

# Hyperledger Fabric Deployment

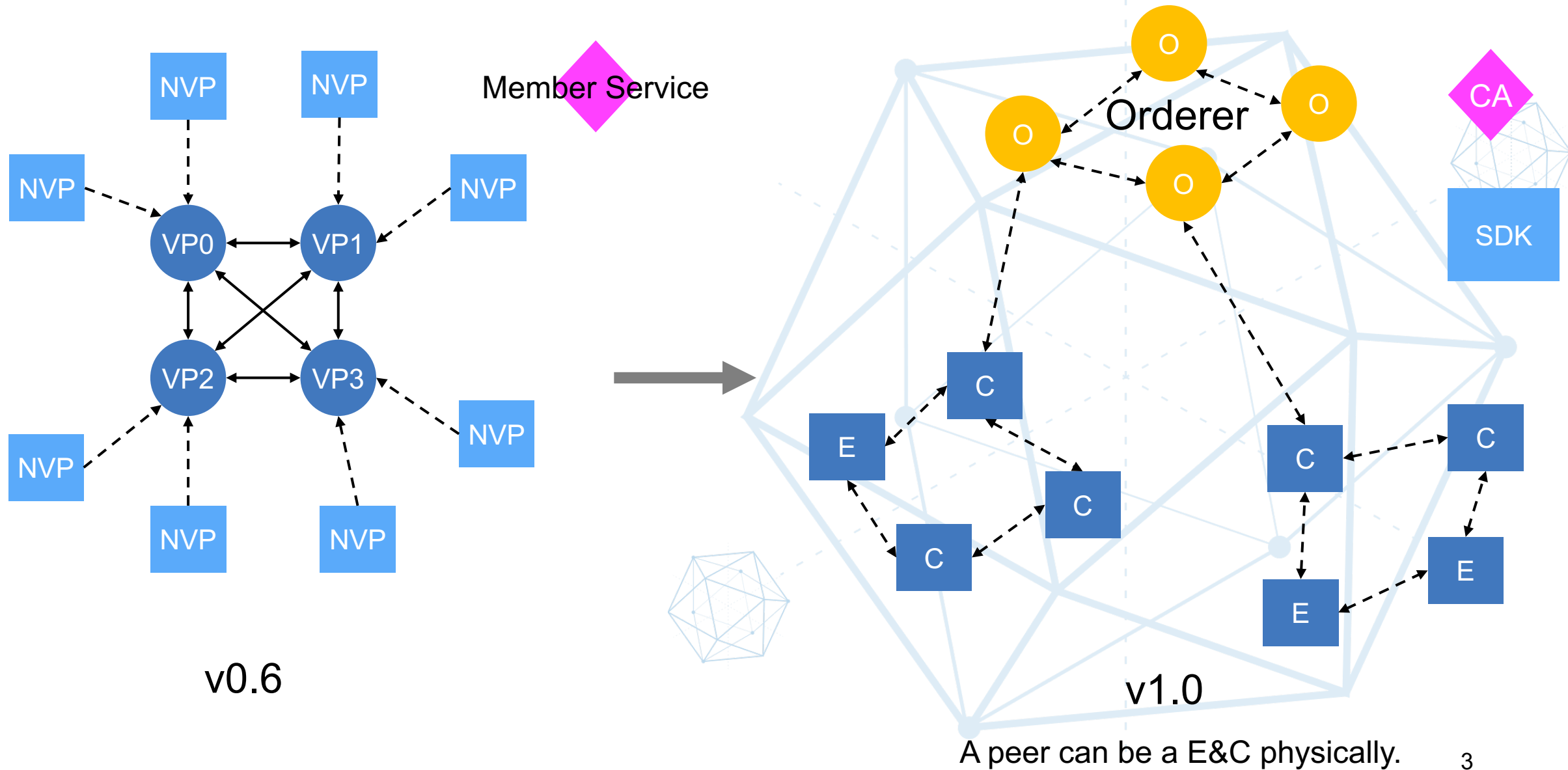
Baohua Yang  
April 7, 2017

# About Me

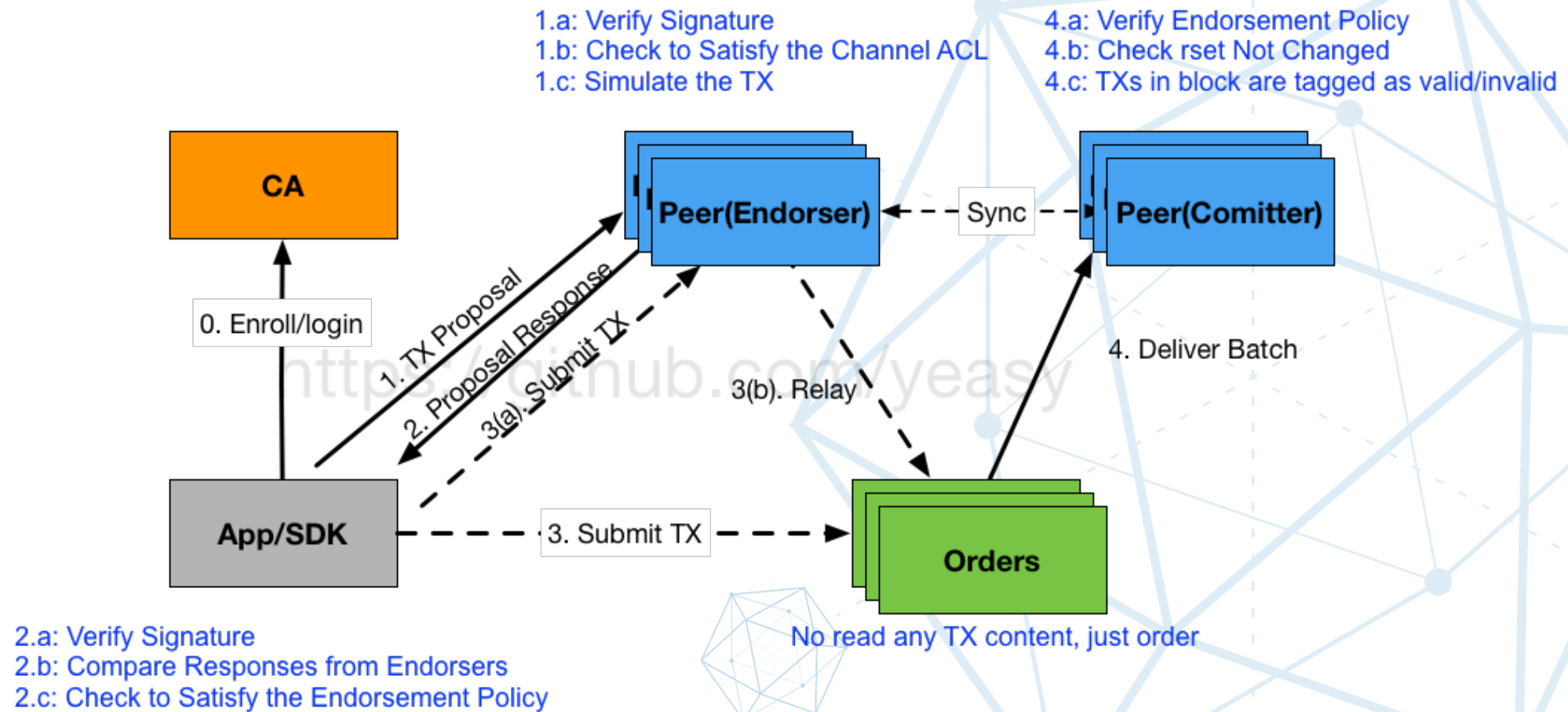
- **Researcher in IBM**
  - Fintech, Cloud and Analytics
- **Open-Source contributor**
  - [Hyperledger](#), [OpenStack](#), [OpenDaylight](#), etc.
- **Hyperledger developer**
  - Code committer to [fabric](#), [sdk](#), [Cello](#) etc.
  - PTL of [Cello](#) project and [fabric-sdk-py](#) project
  - Chair of [Hyperledger Technical Working Group China](#)
  - Drafter of [fabric sdk spec](#) and [multi-channel consensus spec](#)



