000",
            "remote_balance": "80950",
            "commit_fee": "9050",
            "commit_weight": "724",
            "fee_per_kw": "12500",
            "unsettled_balance": "0",
            "total_satoshis_sent": "0",
            "total_satoshis_received": "10000",
            "num_updates": "2",
            "pending_htlcs": [
            ],
            "csv_delay": 144,
            "private": false,
            "initiator": false,
            "chan_status_flags": "ChanStatusDefault"
        }
    ]
}
user@cu-cs-vm:~/gocode/dev$
```

Bob makes an invoice, note the "add\_index" field , it's keeping track of which transaction has happened between them

```

Terminal - user@cu-cs-vm:~/gocode/dev
File Edit View Terminal Tabs Help
user@cu-cs-vm:~/gocode/dev/bob x user@cu-cs-vm:~/gocode/dev
"chan_id": "1605286976618496",
"capacity": "100000",
"local_balance": "10000",
"remote_balance": "80950",
"commit_fee": "9050",
"commit_weight": "724",
"fee_per_kw": "12500",
"unsettled_balance": "0",
"total_satoshis_sent": "0",
"total_satoshis_received": "10000",
"num_updates": "2",
"pending_htlcs": [
],
"csv_delay": 144,
"private": false,
"initiator": false,
"chan_status_flags": "ChanStatusDefault"
}
]
}
user@cu-cs-vm:~/gocode/dev$ lncli-bob addinvoice --amt=10000
{
    "r_hash": "0f499c69cae983bd01938474dfcc3156b108df89b500c92b58887926d04
167",
    "pay_req": "lnsb100u1pwyykuxpp5payec6w2avrh5qe8pr5mlxrz443pr0cndqqey443
zreymksg9nsdqczqpgnjxy8yyfq45sknzklg5258ksasrjdpeuvwyrq9eeelcy3q6cmqp4cxnmfaqy0
9510upse637jyahqu15ks5cm64zc2838g8x7j18qprrz2la",
    "add_index": 2
}
user@cu-cs-vm:~/gocode/dev$
```

Alice pays Bob For THIS #2 invoice on that channel

lncli-alice sendpayment --

```
pay_req=lnsb100u1pwvykuxpp5payec6w2a2vrh5qe8pr5mlxrz443pr0cndgqey443zreymksg9nsdqzcpgnjxy8yyfq45sknzklg5258kasrjdppeuwvyrq9eelcy3q6cmqp4cxnmfaqy085l0upse637yahguj5ks5qcme4cz838g8xt7jl8qpr2ala
```

Proof it's already paid:

```
Terminal - user@cu-cs-vm: ~/gocode/dev/alice
File Edit View Terminal Tabs Help
user@cu-cs-vm:~/gocode/... x user@cu-cs-vm:~/gocode/... x user@cu-cs-vm:~/gocode/...
"expiry": 1529,
"amt_to_forward_msat": 10000000,
"pub_key": "035fdf4a10104a695fdddbdab0f67c0c07b4
7af05c62d6ff84d279224353127b1"
],
"total_amt_msat": 10000000
}

ser@cu-cs-vm:~/gocode/dev/alice$ lncli-alice sendpayment --pay_req=lnsb100ulpwv
kuxpp5payec6w2a2vrh5qe8pr5mlxrz443pr0cndgqey443zreymksg9nsdqzcpgnjxy8yyfq45s
nkzlg5258kasrjdppeuwvyrq9eelcy3q6cmqp4cxnmfaqy085l0upse637yahguj5ks5qcme4cz83
g8xt7jl8qpr2ala
description:
mount (in satoshis): 10000
estimation: 035fdf4a10104a695fdddbdab0f67c0c07b447af05c62d6ff84d279224353127b1
confirm payment (yes/no): yes

"payment_error": "invoice is already paid",
"payment_preimage": "",
"payment_route": null

lncli] invoice is already paid
user@cu-cs-vm:~/gocode/dev/alicess
```

Alice's walletbalance at this point:

