
Appendix: Configuration files from the Docker test mixnet

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As an aid to administrators implementing a Katzenpost mixnet, this appendix provides lightly edited examples of configuration files for each Katzenpost node type. These files are drawn from a built instance of the Docker test mixnet [https://katzenpost.network/docs/admin_guide/docker.html]. These code listings are meant to be used as a reference alongside the detailed configuration documentation in Components and configuration of the Katzenpost mixnet [https://katzenpost.network/docs/admin_guide/components.html]. You cannot use these listings as a drop-in solution in your own mixnets for reasons explained in the Network topology and components [https://katzenpost.network/docs/admin_guide/topology.html] section of the Docker test mixnet documentation.

Directory authority

Source: `../katzenpost/docker/voting_mixnet/auth1/authority.toml`

```
[Server]
  Identifier = "auth1"
  WireKEMScheme = "xwing"
  PKISignatureScheme = "Ed448-Dilithium3"
  Addresses = ["tcp://127.0.0.1:30001"]
  DataDir = "/voting_mixnet/auth1"

[[Authorities]]
  Identifier = "auth1"
  IdentityPublicKey = "-----BEGIN ED448-DILITHIUM3 PUBLIC KEY-----\nfvcvAfUpeu7"
  PKISignatureScheme = "Ed448-Dilithium3"
  LinkPublicKey = "-----BEGIN XWING PUBLIC KEY-----\nsxxS04mftoEmwjxE/w [...] e"
  WireKEMScheme = "xwing"
  Addresses = ["tcp://127.0.0.1:30001"]

[[Authorities]]
  Identifier = "auth2"
  IdentityPublicKey = "-----BEGIN ED448-DILITHIUM3 PUBLIC KEY-----\n5nsy6uFQ178"
  PKISignatureScheme = "Ed448-Dilithium3"
  LinkPublicKey = "-----BEGIN XWING PUBLIC KEY-----\nkQzCJvaS6jg06szLea [...] P"
  WireKEMScheme = "xwing"
  Addresses = ["tcp://127.0.0.1:30002"]

[[Authorities]]
  Identifier = "auth3"
  IdentityPublicKey = "-----BEGIN ED448-DILITHIUM3 PUBLIC KEY-----\nJzkFpS035de"
  PKISignatureScheme = "Ed448-Dilithium3"
  LinkPublicKey = "-----BEGIN XWING PUBLIC KEY-----\n+piUsgEGwHa8k4GZcb [...] 1"
  WireKEMScheme = "xwing"
  Addresses = ["tcp://127.0.0.1:30003"]
```

```
[Logging]
  Disable = false
  File = "katzenpost.log"
  Level = "INFO"

[Parameters]
  SendRatePerMinute = 0
  Mu = 0.005
  MuMaxDelay = 1000
  LambdaP = 0.001
  LambdaPMaxDelay = 1000
  LambdaL = 0.0005
  LambdaLMaxDelay = 1000
  LambdaD = 0.0005
  LambdaDMaxDelay = 3000
  LambdaM = 0.0005
  LambdaG = 0.0
  LambdaMMaxDelay = 100
  LambdaGMaxDelay = 100

[Debug]
  Layers = 3
  MinNodesPerLayer = 1
  GenerateOnly = false

[[Mixes]]
  Identifier = "mix1"
  IdentityPublicKeyPem = "../mix1/identity.public.pem"

[[Mixes]]
  Identifier = "mix2"
  IdentityPublicKeyPem = "../mix2/identity.public.pem"

[[Mixes]]
  Identifier = "mix3"
  IdentityPublicKeyPem = "../mix3/identity.public.pem"

[[GatewayNodes]]
  Identifier = "gateway1"
  IdentityPublicKeyPem = "../gateway1/identity.public.pem"

[[ServiceNodes]]
  Identifier = "servicenode1"
  IdentityPublicKeyPem = "../servicenode1/identity.public.pem"

[Topology]

  [[Topology.Layers]]

    [[Topology.Layers.Nodes]]
      Identifier = "mix1"
      IdentityPublicKeyPem = "../mix1/identity.public.pem"

  [[Topology.Layers]]

    [[Topology.Layers.Nodes]]
      Identifier = "mix2"
      IdentityPublicKeyPem = "../mix2/identity.public.pem"
```

```
[[Topology.Layers]]

[[Topology.Layers.Nodes]]
  Identifier = "mix3"
  IdentityPublicKeyPem = "../mix3/identity.public.pem"

[SphinxGeometry]
  PacketLength = 3082
  NrHops = 5
  HeaderLength = 476
  RoutingInfoLength = 410
  PerHopRoutingInfoLength = 82
  SURBLength = 572
  SphinxPlaintextHeaderLength = 2
  PayloadTagLength = 32
  ForwardPayloadLength = 2574
  UserForwardPayloadLength = 2000
  NextNodeHopLength = 65
  SPRPKeyMaterialLength = 64
  NIKENAME = "x25519"
  KEMName = ""
```

