

APPENDIX A WRITE TRANSACTION

A write transaction can be seen in Supplementary Figure 1.

```
Using spec file: /mnt/g/Projects/fish-farm/spec.yaml
Minifab Execution Context:
  FABRIC_RELEASE=2.3.0
  CHANNEL_NAME=mychannel
  PEER_DATABASE_TYPE=couchdb
  CHAINCODE_LANGUAGE=go
  CHAINCODE_NAME=fishfarm
  CHAINCODE_VERSION=1.0
  CHAINCODE_INIT_REQUIRED=true
  CHAINCODE_PARAMETERS="initMetrics"
  CHAINCODE_PRIVATE=true
  CHAINCODE_POLICY=
  TRANSIENT_DATA={"metrics":{"eyJvYVw1IjoiYmV0cmVjczEwWjg1Iiwid2luZHNwZmVjIjo1MC41bX8oIiwicmFpbmZhbGwiOiIwLjVtbSIsImFpcnByZXRzdXJlIjo1NSBiYXJzIiwidG9tcmVwYXR1cm
  UI0iYmV0cmVjczEwWjg1Iiwid2luZHNwZmVjIjo1MC41bX8oIiwicmFpbmZhbGwiOiIwLjVtbSIsImFpcnByZXRzdXJlIjo1NSBiYXJzIiwidG9tcmVwYXR1cm
  iMIiSjEwIiwidG9tcmVwYXR1cmVjczEwWjg1Iiwid2luZHNwZmVjIjo1MC41bX8oIiwicmFpbmZhbGwiOiIwLjVtbSIsImFpcnByZXRzdXJlIjo1NSBiYXJzIiwidG9tcmVwYXR1cm
  BLOCK_NUMBER=newest
  EXPOSE_ENDPOINTS=false
  CURRENT_ORG=sensorsprovider.org
  HOST_ADDRESSES=172.30.65.83
  WORKING_DIRECTORY: /mnt/g/Projects/fish-farm
.....
# Preparing for the following operations: *****
  verify options, cc invoke
.....
# Running operation: *****
  verify options
-
# Running operation: *****
  cc invoke
.....
# Chaincode invocation results *****
  ['\xb[34m2022-05-13 17:01:43.923 UTC [chaincodeCmd] chaincodeInvokeOrQuery -> INFO 001\x1b[0m Chaincode invoke successful. result: status:200 ']
# STATS *****
minifab: ok=34 failed=0
```

Supplementary Figure 1. Write transaction

APPENDIX B READ TRANSACTION

The read transaction for the 1st record can be seen in Supplementary Figure 2. The read transaction for the 100,000th record can be seen in Supplementary Figure 3.

```
Using spec file: /mnt/g/Projects/fish-farm/spec.yaml
Minifab Execution Context:
  FABRIC_RELEASE=2.3.0
  CHANNEL_NAME=mychannel
  PEER_DATABASE_TYPE=couchdb
  CHAINCODE_LANGUAGE=go
  CHAINCODE_NAME=fishfarm
  CHAINCODE_VERSION=1.0
  CHAINCODE_INIT_REQUIRED=true
  CHAINCODE_PARAMETERS="readMetrics","metrics1"
  CHAINCODE_PRIVATE=true
  CHAINCODE_POLICY=
  TRANSIENT_DATA=
  BLOCK_NUMBER=newest
  EXPOSE_ENDPOINTS=false
  CURRENT_ORG=sensorsprovider.org
  HOST_ADDRESSES=172.30.65.83
  WORKING_DIRECTORY: /mnt/g/Projects/fish-farm
.....
# Preparing for the following operations: *****
  verify options, cc query
.....
# Running operation: *****
  verify options
-
# Running operation: *****
  cc query
.....
# Chaincode query results *****
  [{"airpressure":"1 bars", "docType":"metrics", "name":"metrics1", "rainfall":"0.1mm", "temperature":"20 Celsius Degrees", "watercurrent":"5m/s", "waveheight":"1m",
  "windspeed":"0.1mph"}]
# STATS *****
minifab: ok=26 failed=0
```

