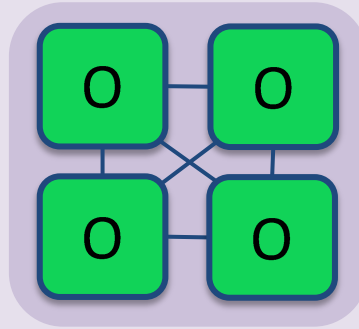


Step 1/6: Configure & Start Ordering Service



Ordering-Service

Hyperledger Fabric Network

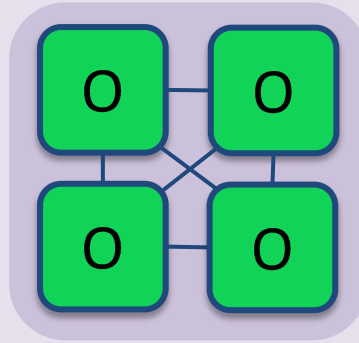
An Ordering Service is configured and started for the network:

\$ docker-compose [-f orderer.yml] ...

Step 2/6: Configure and Start Peer Nodes

E_0

E_1



Ordering-Service

E_2

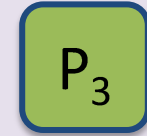
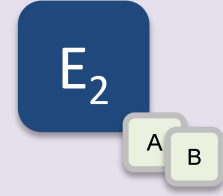
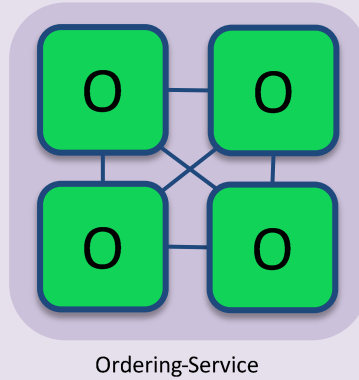
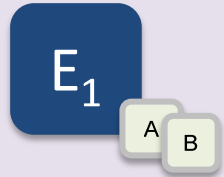
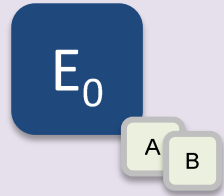
P_3

Hyperledger Fabric Network

A peer is configured and started for each Endorser or Committer in the network:

\$ peer node start ...

Step 3/6: Install Chaincode

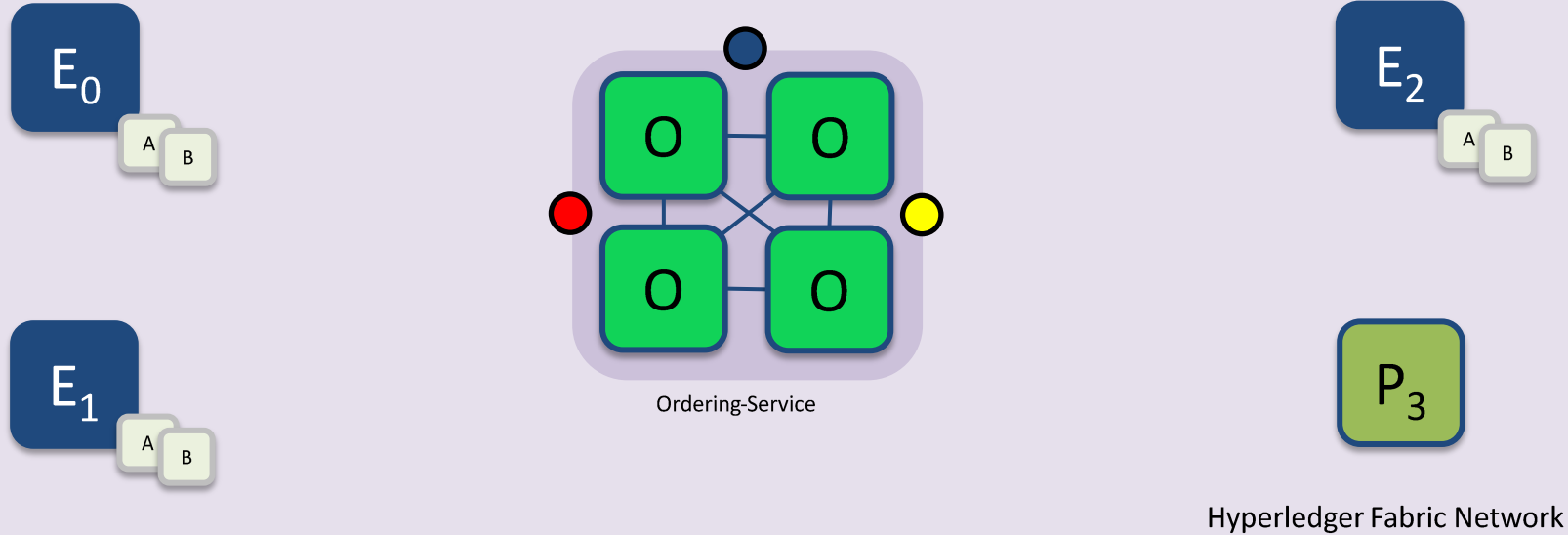


Hyperledger Fabric Network

Chaincode is installed onto each Endorsing Peer that needs to execute it:

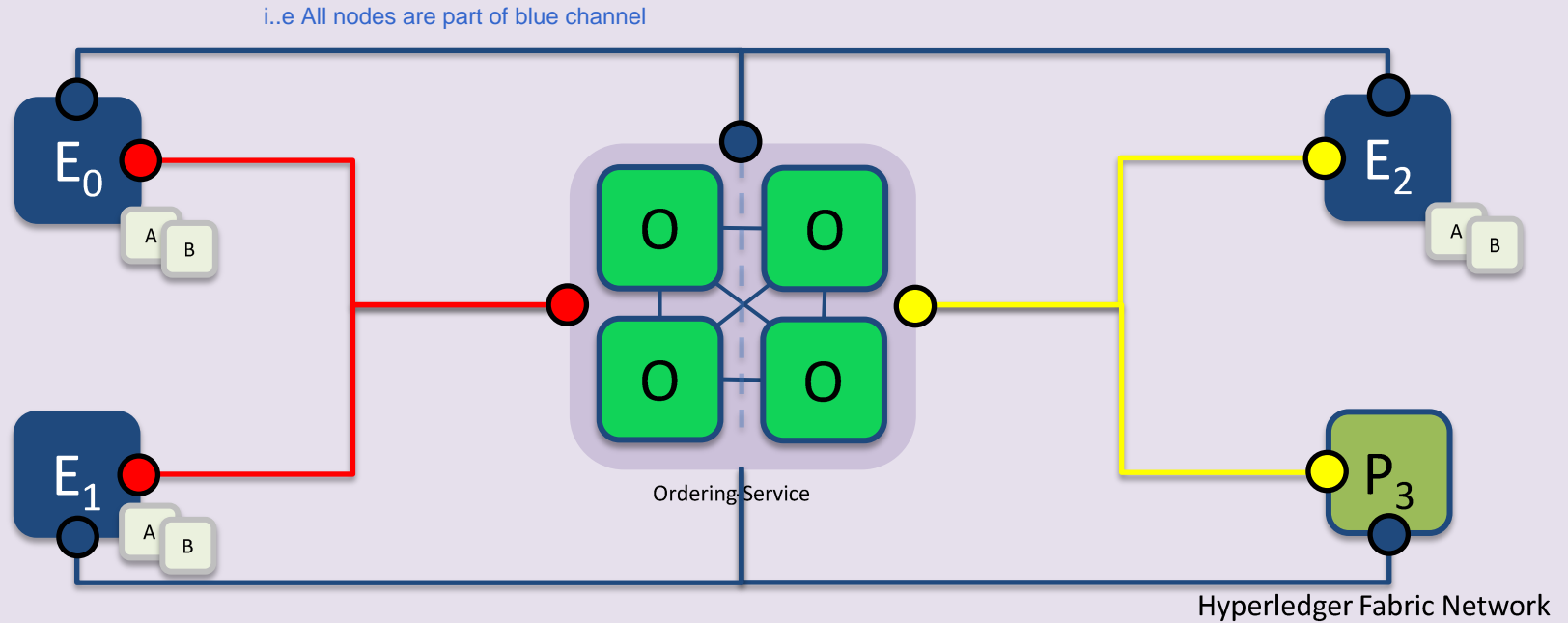
\$ peer chaincode install ...

Step 4/6: Create Channels



Channels are created on the ordering service:
`$ peer channel create -o [orderer] ...`