Mix node

Source: ../katzenpost/docker/voting_mixnet/mix1/katzenpost.toml

```
[Server]
  Identifier = "mix1"
  WireKEM = "xwing"
  PKISignatureScheme = "Ed448-Dilithium3"
  Addresses = ["tcp://127.0.0.1:30010", "quic://[::1]:30011"]
  MetricsAddress = "127.0.0.1:30012"
  DataDir = "/voting_mixnet/mix1"
  IsGatewayNode = false
  IsServiceNode = false

[Logging]
  Disable = false
  File = "katzenpost.log"
  Level = "INFO"

[PKI]
  [PKI.Voting]

    [[PKI.Voting.Authorities]]
      Identifier = "auth1"
      IdentityPublicKey = "-----BEGIN ED448-DILITHIUM3 PUBLIC KEY-----\nfvcvAfU
      PKISignatureScheme = "Ed448-Dilithium3"
      LinkPublicKey = "-----BEGIN XWING PUBLIC KEY-----\nsxxS04mftoEmwjxE/w [..
      WireKEMScheme = "xwing"
      Addresses = ["tcp://127.0.0.1:30001"]

    [[PKI.Voting.Authorities]]
      Identifier = "auth2"
      IdentityPublicKey = "-----BEGIN ED448-DILITHIUM3 PUBLIC KEY-----\n5nsy6uF
      PKISignatureScheme = "Ed448-Dilithium3"
      LinkPublicKey = "-----BEGIN XWING PUBLIC KEY-----\nkQzCJvaS6jg06szLea [..
```

```
WireKEMScheme = "xwing"
Addresses = ["tcp://127.0.0.1:30002"]

[[PKI.Voting.Authorities]]
Identifier = "auth3"
IdentityPublicKey = "-----BEGIN ED448-DILITHIUM3 PUBLIC KEY-----\nJzkFpS0
PKISignatureScheme = "Ed448-Dilithium3"
LinkPublicKey = "-----BEGIN XWING PUBLIC KEY-----\n+pIUsGEGwHa8k4GZcb [..
WireKEMScheme = "xwing"
Addresses = ["tcp://127.0.0.1:30003"]

[Management]
Enable = false
Path = "/voting_mixnet/mix1/management_sock"

[SphinxGeometry]
PacketLength = 3082
NrHops = 5
HeaderLength = 476
RoutingInfoLength = 410
PerHopRoutingInfoLength = 82
SURBLength = 572
SphinxPlaintextHeaderLength = 2
PayloadTagLength = 32
ForwardPayloadLength = 2574
UserForwardPayloadLength = 2000
NextNodeHopLength = 65
SPRPKeyMaterialLength = 64
NIKEName = "x25519"
KEMName = ""

[Debug]
NumSphinxWorkers = 16
NumServiceWorkers = 3
NumGatewayWorkers = 3
NumKaetzchenWorkers = 3
SchedulerExternalMemoryQueue = false
SchedulerQueueSize = 0
SchedulerMaxBurst = 16
UnwrapDelay = 250
GatewayDelay = 500
ServiceDelay = 500
KaetzchenDelay = 750
SchedulerSlack = 150
SendSlack = 50
DecoySlack = 15000
ConnectTimeout = 60000
HandshakeTimeout = 30000
ReauthInterval = 30000
SendDecoyTraffic = false
DisableRateLimit = false
GenerateOnly = false
```

