Service Principals, App Registrations and other Azure Myths

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User Assigned

App Registration

Service Connections

Client ID

Service Principal

Enterprise App

App Consent

Managed Identity

Security Principal

Client Secret

System Assigned

User Principal

Application Object

...

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What is it all about?

User

Client App

DATA

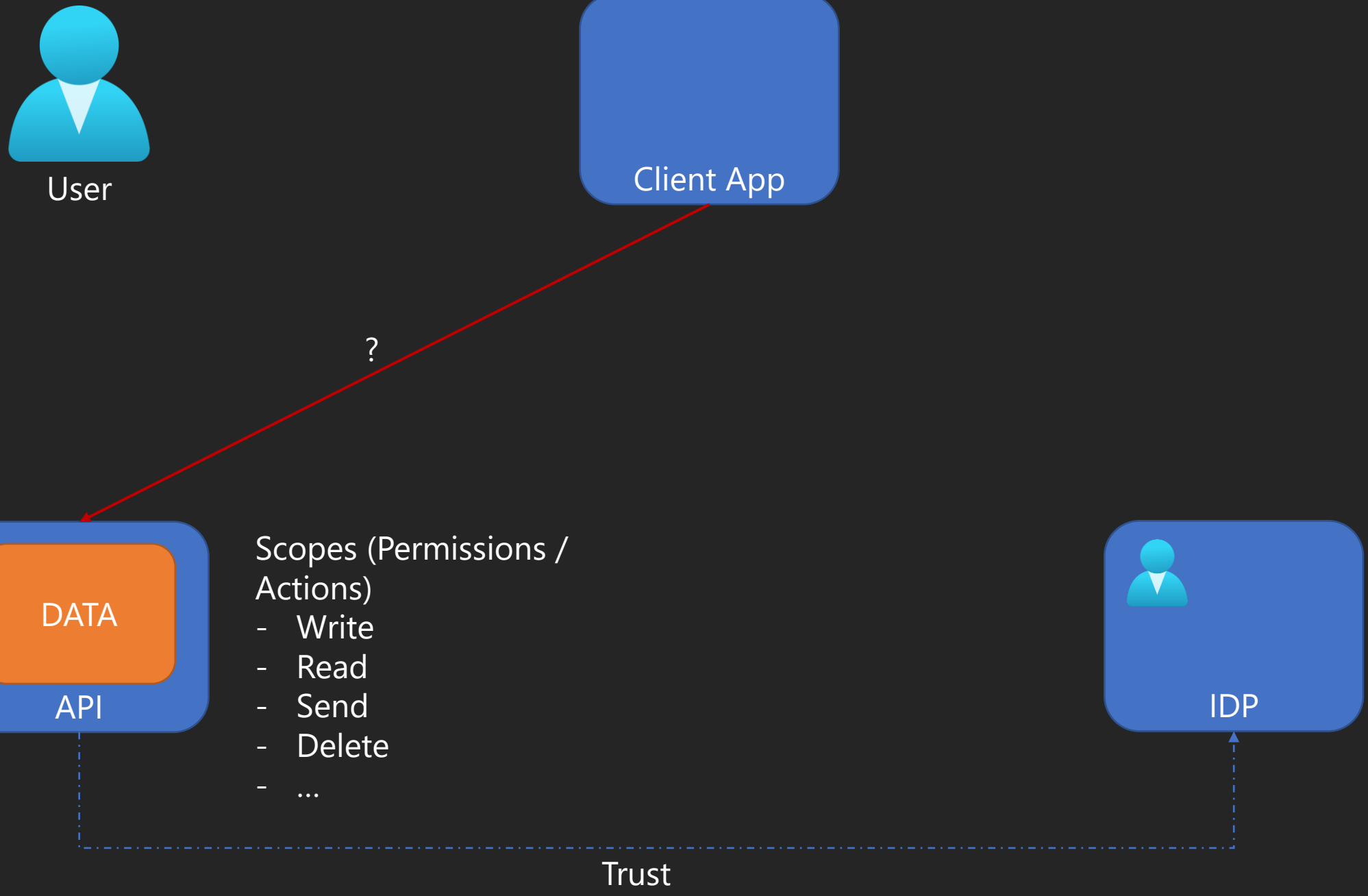
API

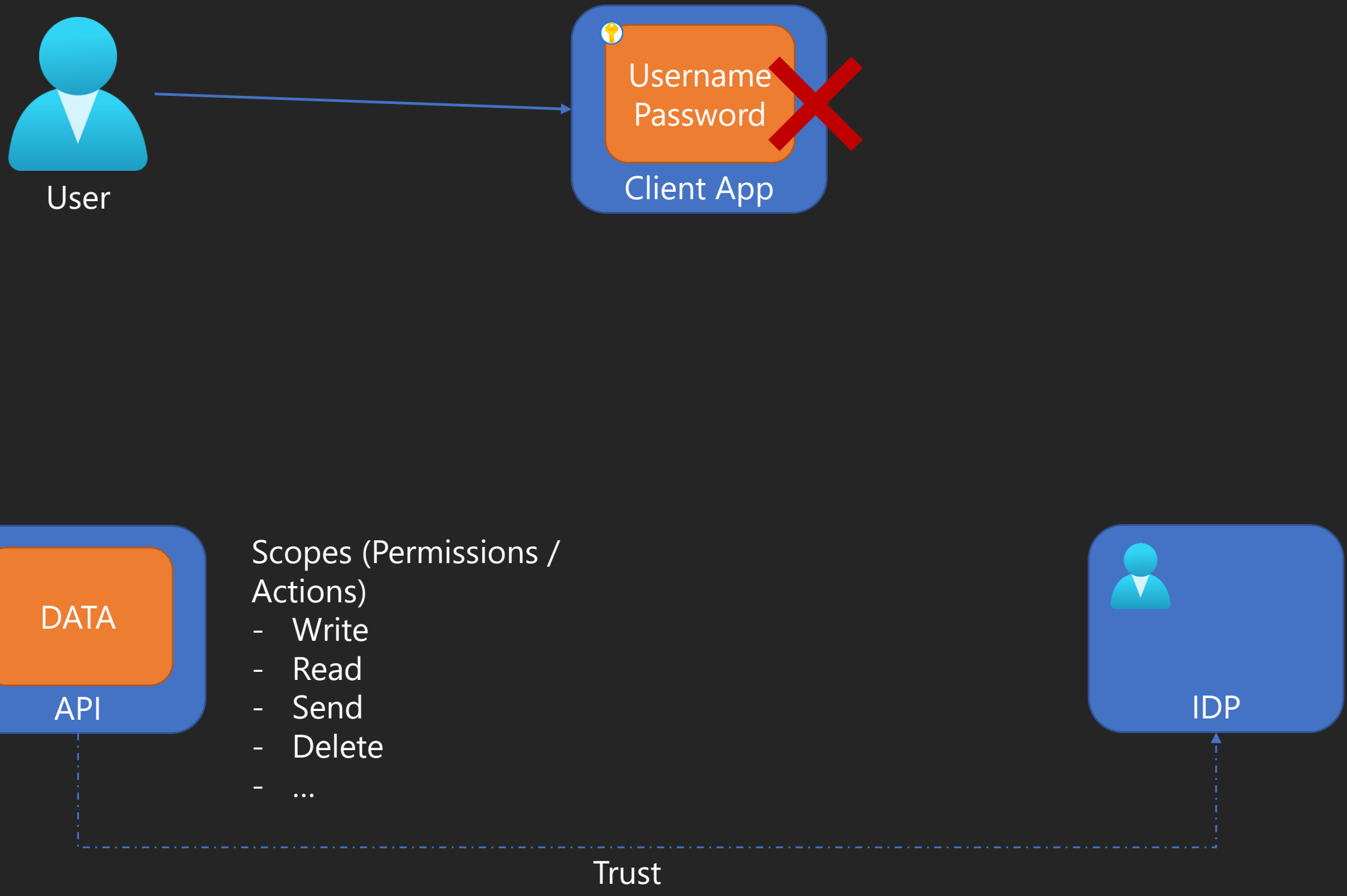
Scopes (Permissions / Actions)