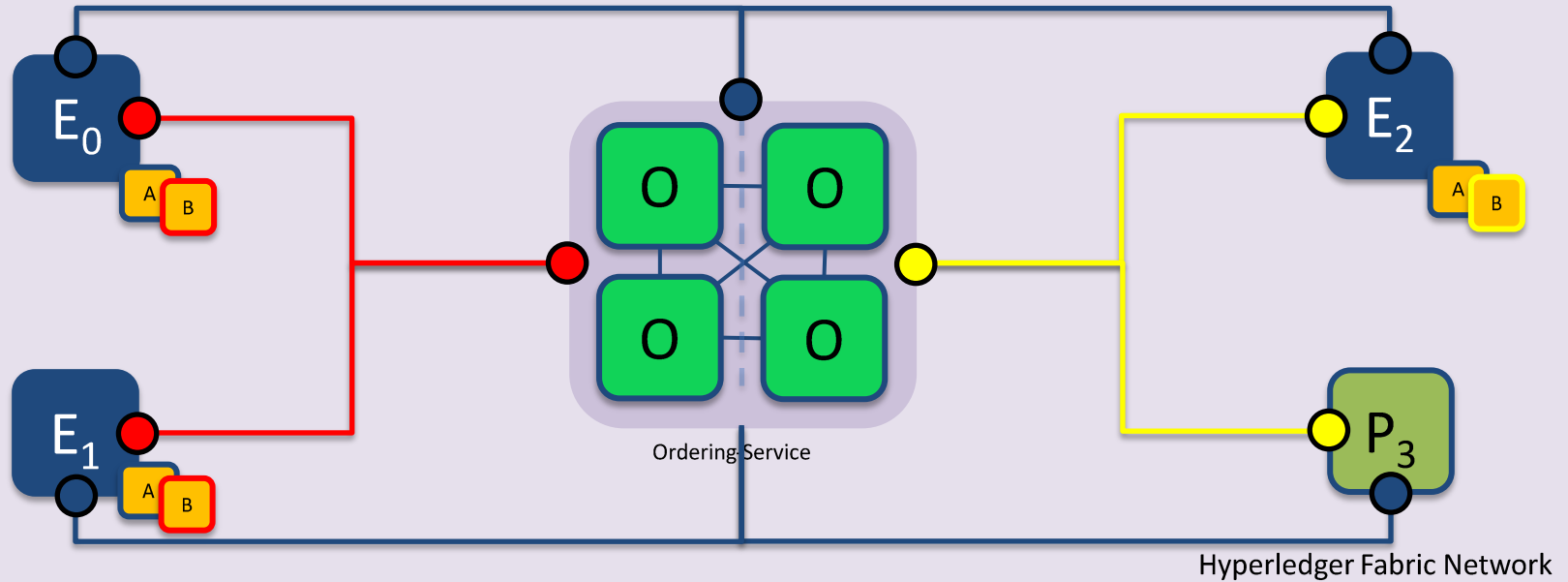
Join Channels



Peers that are permitted can then join the channels they want to transact on:
\$ peer channel join ...

Step 6/6: Instantiate Chaincode in Channel

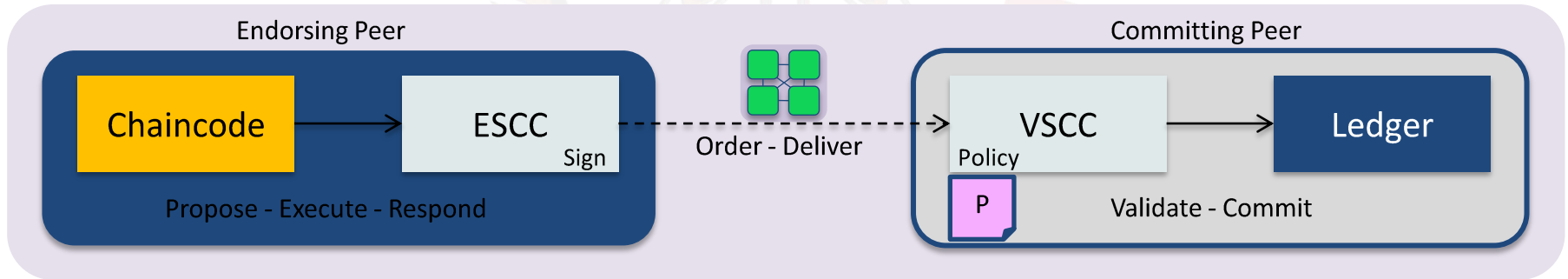
An Endorsement Policy is specified and once instantiated chaincode can process transactions.



Peers finally instantiate the Chaincode on the channels they want to transact on:
`$ peer chaincode instantiate ... -P 'policy'`

Endorsement Policies

- Each chaincode is deployed with an Endorsement Policy
- **ESCC** (Endorsement System ChainCode) signs the proposal response on the endorsing peer
- **VSCC** (Validation System ChainCode) validates the endorsements



Endorsement Policy Syntax

```
$ peer chaincode instantiate  
-C mychannel  
-n mycc  
-v 1.0  
-p chaincode_example02  
-c '{"Args":["init","a", "100", "b","200"]}'  
-P "AND('Org1MSP.member')"
```

Instantiate the chaincode **mycc** on
channel **mychannel** with the policy
AND('Org1MSP.member')
i.e. any member of Org1 can sign this transaction

-p referring to this file

Policy Syntax: **EXPR(E[, E...])**

Where **EXPR** is either AND or OR and **E** is either a principal or nested EXPR

Principal Syntax: **MSP.ROLE**

Supported roles are: member and admin

Where **MSP** is the MSP ID, and **ROLE** is either “member” or “admin”

N-out-of-K policy specification also possible (e.g., 3 out of 5 peers in the channel must endorse)

Endorsement Policy Examples

Examples of policies:

- Request 1 signature from all three principals
 - `AND('Org1.member', 'Org2.member', 'Org3.member')`
- Request 1 signature from either one of the two principals
 - `OR('Org1.member', 'Org2.member')`
- Request either one signature from a member of the Org1 MSP or (1 signature from a member of the Org2 MSP and 1 signature from a member of the Org3 MSP)
 - `OR('Org1.member', AND('Org2.member', 'Org3.member'))`