# Fabric 1.0 Deployment Scenarios

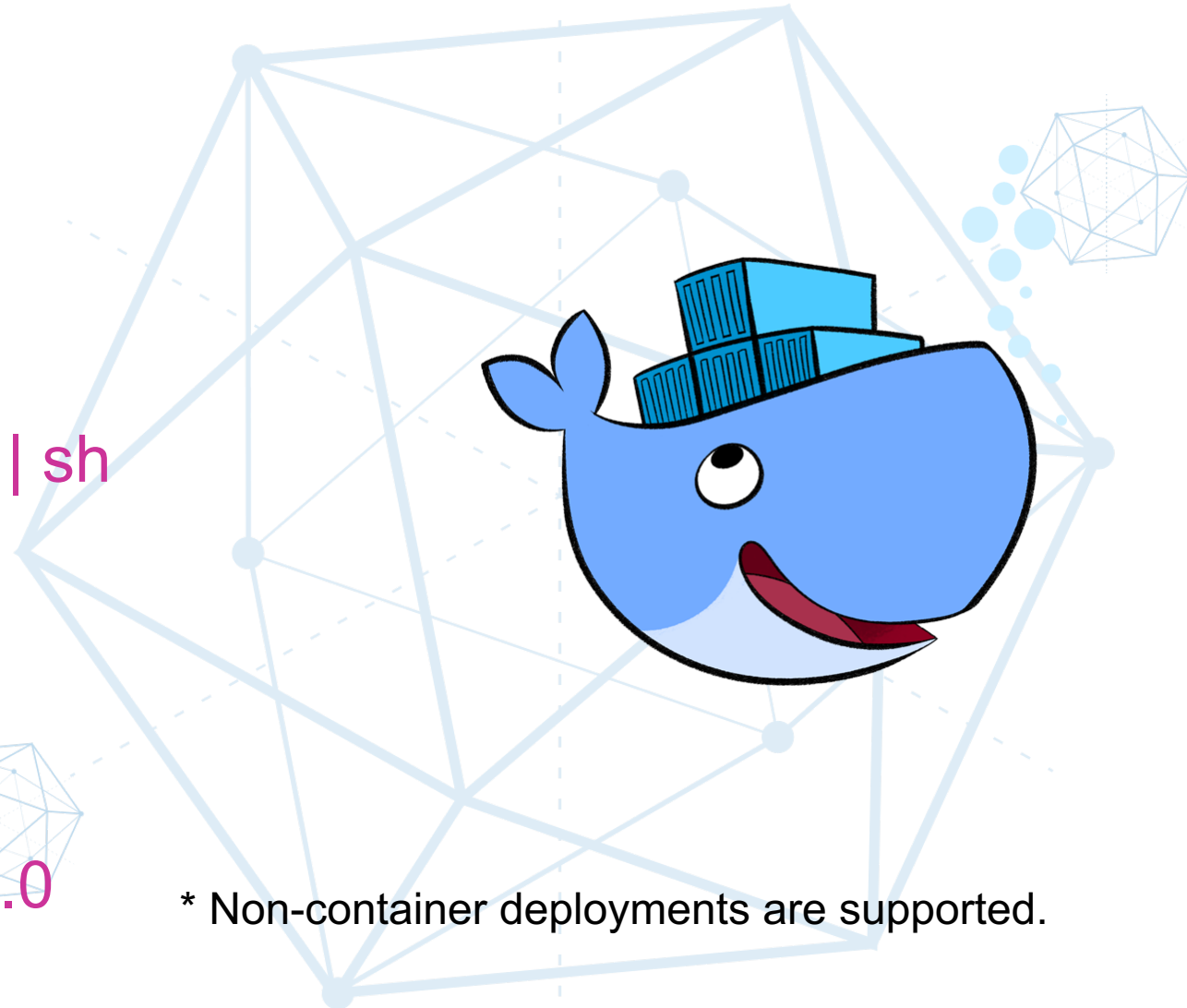


# Fabric 1.0 Workflow



# Environment Setup – Docker Installation

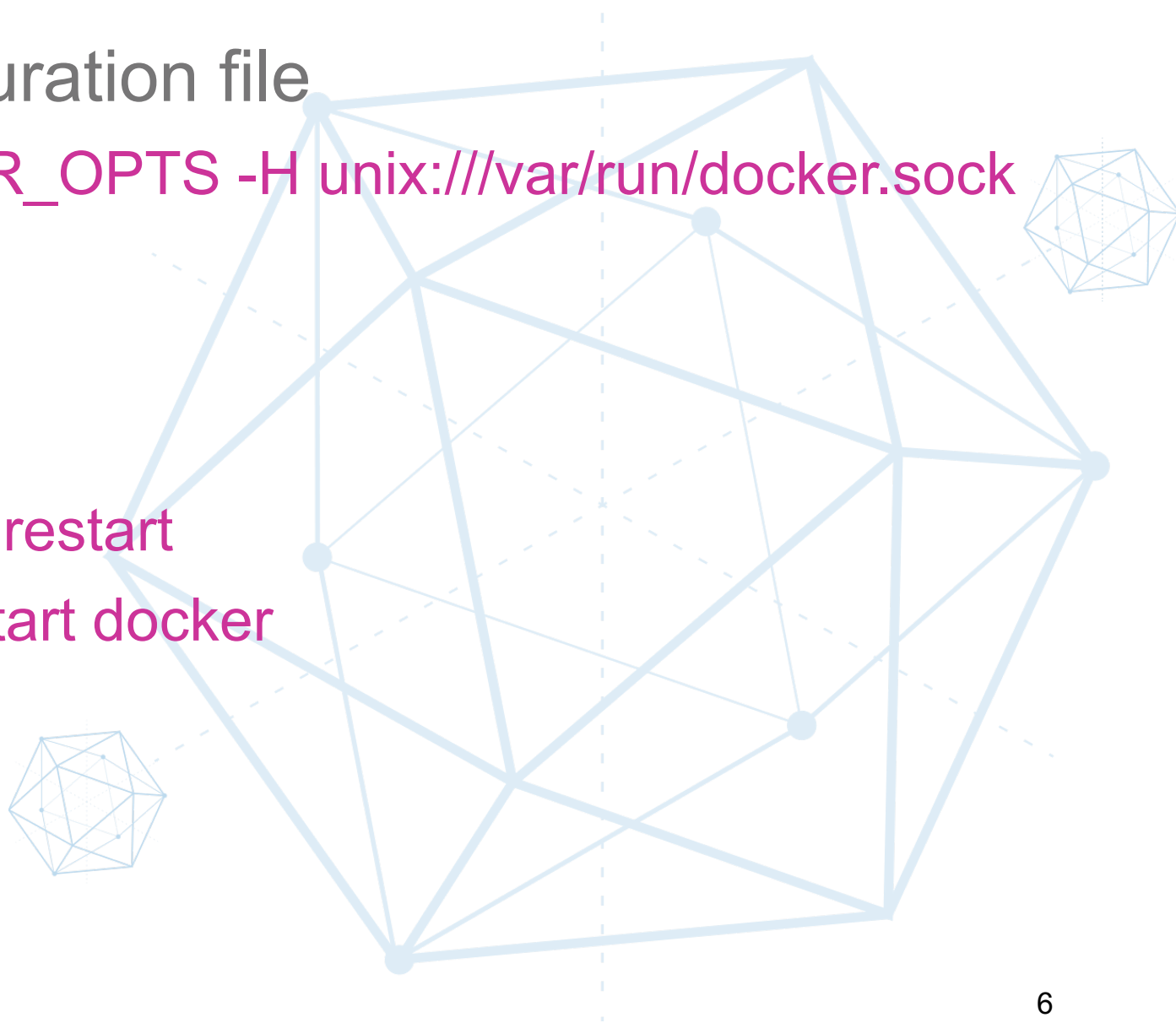
- Docker 1.12+
- Linux
  - 64 bit
  - kernel 3.10+
  - `curl -sSL https://get.docker.com/ | sh`
- Mac
  - [Docker for Mac](#)
- Docker-Compose 1.7.0+
  - `pip install docker-compose>=1.7.0`



\* Non-container deployments are supported.