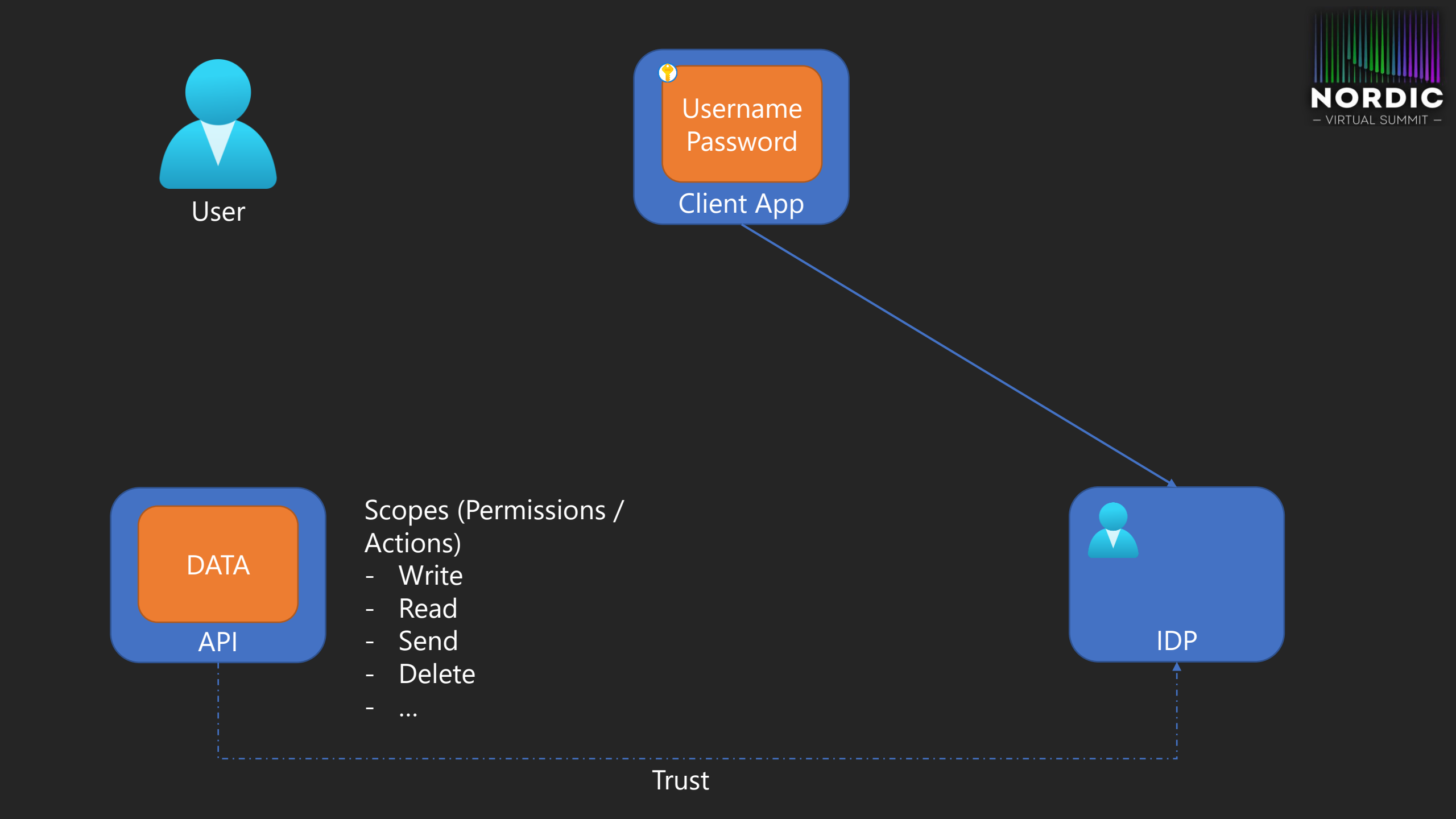
- Write
- Read
- Send
- Delete
- ...