```
user@cu-cs-vm:~/gocode/dev/alice$ lncli-alice walletbalance
{
  "total_balance": "549998853476",
  "confirmed_balance": "549998853476",
  "unconfirmed_balance": "0"
}
user@cu-cs-vm:~/gocode/dev/alicess
```

Bob's walletbalance at this point:

```
user@cu-cs-vm:~/gocode/dev$ lncli-bob walletbalance
{
  "total_balance": "315000000000",
  "confirmed_balance": "315000000000",
  "unconfirmed_balance": "0"
}
user@cu-cs-vm:~/gocode/dev$
```

To direct input to this VM move the mouse pointer inside or press Ctrl

Bob runs ANOTHER invoice, invoice #3

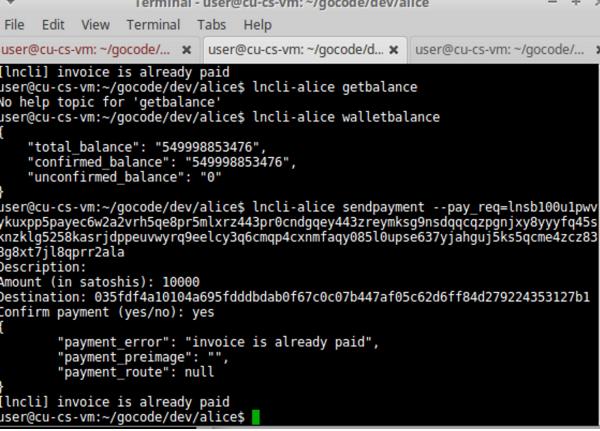
```
lnsb100u1pwvyhg8pp5ga7e2en45asw6fg5s23ckp4zapvtqe35lftg3d49xv2r9p77melqdqqcqzpgvz9j4n45zgs0j44
3uca99t0dhrrv3pmjvq5h3kd8m7w0m3vt8jze9uu7sgvr22kwv6ges9fmk5x4px7jy43zlnjuc5mjgmv8tg6p5cp7r6
tnt
```

```
Terminal - user@cu-cs-vm: ~/gocode/dev
File Edit View Terminal Tabs Help
user@cu-cs-vm:~/gocode/dev/bob x user@cu-cs-vm:~/gocode/dev x
"total_satoshi_received": "10000",
"num_updates": "2",
"pending_htlcs": [
],
"csv_delay": 144,
"private": false,
"initiator": false,
"chan_status_flags": "ChanStatusDefault"
}
}
}
user@cu-cs-vm:~/gocode/dev$ lncli-bob addinvoice --amt=10000
{
  "r_hash": "0f499c69cae0983bd01938474dfcc3156b108df89b500c92b58887926ed04
167",
  "pay_req": "lnsb100u1pwvykuxpp5payec6w2a2vrh5qe8pr5mlxrz443pr0cndgqey443zreymksg9nsdqzcpgnjxy8yyfq45sknzk
lg5258kasrjdppeuwvyrq9eelcy3q6cmqp4cxnmfaqy085l0upse637yahguj5ks5qcme4cz838g8xt7jl8qpr2ala",
  "add_index": 2
}
user@cu-cs-vm:~/gocode/dev$ lncli-bob addinvoice --amt=10000
{
  "r_hash": "477d956675a760ed251482a38b06a2e858b06634fa5688b6a533143287ded
e7e",
  "pay_req": "lnsb100u1pwvyhg8pp5ga7e2en45asw6fg5s23ckp4zapvtqe35lftg3d49x
v279p77melqdqqcqzpgvz9j4n45zgs0j443uca99t0dhrrv3pmjvq5h3kd8m7w0m3vt8ze9uu7sgvr
22kwv6ges9fmk5x4px7jy43zlnjuc5mjgmv8tg6p5cp7r6tnt",
  "add_index": 3
}
user@cu-cs-vm:~/gocode/dev$
```

Alice tries to resend an old payment to Bob For invoice #3 to fool him, on that same channel

lncli-alice sendpayment --