Gateway node

Source: ../katzenpost/docker/voting_mixnet/gateway1/katzenpost.toml

```
[Server]
```

```
Identifier = "gateway1"
WireKEM = "xwing"
PKISignatureScheme = "Ed448-Dilithium3"
Addresses = ["tcp://127.0.0.1:30004", "quic://[::1]:30005", "onion://thisisju
BindAddresses = ["tcp://127.0.0.1:30004", "quic://[::1]:30005"]
MetricsAddress = "127.0.0.1:30006"
DataDir = "/voting_mixnet/gateway1"
IsGatewayNode = true
IsServiceNode = false

[Logging]
Disable = false
File = "katzenpost.log"
Level = "INFO"

[Gateway]
[Gateway.UserDB]
Backend = "bolt"
[Gateway.UserDB.Bolt]
UserDB = "/voting_mixnet/gateway1/users.db"
[Gateway.SpoolDB]
Backend = "bolt"
[Gateway.SpoolDB.Bolt]
SpoolDB = "/voting_mixnet/gateway1/spool.db"

[PKI]
[PKI.Voting]

[[PKI.Voting.Authorities]]
Identifier = "auth1"
IdentityPublicKey = "-----BEGIN ED448-DILITHIUM3 PUBLIC KEY-----\nfvcvAfU
PKISignatureScheme = "Ed448-Dilithium3"
LinkPublicKey = "-----BEGIN XWING PUBLIC KEY-----\nsexS04mftoEmwjxE/w [..
WireKEMScheme = "xwing"
Addresses = ["tcp://127.0.0.1:30001"]

[[PKI.Voting.Authorities]]
Identifier = "auth2"
IdentityPublicKey = "-----BEGIN ED448-DILITHIUM3 PUBLIC KEY-----\n5nsy6uF
PKISignatureScheme = "Ed448-Dilithium3"
LinkPublicKey = "-----BEGIN XWING PUBLIC KEY-----\nkQzCJvaS6jg06szLea [..
WireKEMScheme = "xwing"
Addresses = ["tcp://127.0.0.1:30002"]

[[PKI.Voting.Authorities]]
Identifier = "auth3"
IdentityPublicKey = "-----BEGIN ED448-DILITHIUM3 PUBLIC KEY-----\nJzkFpSO
PKISignatureScheme = "Ed448-Dilithium3"
LinkPublicKey = "-----BEGIN XWING PUBLIC KEY-----\npIUsgEGwHa8k4GZcb [..
WireKEMScheme = "xwing"
Addresses = ["tcp://127.0.0.1:30003"]

[Management]
Enable = true
Path = "/voting_mixnet/gateway1/management_sock"

[SphinxGeometry]
PacketLength = 3082
```

```
NrHops = 5
HeaderLength = 476
RoutingInfoLength = 410
PerHopRoutingInfoLength = 82
SURBLength = 572
SphinxPlaintextHeaderLength = 2
PayloadTagLength = 32
ForwardPayloadLength = 2574
UserForwardPayloadLength = 2000
NextNodeHopLength = 65
SPRPKeyMaterialLength = 64
NIKEName = "x25519"
KEMName = ""
```

```
[Debug]
NumSphinxWorkers = 16
NumServiceWorkers = 3
NumGatewayWorkers = 3
NumKaetzchenWorkers = 3
SchedulerExternalMemoryQueue = false
SchedulerQueueSize = 0
SchedulerMaxBurst = 16
UnwrapDelay = 250
GatewayDelay = 500
ServiceDelay = 500
KaetzchenDelay = 750
SchedulerSlack = 150
SendSlack = 50
DecoySlack = 15000
ConnectTimeout = 60000
HandshakeTimeout = 30000
ReauthInterval = 30000
SendDecoyTraffic = false
DisableRateLimit = false
GenerateOnly = false
```