# Environment Setup - Configuration

- Update the Docker configuration file
  - `DOCKER_OPTS="$DOCKER_OPTS -H unix:///var/run/docker.sock -H tcp://0.0.0.0:2375"`
- Restart Docker Daemon
  - Upstart: `sudo service docker restart`
  - Systemd: `sudo systemctl restart docker`



# Fabric 1.0 Bootup in 3 steps

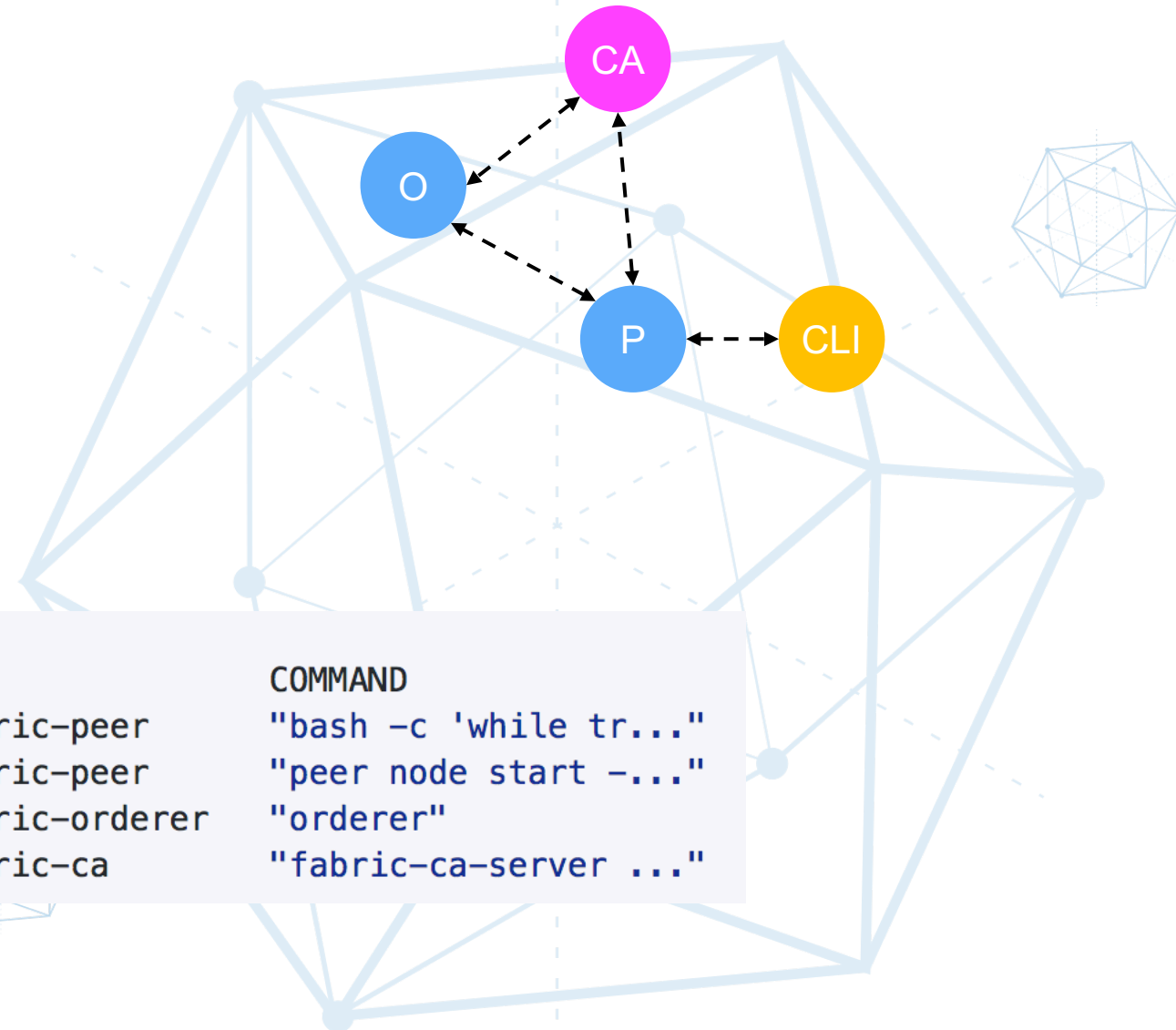
- Get Docker images
  - <https://github.com/yeasy/docker-compose-files/tree/master/hyperledger/1.0>
  - <http://ibm.com/ibm/cn/blockchain/>
  - <https://hub.docker.com/r/hyperledger>
- Get Compose file
  - `git clone` <https://github.com/yeasy/docker-compose-files>
- Start fabric
  - `cd hyperledger/1.0 & docker-compose up`



