



# **CCNx 1.0 Software APIs Architectural Overview**

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# CCNx Socket API

## Open, Close

Create a socket configured with a specific assembly of Transport Stack components.

## Read, Write

Synchronous/Asynchronous receipt and transmission of Interests and Content Objects.

## Control

Transport software stack configuration.

# CCNx Socket API

**ccnxSocket\_Open** Open a CCN socket  
**ccnxSocket\_Close** Close a CCN socket.  
**ccnxSocket\_Listen** Listen for Interests.  
**ccnxSocket\_Read** Read a CCN Message.  
**ccnxSocket\_Write** Write a CCN Message.

# CCNx Key Value API

Abstracts away Interests and Content Objects.

Files, services, devices are named resources.

Primitives for Create, Read, Update, Delete.

Primitives for ACID semantics and lock-free modification.

# CCNx Key Value API

**ccnxKV\_Announce** Announce that the given named entity is available here.

**ccnxKV\_Create** Create a named entity with content.

**ccnxKV\_Read** Read the content of a named entity.

**ccnxKV\_Update** Update the content of an existing named entity.

**ccnxKV\_Delete** Deletes the named entity.

**ccnxKV\_GetProperties** Get the properties for the named entity.

**ccnxKV\_SetProperties** Set the properties for the named entity.

**ccnxKV\_Copy** Copy the content of an existing named entity to a new named entity.

**ccnxKV\_Rename** Rename an existing entity from one name to another new name.

**ccnxKV\_Lock** Lock a named entity.

**ccnxKV\_Unlock** Unlock a named entity.

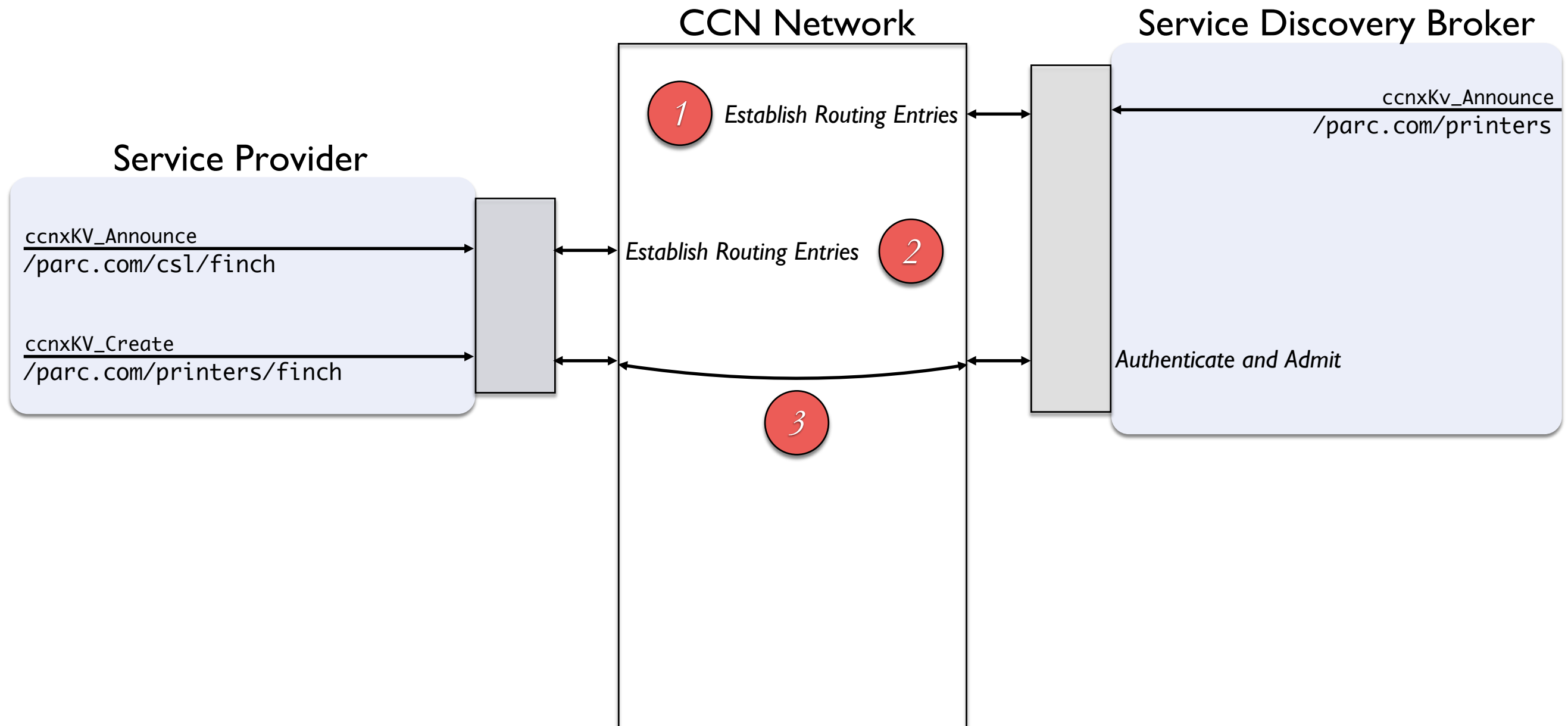
**ccnxKV\_Identity** Represent the identity of a requester or provider.