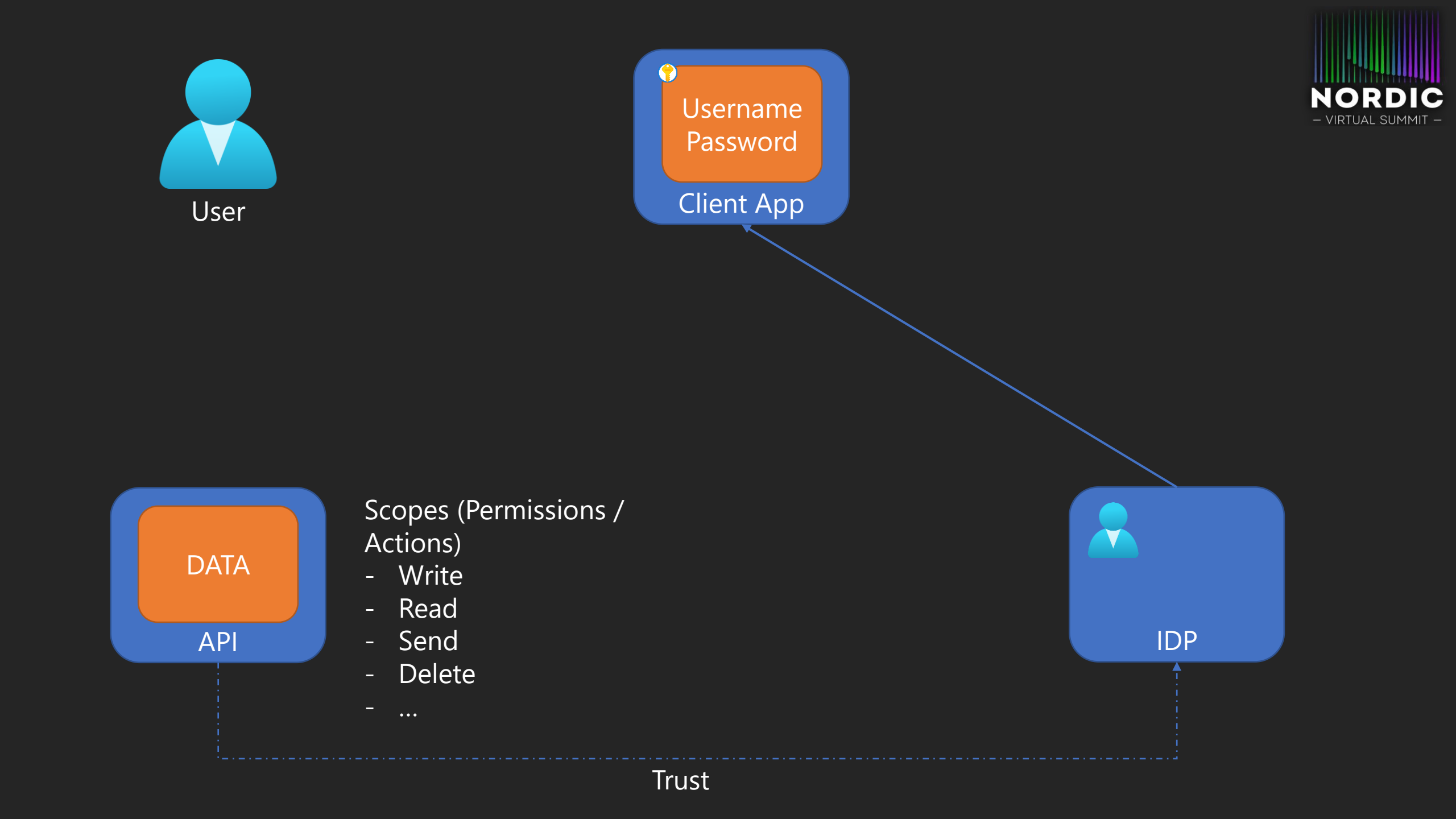
IDP

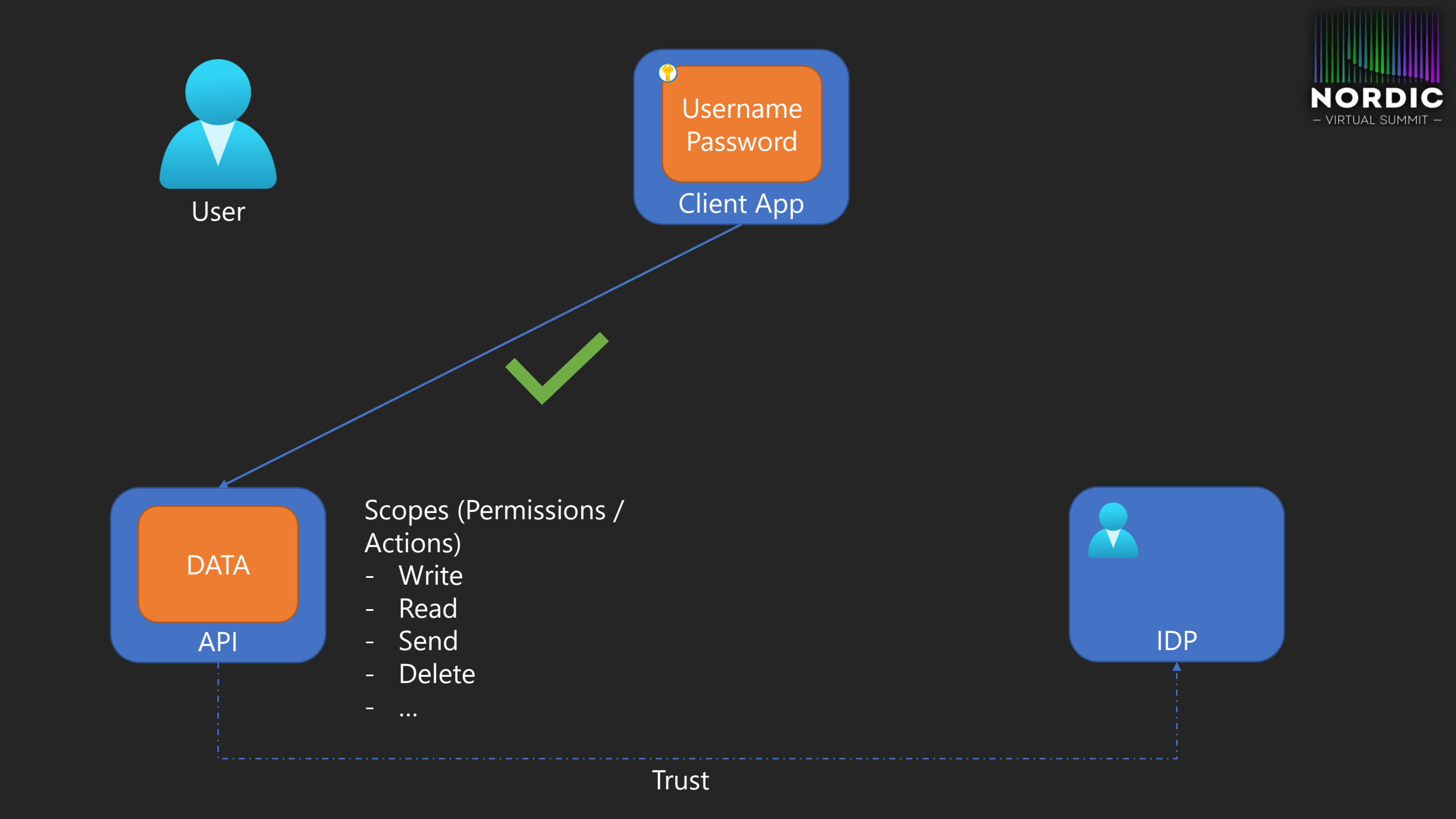
Trust


User
Client App
?
DATA
API
Scopes (Permissions / Actions)
- Write
- Read
- Send
- Delete
- ...
IDP
Trust

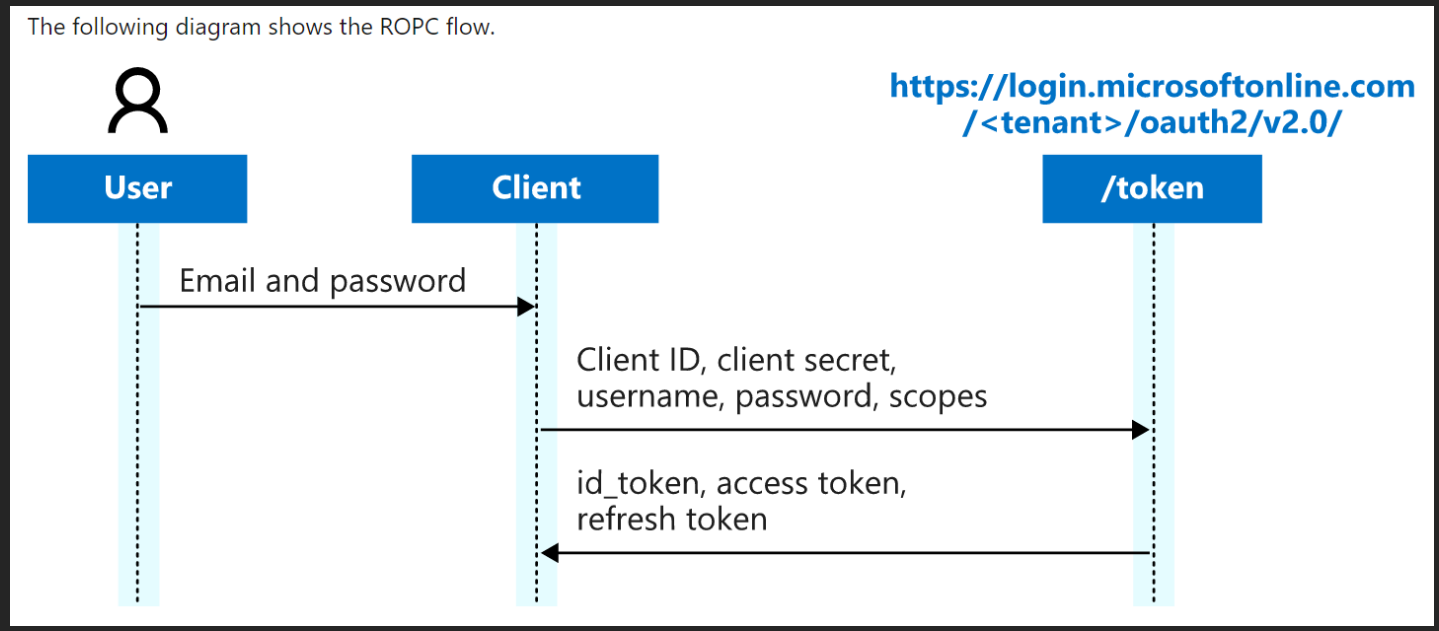

User
Username
Password
Client App
DATA
API
Scopes (Permissions / Actions)
- Write
- Read
- Send
- Delete
- ...
IDP
Trust


User
Username
Password
Client App
DATA
API
Scopes (Permissions / Actions)
- Write
- Read
- Send
- Delete
- ...
IDP
Trust


User
Username
Password
Client App
DATA
API
Scopes (Permissions / Actions)
- Write
- Read
- Send
- Delete