# Play Transactions

- Check container status
  - watch docker ps
- Enter the cli container
  - docker exec -it fabric-cli bash

```
$ docker ps
CONTAINER ID    IMAGE                                     COMMAND
c1cf099e1f76    hyperledger/fabric-peer                "bash -c 'while tr..."
0b67c42fd5cc    hyperledger/fabric-peer                "peer node start -..."
80b5fb85636e    hyperledger/fabric-orderer             "orderer"
f3680e5889b0    hyperledger/fabric-ca                  "fabric-ca-server ..."
```





# Play Transactions cont.

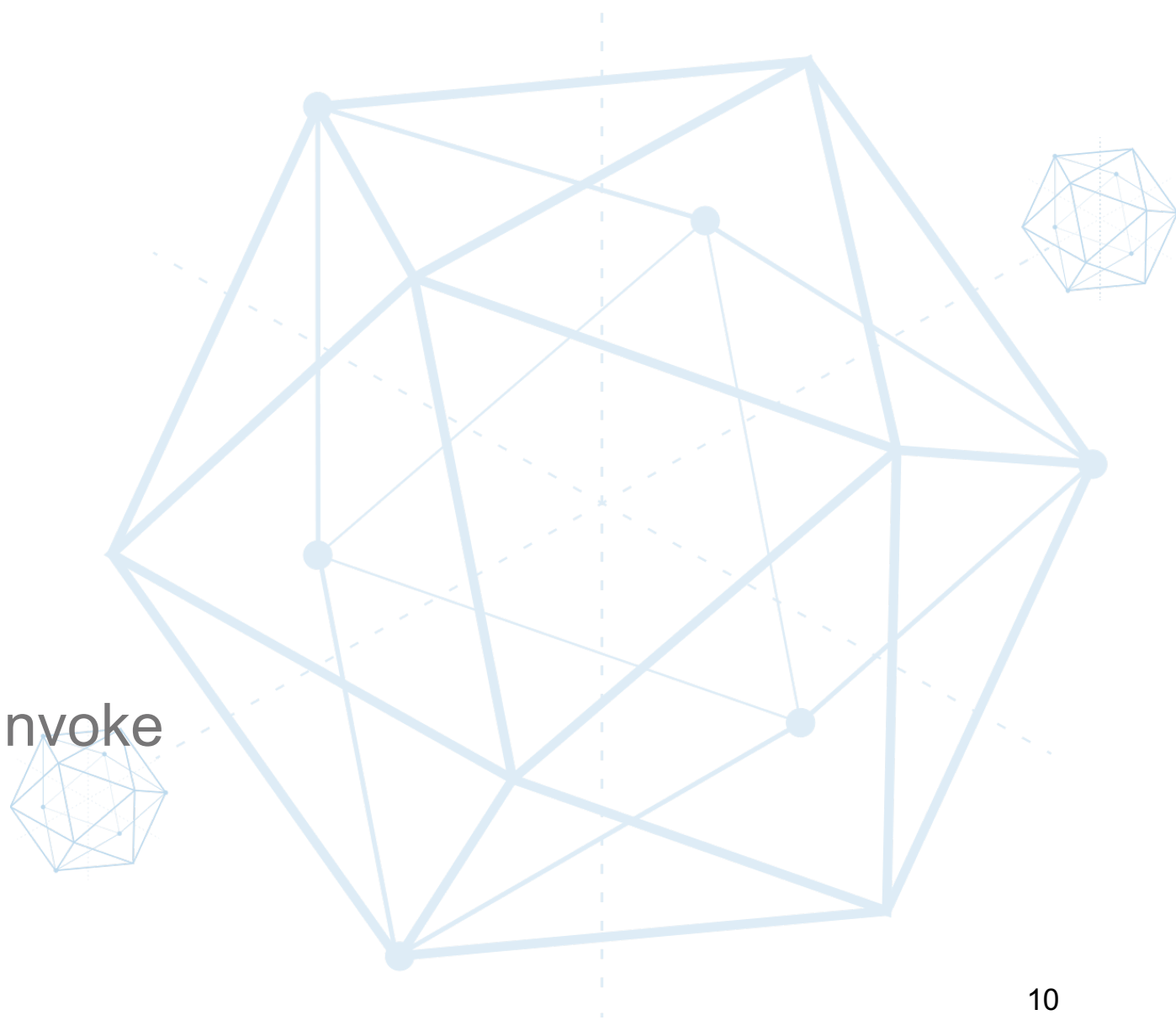
- Install/instantiate chaincode
  - `CC_PATH=`  
[github.com/hyperledger/fabric/examples/chaincode/go/chaincode\\_example02](https://github.com/hyperledger/fabric/examples/chaincode/go/chaincode_example02)
  - `peer chaincode install -v 1.0 -n test_cc -p $CC_PATH -c`  
`'{"Args":["init","a","100","b","200"]}'`
  - `peer chaincode instantiate -v 1.0 -n test_cc -p $CC_PATH -c`  
`'{"Args":["init","a","100","b","200"]}'`
- Invoke chaincode
  - `peer chaincode invoke -n test_cc -c '{"Args":["query","a"]}'`
  - `peer chaincode invoke -n test_cc -c '{"Args":["invoke","a","b","10"]}'`

```
$ docker ps
```

CONTAINER ID	IMAGE	COMMAND
c0abb4b9206b	dev-peer0-test_cc-1.0	"chaincode -peer.a..."
c1cf099e1f76	hyperledger/fabric-peer	"bash -c 'while tr..."
0b67c42fd5cc	hyperledger/fabric-peer	"peer node start -..."
80b5fb85636e	hyperledger/fabric-orderer	"orderer"
f3680e5889b0	hyperledger/fabric-ca	"fabric-ca-server ..."

