Admin and User Guide

To add a new organization to an existing channel in Hyperledger Fabric 2.2 version, you can follow the below steps:

1) Generate cryptographic material for the new organisation: You need to create cryptographic material such as certificates and private keys for the new organisation. You can use the Crytogen tool provided by Hyperledger Fabric or create the material using another tool like Fabric-CA.
2) Update the channel configuration: You need to update the channel configuration to include cryptographic material for the new organisation. You can use the configtxlator tool to update the channel configuration.
3) Add the new organisation to the channel: You can use the peer channel join command to add the new organisation to the channel. You need to have the new organization's peer join the channel with the appropriate cryptographic material.

Can they use their own Certificate Authority (CA)?

Yes, the new organization can use their own Certificate Authority (CA) in Hyperledger Fabric. In fact, using an external CA for an organization is a best practice in Hyperledger Fabric.

1) When a new organization joins the network, it typically generates its own cryptographic material, including certificates and private keys, using a CA. This ensures that the organization has complete control over its own cryptographic material and that the CA is trusted only by the organization.
2) To use an external CA, the organization can set up its own Fabric-CA server or use a third-party CA solution that supports the Fabric CA protocol. The organization can then use the Fabric-CA client to generate cryptographic material for its peers and other components and submit enrollment requests to the external CA.
3) To add the new organization to the existing channel using its own CA, you need to make sure that the channel configuration is updated to include the root certificate of the new organization's CA.
4) The root certificate of the new organization's CA should be added to the MSP configuration of the channel, along with the root certificates of the other organizations. This will ensure that the channel trusts the new organization's certificates and can authenticate its transactions.

The difference between the Endorsement policy and the lifecycle endorsement policy:

In Hyperledger Fabric, there are two types of endorsement policies: Endorsement and LifecycleEndorsement.The Endorsement policy determines the endorsement policy for invoking chaincode operations. It specifies the minimum number of peers that must agree on the proposed transaction before the transaction is considered valid and can be committed to the ledger. On the other hand, the LifecycleEndorsement policy determines the endorsement policy for committing chaincode definition updates to the ledger. It specifies the minimum number of peers that must agree on the new chaincode definition before it can be committed to the ledger. These two policies have different purposes and are used in different phases of the chaincode lifecycle. The Endorsement policy is used when invoking chaincode operations, while the LifecycleEndorsement policy is used when committing chaincode definition updates to the ledger.

References:

Hyperledger Fabric documentation: https://hyperledger-fabric.readthedocs.io/en/release-2.2/

Fabric configuration documentation: https://hyperledger-fabric.readthedocs.io/en/release-2.2/configtx.html

Adding an organization to a channel: https://hyperledger-fabric.readthedocs.io/en/release-2.2/channel_update_tutorial.html

Modifying the ChannelCreationPolicy: https://hyperledger-fabric.readthedocs.io/en/release-2.2/configtx.html#modifying-the-channelcreationpolicy

 Configtx.yaml file reference: https://hyperledger-fabric.readthedocs.io/en/release-2.2/configtx.html#configtx-yaml-file-reference

Endorsement policies: https://hyperledger-fabric.readthedocs.io/en/release-2.2/endorsement-policies.html

Chaincode lifecycle: https://hyperledger-fabric.readthedocs.io/en/release-2.2/chaincode_lifecycle.html