- ...
IDP
Trust


User
Username
Password
Client App
DATA
API
Scopes (Permissions / Actions)
- Write
- Read
- Send
- Delete
- ...
IDP
Trust

This is how it flows … in AAD



How to do it better?

User

Client App

DATA

API

Scopes (Permissions / Actions)

- Write
- Read
- Send
- Delete
- ...

IDP

Trust

User

Client App

DATA

API

Scopes (Permissions / Actions)

- Write
- Read
- Send
- Delete
- ...

Client App

IDP

Trust

User

Client ID
&
Secret

Client App

DATA

API

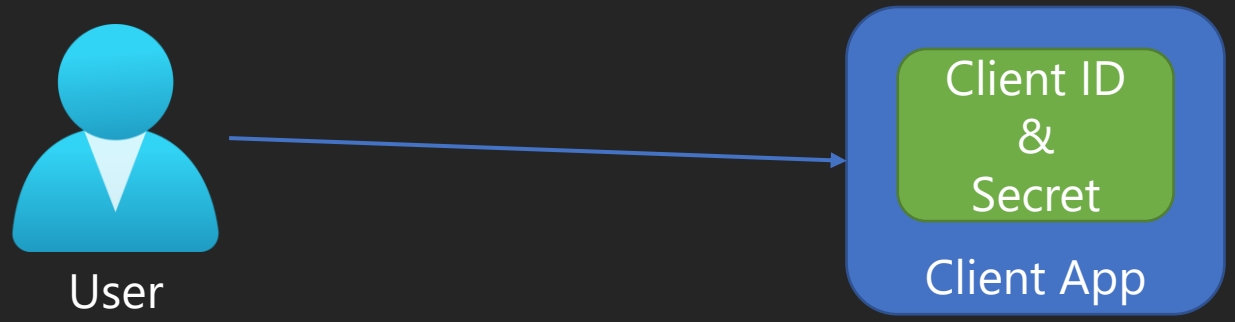
Scopes (Permissions / Actions)

- Write
- Read
- Send
- Delete
- ...