```
pay_req=lnsb100u1pwvykuxpp5payec6w2a2vrh5qe8pr5mlxrz443pr0cndgqey443zreymksg9nsdqczpgnjxy8
yyyfq45sknzklg5258kasrjdppewvyrq9eelcy3q6cmqp4cxnmfaqy085l0upse637yahguj5ks5qcme4zc2838g8xt7j
l8qpr2ala
```



```
Terminal - user@cu-cs-vm:~/gocode/dev/alice
File Edit View Terminal Tabs Help
user@cu-cs-vm:~/gocode/... x user@cu-cs-vm:~/gocode/d... x user@cu-cs-vm:~/gocode/...
[lncli] invoice is already paid
user@cu-cs-vm:~/gocode/dev/alice$ lncli-alice getbalance
No help topic for 'getbalance'
user@cu-cs-vm:~/gocode/dev/alice$ lncli-alice walletbalance
{
    "total_balance": "549998853476",
    "confirmed_balance": "549998853476",
    "unconfirmed_balance": "0"
}
user@cu-cs-vm:~/gocode/dev/alice$ lncli-alice sendpayment --pay_req=lnsb100u1pwv
yku...5payec6w2a2vrh5qe8pr5mlxrz443pr0cndgqey443zreymksg9nsdqczpgnjxy8yyyfq45s
knzklg5258kasrjdppewvyrq9eelcy3q6cmqp4cxnmfaqy085l0upse637yahguj5ks5qcme4zc283
8g8xt7j18qpr2ala
Description:
Amount (in satoshis): 10000
Destination: 035fdf4a10104a695fdddbab0f67c0c07b447af05c62d6ff84d279224353127b1
confirm payment (yes/no): yes
{
    "payment_error": "invoice is already paid",
    "payment_preimage": "",
    "payment_route": null
}
[lncli] invoice is already paid
user@cu-cs-vm:~/gocode/dev/alice$
```

Alice wallet balance at this point:

```
[lncli] invoice is already paid
user@cu-cs-vm:~/gocode/dev/alice$ lncli-alice walletbalance
{
    "total_balance": "549998853476",
    "confirmed_balance": "549998853476",
    "unconfirmed_balance": "0"
}
user@cu-cs-vm:~/gocode/dev/alice$
```

And then Alice attempts to close the latest channel #3 without paying Bob

```

Terminal - user@cu-cs-vm: ~... Terminal - user@cu-cs-vm: ~... Terminal - user@cu-cs-vm: ~... Terminal - user@cu-cs-vm: ~...
File Edit View Terminal Tabs Help File Edit View Terminal Tabs Help File Edit View Terminal Tabs Help
user@cu-cs-vm: ~/gocode/dev/bob user@cu-cs-vm: ~/gocode/dev user@cu-cs-vm: ~/gocode/dev/charlie
{
    "active": true,
    "remote_pubkey": "02f78f5744363123888a707c61eb4c0d760726d83b34c6870b68f7dba300a7756d",
    "channel_point": "2f7c110d7d187f6cc87dc93263cac8ed8cb5aad4c7679b074e098f69ca5dfb07:0",
    "chan_id": "1638272325451776",
    "capacity": "100000",
    "local_balance": "0",
    "remote_balance": "990950",
    "commit_fee": "9050",
    "commit_weight": "552",
    "fee_per_kw": "12500",
    "unsettled_balance": "0",
    "total_satoshis_sent": "0",
    "total_satoshis_received": "0",
    "num_updates": "0",
    "pending_htlcs": [
    ],
    "csv_delay": 144,
    "private": false,
    "initiator": false,
    "chan_status_flags": "ChanStatusDefault"
},
{
    "active": true,
    "remote_pubkey": "02f78f5744363123888a707c61eb4c0d760726d83b34c6870b68f7dba300a7756d",
    "channel_point": "0f3d0ccddfc4d51365b41b3f7491ce00803244bccddc772141ed24926fee1e5e:0",
    "chan_id": "1605286976618496",
    "capacity": "100000",
    "local_balance": "20000",
    "remote_balance": "70950",
    "commit_fee": "9050",
    "commit_weight": "724",
    "fee_per_kw": "12500",
    "unsettled_balance": "0",
    "total_satoshis_sent": "0",
    "total_satoshis_received": "20000",
    "num_updates": "4",
    "pending_htlcs": [
    ],
    "csv_delay": 144,
    "private": false,
    "initiator": false,
    "chan_status_flags": "ChanStatusDefault"
}
}
user@cu-cs-vm:~/gocode/dev$ 
user@cu-cs-vm:~/gocode/dev/charlie$ 

```

Incli-alice listchannels

Incli-alice closechannel --

funding\_txid=bb6ec0889ef37312bb9ca2741c34178bd94113ccd126f05ebb587d6ee3eb21c4

Incli-alice listchannels