Supplementary Figure 2. Read transaction first record

APPENDIX C PRIVATE DATA COLLECTION

A successful read transaction to the private data collection can be seen in Supplementary Figure 4. An unsuccessful read transaction to the private data collection can be seen in Supplementary Figure 5.

```
Using spec file: /mnt/g/Projects/fish-farm/spec.yaml
Minifab Execution Context:
  FABRIC_RELEASE=2.3.0
  CHANNEL_NAME=mychannel
  PEER_DATABASE_TYPE=couchdb
  CHAINCODE_LANGUAGE=go
  CHAINCODE_NAME=fishfarm
  CHAINCODE_VERSION=1.0
  CHAINCODE_INIT_REQUIRED=true
  CHAINCODE_PARAMETERS="readMetrics","metrics100000"
  CHAINCODE_PRIVATE=true
  CHAINCODE_POLICY=
  TRANSIENT_DATA=
  BLOCK_NUMBER=newest
  EXPOSE_ENDPOINTS=false
  CURRENT_ORG=sensorsprovider.org
  HOST_ADDRESSES=172.30.65.83
  WORKING_DIRECTORY: /mnt/g/Projects/fish-farm
.....
# Preparing for the following operations: *****
  verify options, cc query
.....
# Running operation: *****
  verify options
.
# Running operation: *****
  cc query
.....
# Chaincode query results *****
  [{"airpressure":"10 bars","docType":"metrics","name":"metrics100000","rainfall":"3.5mm","temperature":"22 Celsius Degrees","watercurrent":"10m/s","waveheight":
  "3m","windspeed":"3.5mph"}]
.....
# STATS *****
minifab: ok=26 failed=0
```

Supplementary Figure 3. Read transaction 100,000th record

```
Using spec file: /mnt/g/Projects/fish-farm/spec.yaml
Minifab Execution Context:
  FABRIC_RELEASE=2.3.0
  CHANNEL_NAME=mychannel
  PEER_DATABASE_TYPE=couchdb
  CHAINCODE_LANGUAGE=go
  CHAINCODE_NAME=fishfarm
  CHAINCODE_VERSION=1.0
  CHAINCODE_INIT_REQUIRED=true
  CHAINCODE_PARAMETERS="readMetricsPrivateDetails","metrics100000"
  CHAINCODE_PRIVATE=true
  CHAINCODE_POLICY=
  TRANSIENT_DATA=
  BLOCK_NUMBER=newest
  EXPOSE_ENDPOINTS=false
  CURRENT_ORG=fishfarm.org
  HOST_ADDRESSES=172.30.65.83
  WORKING_DIRECTORY: /mnt/g/Projects/fish-farm
.....
# Preparing for the following operations: *****
  verify options, cc query
.....
# Running operation: *****
  verify options
.
# Running operation: *****
  cc query
.....
# Chaincode query results *****
  [{"algae":"7","docType":"metricsPrivateDetails","fdom":"30","name":"metrics100000","nitrates":"300ppm","orp":"20V","ph":"8","salinity":"10g/L","turbidity":"5"
  }]}]
.....
# STATS *****
minifab: ok=26 failed=0
```

Supplementary Figure 4. Successful read transaction to private data collection

```
Using spec file: /mnt/g/Projects/fish-farm/spec.yaml
Minifab Execution Context:
FABRIC_RELEASE=2.3.0
CHANNEL_NAME=mychannel
PEER_DATABASE_TYPE=couchdb
CHAINCODE_LANGUAGE=go
CHAINCODE_NAME=fishfarm
CHAINCODE_VERSION=1.0
CHAINCODE_INIT_REQUIRED=true
CHAINCODE_PARAMETERS="readMetricsPrivateDetails","metrics100000"
CHAINCODE_PRIVATE=true
CHAINCODE_POLICY=
TRANSIENT_DATA=
BLOCK_NUMBER=newest
EXPOSE_ENDPOINTS=false
CURRENT_ORG=sensorsprovider.org
HOST_ADDRESSES=172.30.65.83
WORKING_DIRECTORY: /mnt/g/Projects/fish-farm
*****
# Preparing for the following operations: *****
  verify options, cc query
*****
# Running operation: *****
  verify options
-
# Running operation: *****
  cc query
*****
# Run the chaincode query script on cli container *****
  non-zero return code
  Error: endorsement failure during query. response: status:500 message:{"Error": "Failed to get private details for metrics100000: GET_STATE failed: transaction ID: c046519c49979a041c046303e0229ee754d8aab7358fb269ebf5de20e1149c01: tx creator does not have read access permission on privatedata in chaincodeName: fishfarm collectionName: collectionFishFarmPrivateDetails"}"
*****
# STATS *****
minifab: ok=24 failed=1
```

Supplementary Figure 5. Unsuccessful read transaction to private data collection with permission denied error