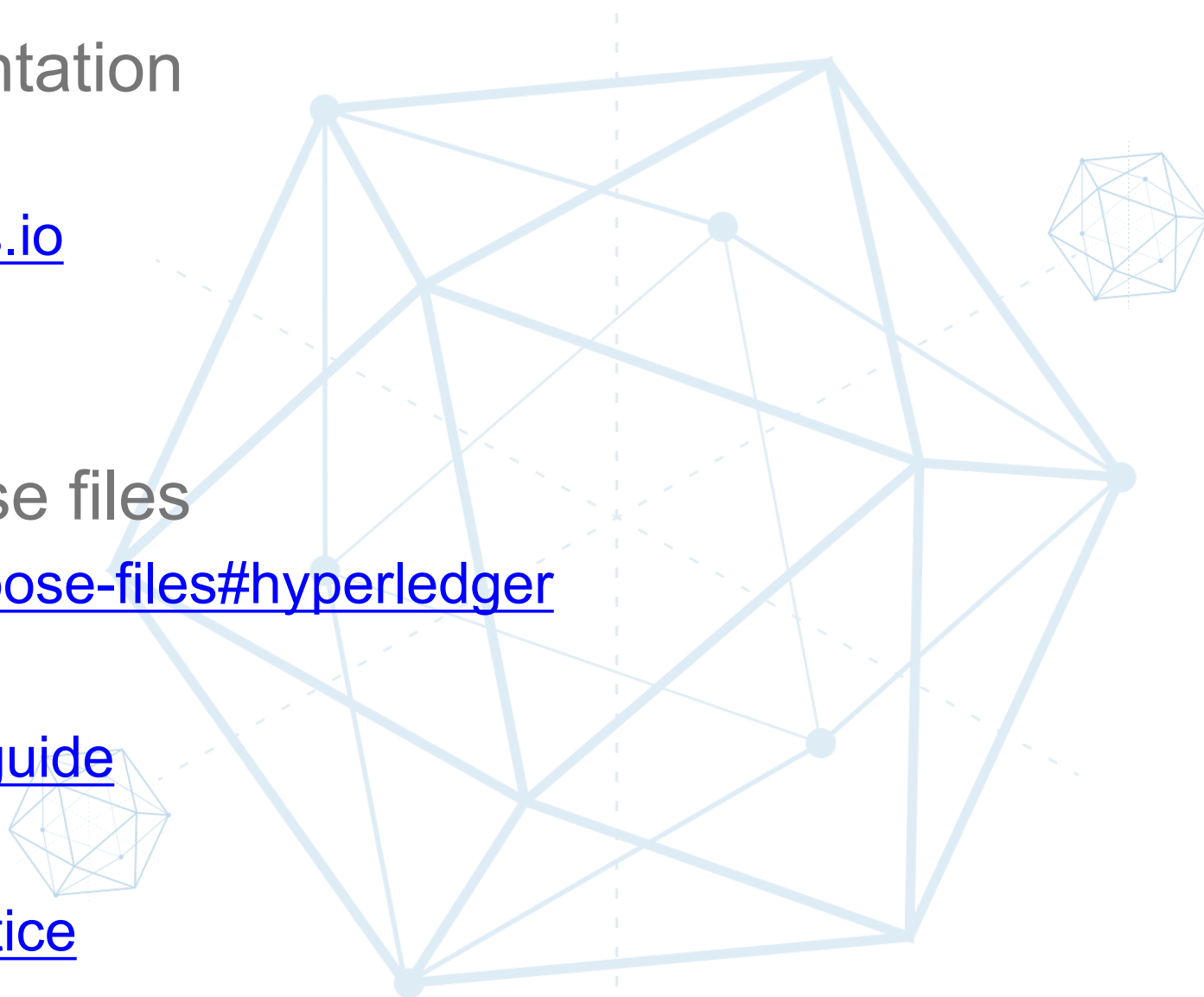
# More on Using Fabric

- Application interactions
  - APIs: gRPC
  - SDK: Node, Python, Java
- Commands
  - Peer start/stop
  - Channel create/join
  - User enroll/login
  - Chaincode install/instantiate/invoke



# Reference

- Hyperledger Wiki&Documentation
  - [wiki.hyperledger.org](http://wiki.hyperledger.org)
  - [hyperledger-fabric.readthedocs.io](http://hyperledger-fabric.readthedocs.io)
- IBM 区块链
  - [ibm.com/ibm/cn/blockchain/](http://ibm.com/ibm/cn/blockchain/)
- Hyperledger Fabric Compose files
  - [github.com/yeasy/docker-compose-files#hyperledger](https://github.com/yeasy/docker-compose-files#hyperledger)
- 《区块链技术指南》
  - [github.com/yeasy/blockchain\\_guide](https://github.com/yeasy/blockchain_guide)
- 《Docker 从入门到实践》
  - [github.com/yeasy/docker\\_practice](https://github.com/yeasy/docker_practice)





# Questions?

**Thank You!**  
**@baohua**

*Slides available at [github.com/yeasy/seminar-talk#hyperledger](https://github.com/yeasy/seminar-talk#hyperledger)*