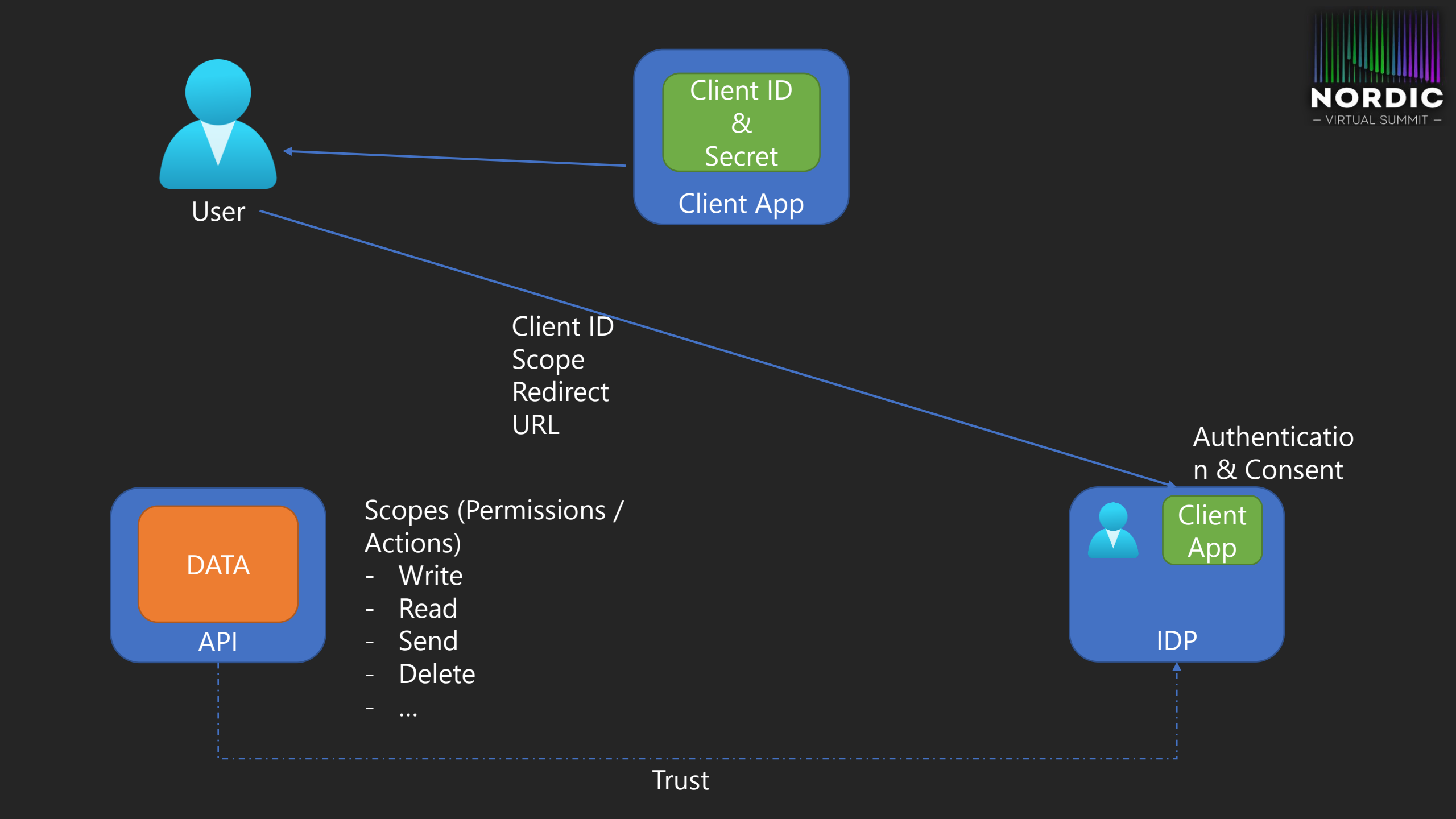
Client App

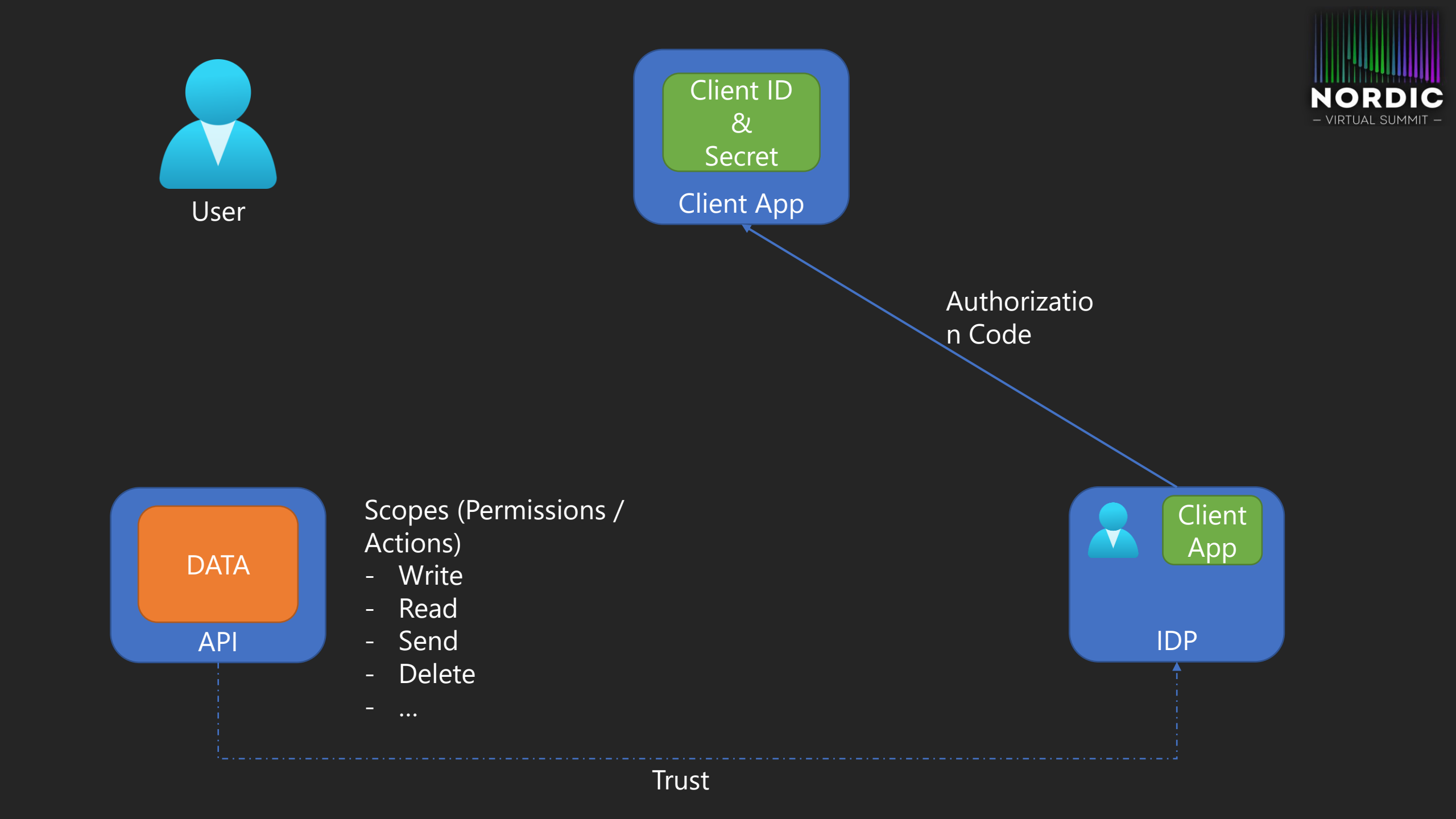
IDP

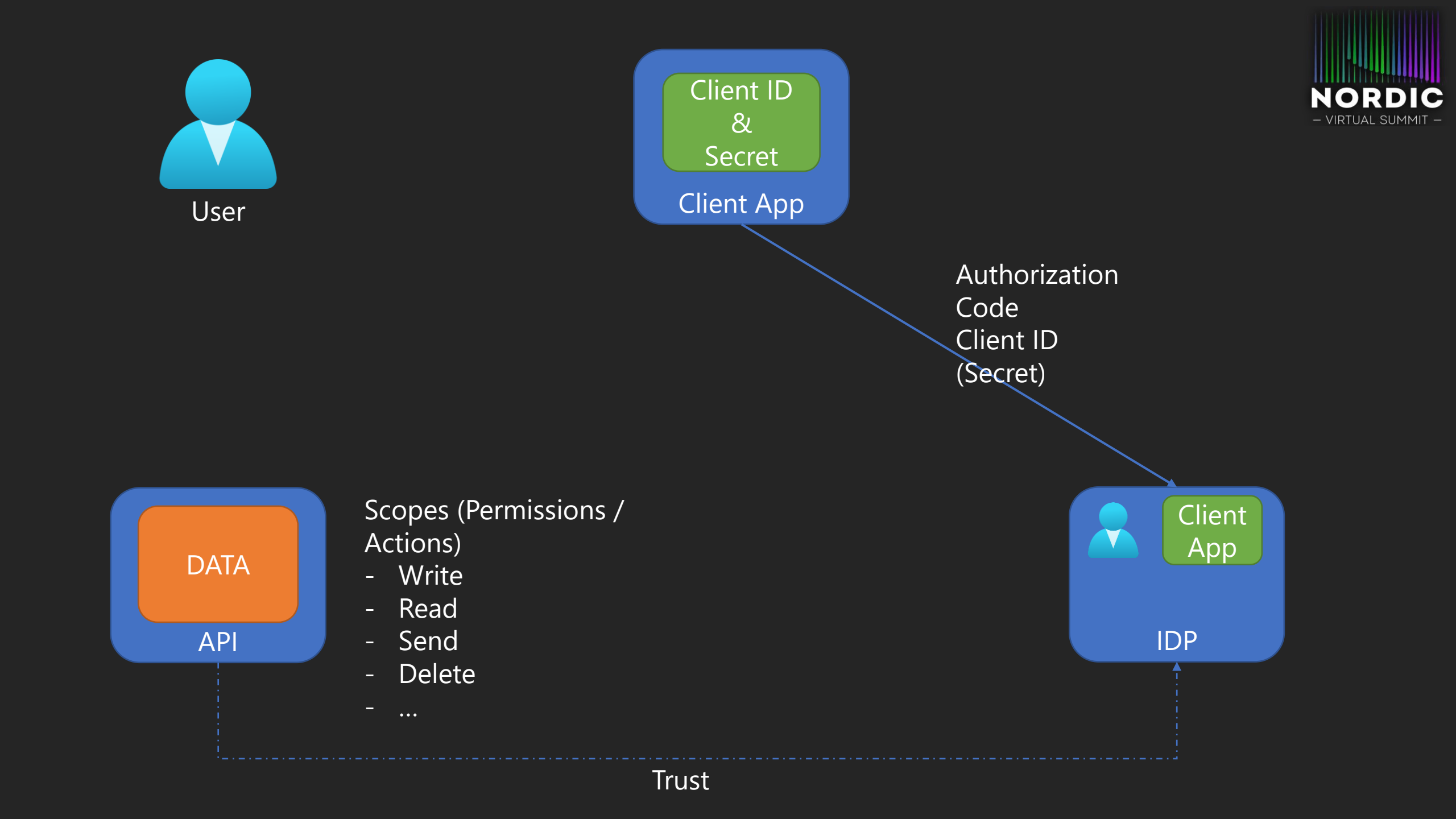
Trust

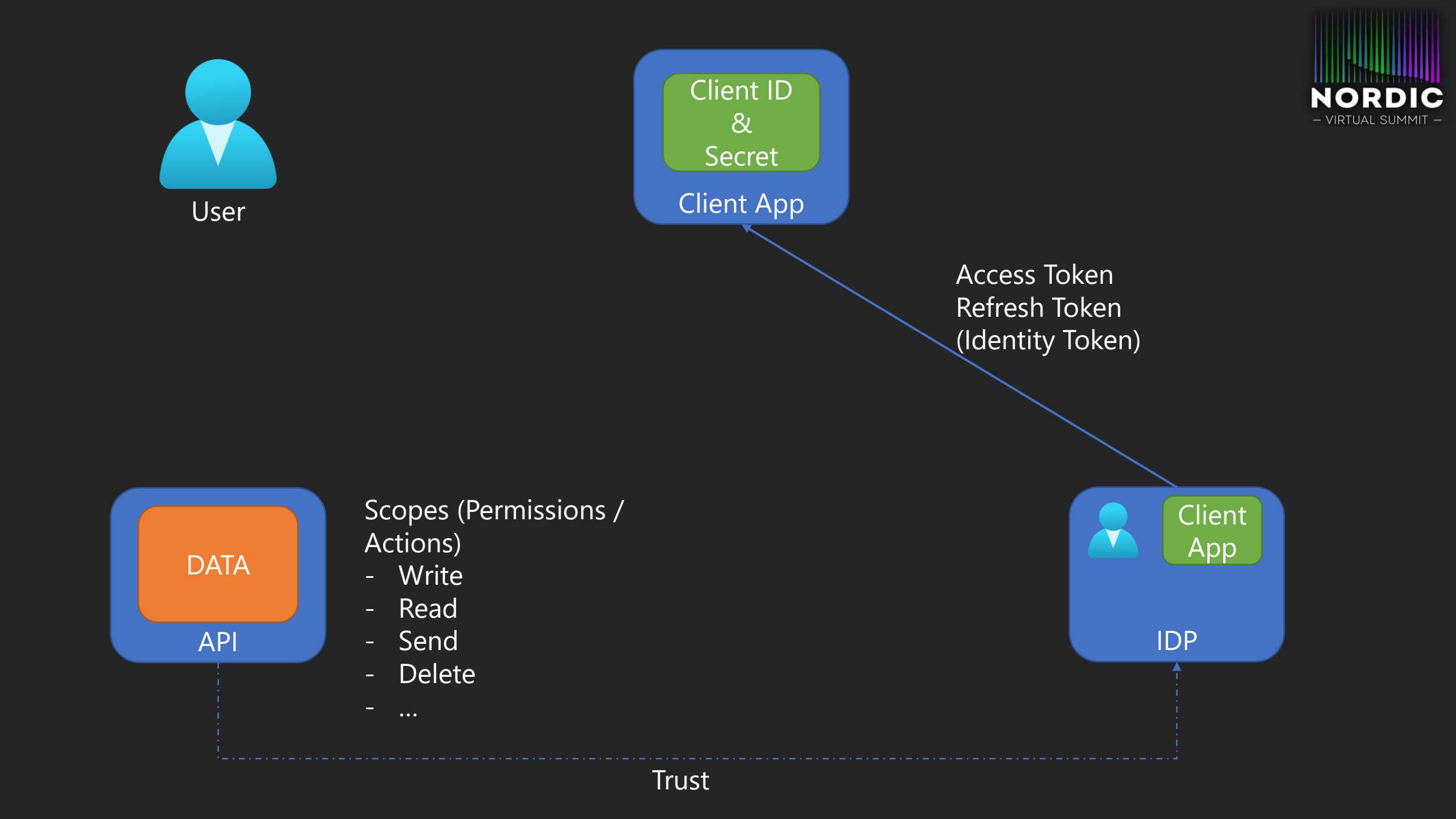