Service node

Source: `../katzenpost/docker/voting_mixnet/servicenodel/katzenpost.toml`

```
[Server]
Identifier = "servicenodel"
WireKEM = "xwing"
PKISignatureScheme = "Ed448-Dilithium3"
Addresses = ["tcp://127.0.0.1:30007", "quic://[::1]:30008"]
MetricsAddress = "127.0.0.1:30009"
DataDir = "/voting_mixnet/servicenodel"
IsGatewayNode = false
IsServiceNode = true

[Logging]
Disable = false
File = "katzenpost.log"
Level = "INFO"

[ServiceNode]
```

```
[[ServiceNode.Kaetzchen]]
  Capability = "echo"
  Endpoint = "+echo"
  Disable = false

[[ServiceNode.Kaetzchen]]
  Capability = "testdest"
  Endpoint = "+testdest"
  Disable = false

[[ServiceNode.CBORPluginKaetzchen]]
  Capability = "spool"
  Endpoint = "+spool"
  Command = "/voting_mixnet/memspool.alpine"
  MaxConcurrency = 1
  Disable = false
  [ServiceNode.CBORPluginKaetzchen.Config]
    data_store = "/voting_mixnet/servicenodel/memspool.storage"
    log_dir = "/voting_mixnet/servicenodel"

[[ServiceNode.CBORPluginKaetzchen]]
  Capability = "pigeonhole"
  Endpoint = "+pigeonhole"
  Command = "/voting_mixnet/pigeonhole.alpine"
  MaxConcurrency = 1
  Disable = false
  [ServiceNode.CBORPluginKaetzchen.Config]
    db = "/voting_mixnet/servicenodel/map.storage"
    log_dir = "/voting_mixnet/servicenodel"

[[ServiceNode.CBORPluginKaetzchen]]
  Capability = "panda"
  Endpoint = "+panda"
  Command = "/voting_mixnet/panda_server.alpine"
  MaxConcurrency = 1
  Disable = false
  [ServiceNode.CBORPluginKaetzchen.Config]
    fileStore = "/voting_mixnet/servicenodel/panda.storage"
    log_dir = "/voting_mixnet/servicenodel"
    log_level = "INFO"

[[ServiceNode.CBORPluginKaetzchen]]
  Capability = "http"
  Endpoint = "+http"
  Command = "/voting_mixnet/proxy_server.alpine"
  MaxConcurrency = 1
  Disable = false
  [ServiceNode.CBORPluginKaetzchen.Config]
    host = "localhost:4242"
    log_dir = "/voting_mixnet/servicenodel"
    log_level = "DEBUG"

[PKI]
  [PKI.Voting]

    [[PKI.Voting.Authorities]]
      Identifier = "auth1"
      IdentityPublicKey = "-----BEGIN ED448-DILITHIUM3 PUBLIC KEY-----\nfvcvAfU
```

```
PKISignatureScheme = "Ed448-Dilithium3"
LinkPublicKey = "-----BEGIN XWING PUBLIC KEY-----\nsxxS04mftoEmwjxE/w [...
WireKEMScheme = "xwing"
Addresses = ["tcp://127.0.0.1:30001"]

[[PKI.Voting.Authorities]]
Identifier = "auth2"
IdentityPublicKey = "-----BEGIN ED448-DILITHIUM3 PUBLIC KEY-----\n5nsy6uF0
PKISignatureScheme = "Ed448-Dilithium3"
LinkPublicKey = "-----BEGIN XWING PUBLIC KEY-----\nkQzCJvaS6jg06szLea [...
WireKEMScheme = "xwing"
Addresses = ["tcp://127.0.0.1:30002"]

[[PKI.Voting.Authorities]]
Identifier = "auth3"
IdentityPublicKey = "-----BEGIN ED448-DILITHIUM3 PUBLIC KEY-----\nJzkFpS0
PKISignatureScheme = "Ed448-Dilithium3"
LinkPublicKey = "-----BEGIN XWING PUBLIC KEY-----\n+pIUsEGwHa8k4GZcb [...
WireKEMScheme = "xwing"
Addresses = ["tcp://127.0.0.1:30003"]

[Management]
Enable = true
Path = "/voting_mixnet/servicenode1/management_sock"

[SphinxGeometry]
PacketLength = 3082
NrHops = 5
HeaderLength = 476
RoutingInfoLength = 410
PerHopRoutingInfoLength = 82
SURBLength = 572
SphinxPlaintextHeaderLength = 2
PayloadTagLength = 32
ForwardPayloadLength = 2574
UserForwardPayloadLength = 2000
NextNodeHopLength = 65
SPRPKeyMaterialLength = 64
NIKEName = "x25519"
KEMName = ""

[Debug]
NumSphinxWorkers = 16
NumServiceWorkers = 3
NumGatewayWorkers = 3
NumKaetzchenWorkers = 4
SchedulerExternalMemoryQueue = false
SchedulerQueueSize = 0
SchedulerMaxBurst = 16
UnwrapDelay = 250
GatewayDelay = 500
ServiceDelay = 500
KaetzchenDelay = 750
SchedulerSlack = 150
SendSlack = 50
DecoySlack = 15000
ConnectTimeout = 60000
HandshakeTimeout = 30000
```



```
ReauthInterval = 30000  
SendDecoyTraffic = false  
DisableRateLimit = false  
GenerateOnly = false
```