**ccnxKV\_Cancel** Cancel a previously established, asynchronous operation.

**ccnxKV\_Wait** Wait for previously established, asynchronous operation.

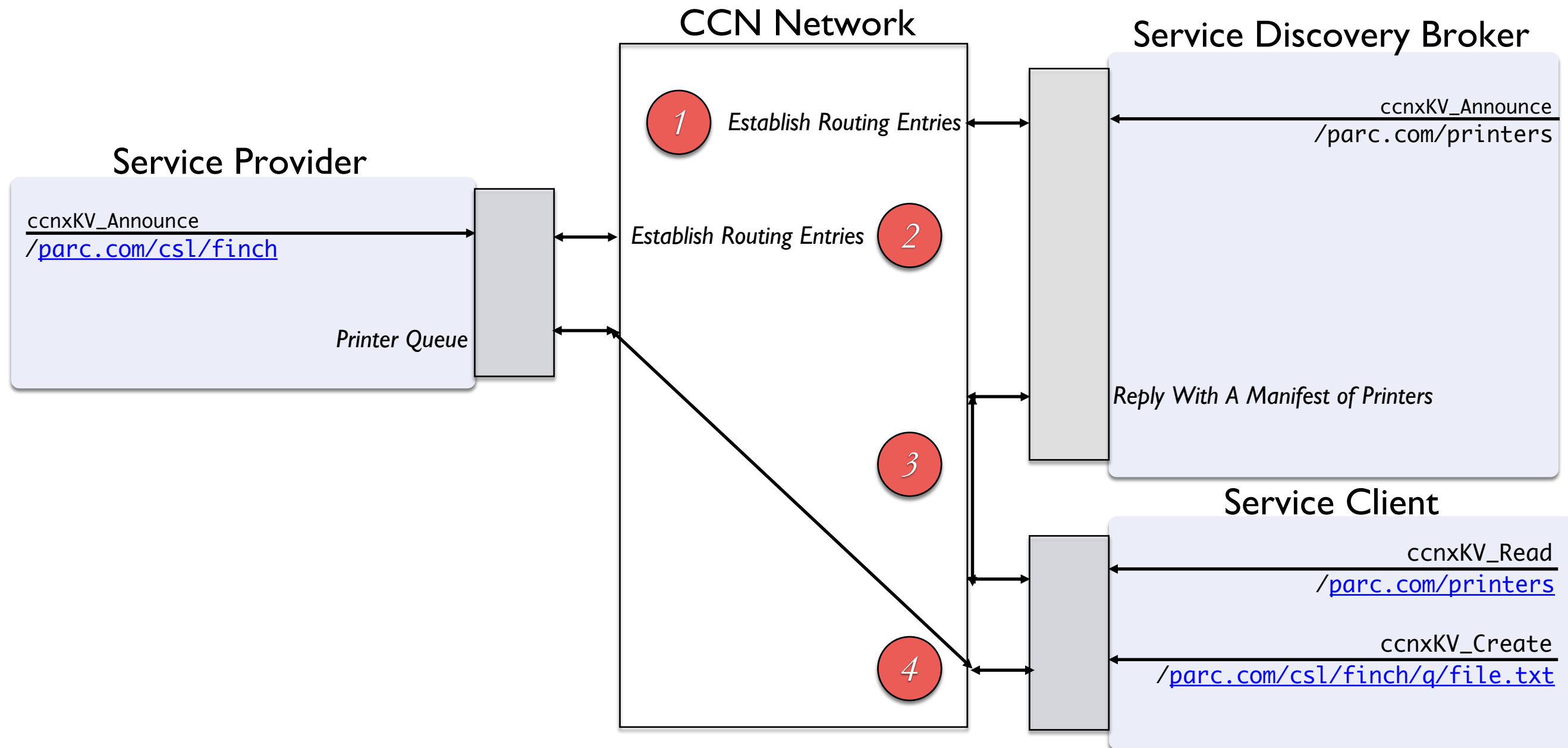
# Simple Service Discovery

Admission via the CCNx Key Value API



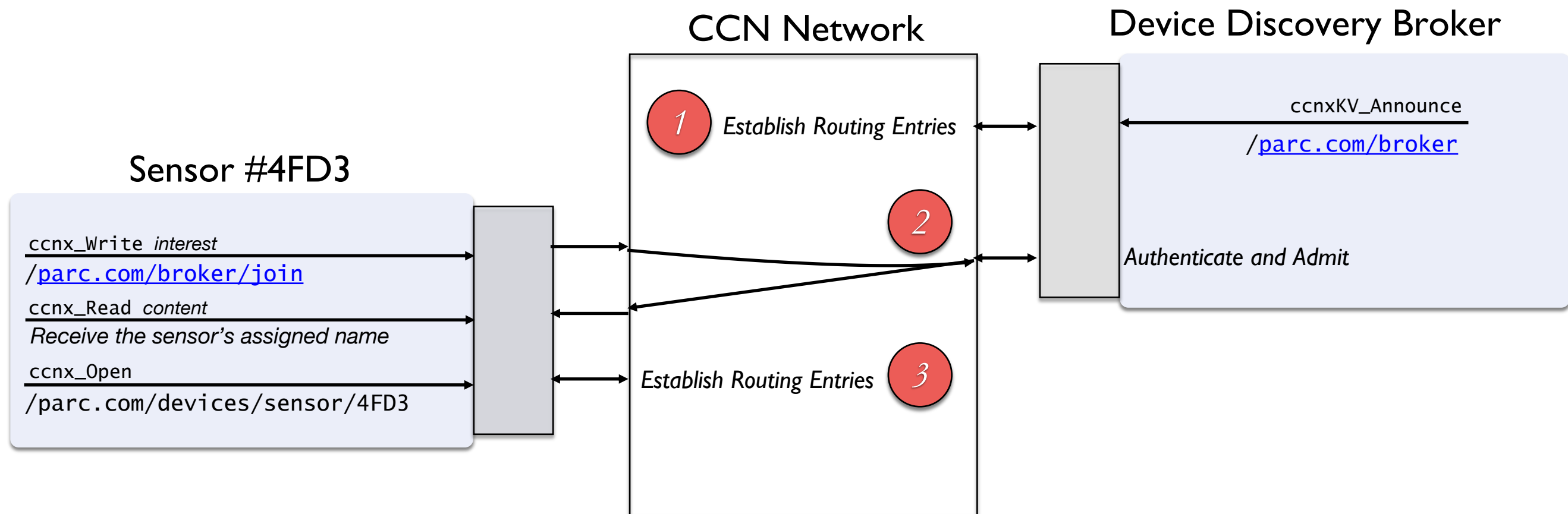
# Simple Service Discovery

Client Interaction via the CCNx Key Value API



# Simple Device Discovery

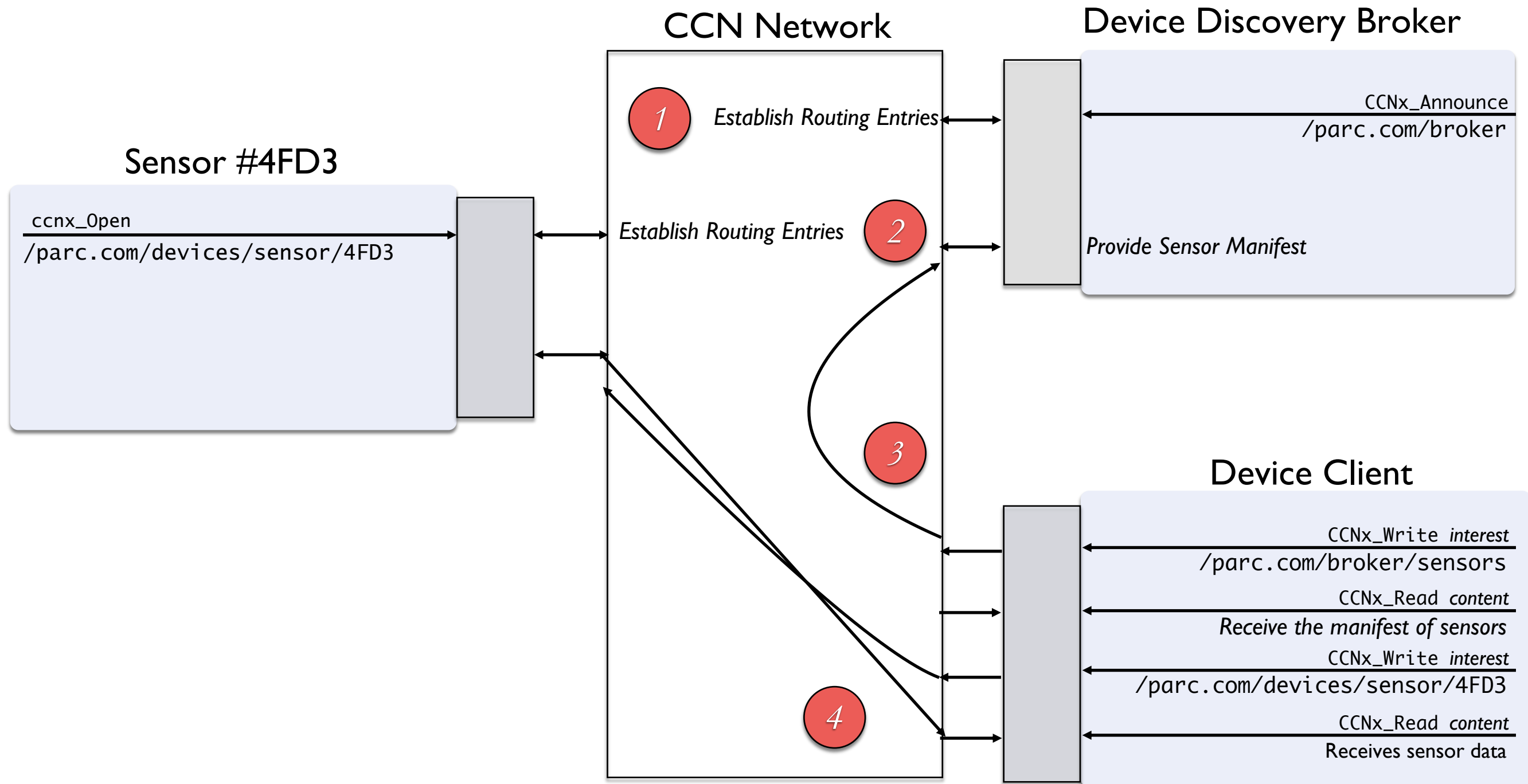
CCNx Key Value and CCNx Socket API  
interoperation





# Simple Device Discovery

## CCNx Key Value and CCNx Socket API



# Simple Device Discovery

## CCNx Key Value and CCNx Socket API

### Sensor #4FD3

CCNx\_Write interest  
/parc.com/devices/join  
CCNx\_Read content  
Receives the sensor's assigned name  
CCNx\_Listen  
/parc.com/devices/sensor/4FD3  
CCNx\_Read interest  
Read interest in current state  
CCNx\_Write content  
/parc.com/devices/sensor/4FD3

### CCN Network

Establish Routing Entries

Establish Routing Entries

### Device Discovery Broker

CCNx\_Announce

[/parc.com/devices](#)

Authenticate and Admit

Reply With A Manifest of sensors

### Device Client

CCNx\_Write interest  
/parc.com/devices/sensor/  
CCNx\_Read content  
Receive the manifest of sensors  
CCNx\_Write interest  
/parc.com/devices/sensor/4FD3  
CCNx\_Read content  
Receives data from the sensor