User
Client ID
&
Secret
Client App

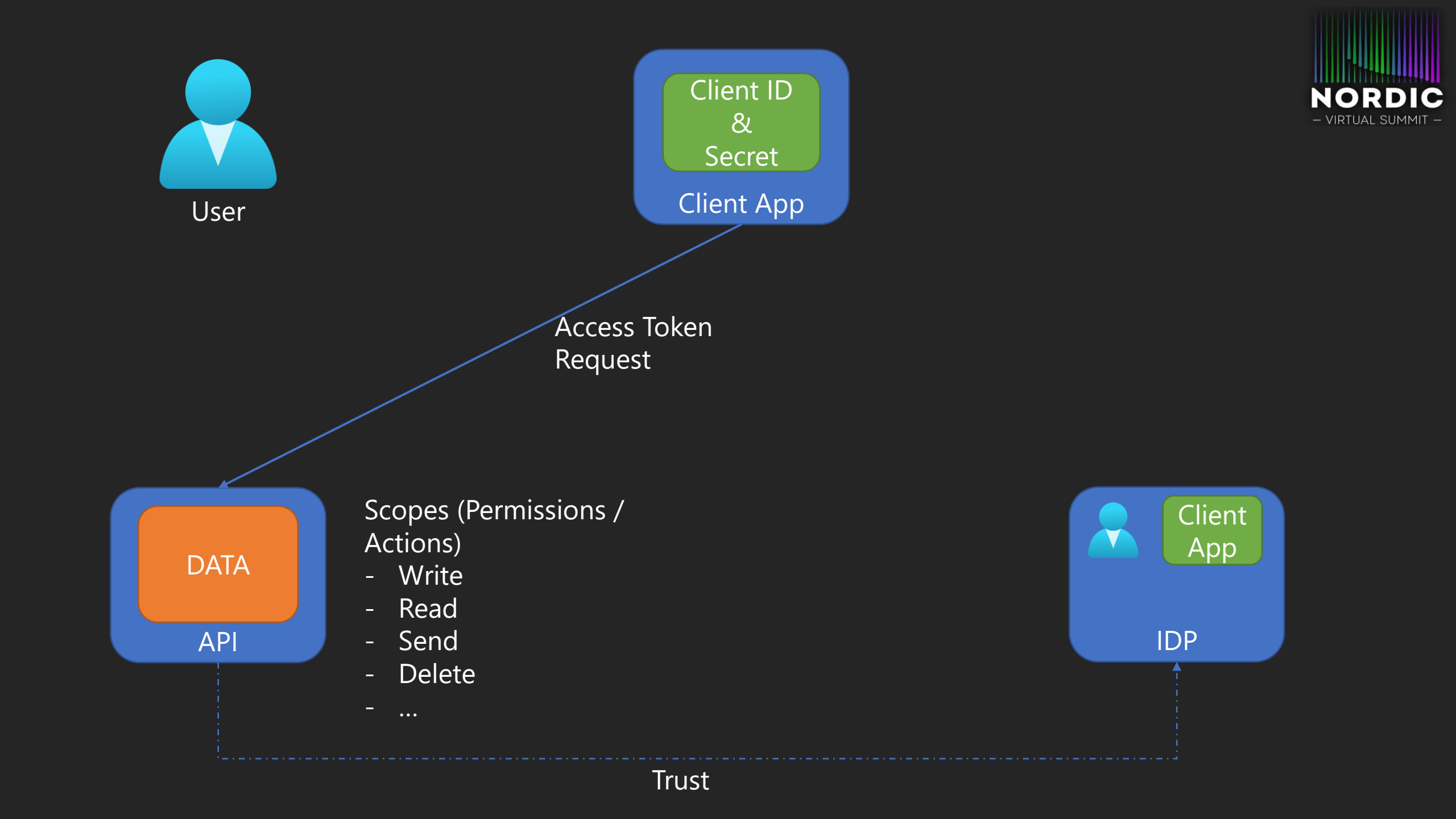

DATA
API
Scopes (Permissions / Actions)
- Write
- Read
- Send
- Delete
- ...
Client App
IDP