```

user@cu-cs-vm:~/gocode/dev/alice$ lncli-alice closechannel --funding_txid=<0f3d0ccddfc4d51365b41b3f7491ce00803244bccddc772141ed24926fee1e5e>
bash: 0f3d0ccddfc4d51365b41b3f7491ce00803244bccddc772141ed24926fee1e5e: No such file or directory
user@cu-cs-vm:~/gocode/dev/alice$ lncli-alice closechannel --funding_txid=f3d0ccddfc4d51365b41b3f7491ce00803244bccddc772141ed24926fee1e5e
{
    "closing_txid": "b7678e59ce94adb0946c53e5e770d25a1c51d4d0245173e620dee3cb9c06af50"
}
user@cu-cs-vm:~/gocode/dev/alice$ 

```

She is not able to close without paying and is punished by having to give Bob all the \$ in the channel

```

user@cu-cs-vm:~/gocode/dev/alice$ lncli-alice walletbalance
{
    "total_balance": "549998924426",
    "confirmed_balance": "549998924426",
    "unconfirmed_balance": "0"
}
user@cu-cs-vm:~/gocode/dev/alice$ 

```

```
user@cu-cs-vm:~/gocode/dev/alice$ lncli-alice listpayments
{
  "payments": [
    {
      "payment_hash": "370631ddffbf9eaf40286710b9f733d309fee8d5de19465559fe3301adc7d13a",
      "value": "10000",
      "creation_date": "1556237694",
      "path": [
        "035fdf4a10104a695fdddbab0f67c0c07b447af05c62d6ff84d279224353127b1"
      ],
      "fee": "0",
      "payment_preimage": "6e9b3c75608408c981d4574f911a8c735ca90500d202bed1926f1f9cb8e5e171",
      "value_sat": "10000",
      "value_msat": "10000000"
    },
    {
      "payment_hash": "d04fb8ea9d9fffc834239852379aa414e7e5948c3fa3f69e3d8dd7bfaa8971d2",
      "value": "10000",
      "creation_date": "1556239015",
      "path": [
        "028e62fca34e52963d7cd663fb4fb192f1bcd7091654a3a0182c7bca30ae7bf2"
      ],
      "fee": "0",
      "payment_preimage": "3506d2f9738f01e4a3bff4c5e20aca0e86e3b16b8c82389a1ac31a4cb4e76334",
      "value_sat": "10000",
      "value_msat": "10000000"
    },
    {
      "payment_hash": "0f499c69cae983bd01938474dfcc3156b108df89b500c92b58887926ed04167",
      "value": "10000",
      "creation_date": "1556241535",
      "path": [
        "035fdf4a10104a695fdddbab0f67c0c07b447af05c62d6ff84d279224353127b1"
      ],
      "fee": "0",
      "payment_preimage": "d8f97f44c1b2484aabe28b8c1b1a53c5556e5d51c9a18d4201808febb1632e80",
      "value_sat": "10000",
      "value_msat": "10000000"
    }
  ]
}
user@cu-cs-vm:~/gocode/dev/alice$
```

Bob's new balance:

```
user@cu-cs-vm:~/gocode/devs$ lncli-bob walletbalance
{
  "total_balance": "405000020000",
  "confirmed_balance": "405000020000",
  "unconfirmed_balance": "0"
}
user@cu-cs-vm:~/gocode/devs$
```