Trust

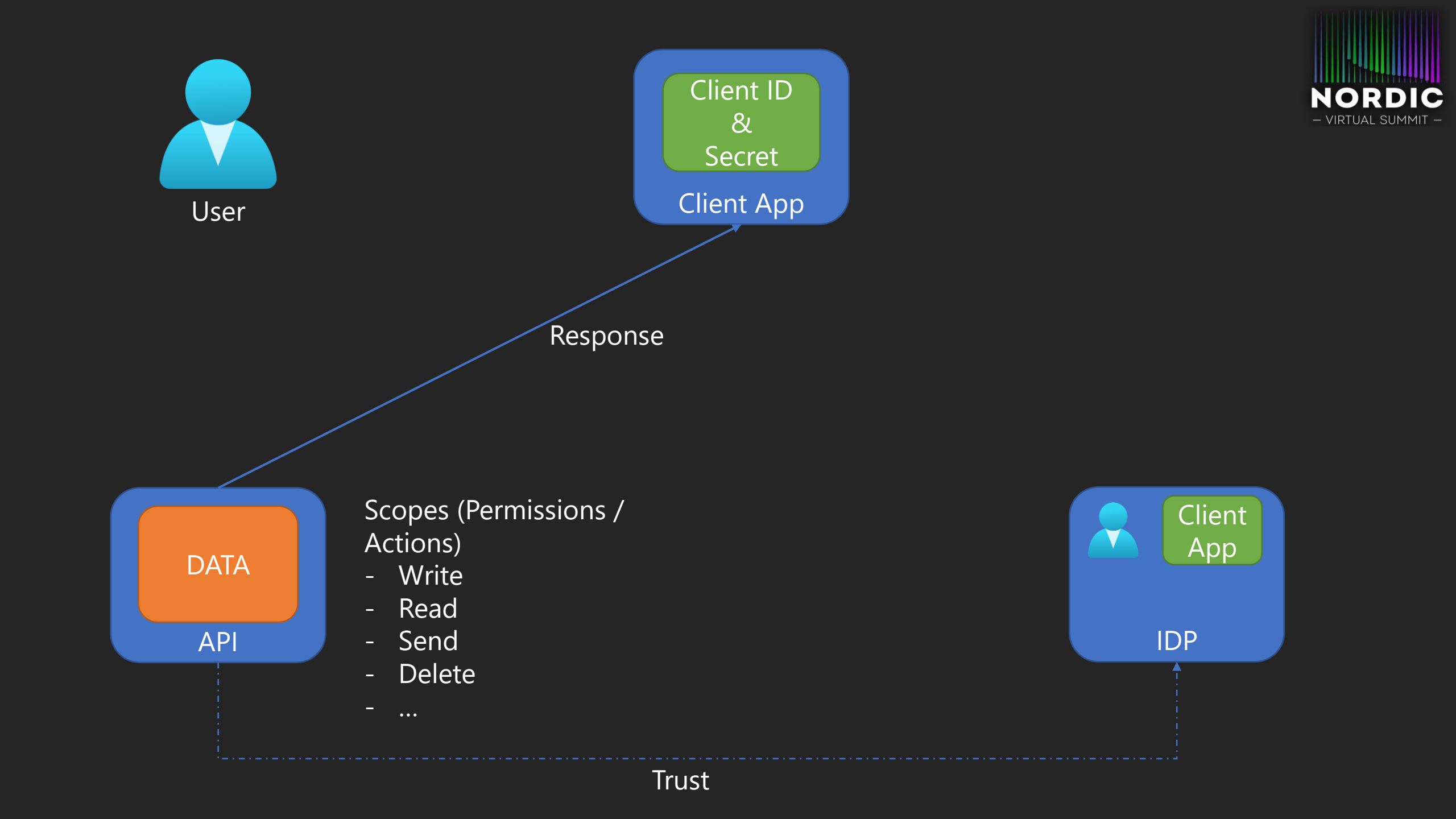

Client ID
&
Secret
Client App
User
Client ID
Scope
Redirect
URL
Authenticatio
n & Consent
DATA
API
Scopes (Permissions /
Actions)
- Write
- Read
- Send
- Delete
- ...
Client
App
IDP
Trust


User
Client ID
&
Secret
Client App
Authorizatio
n Code
DATA
API
Scopes (Permissions /
Actions)
- Write
- Read
- Send
- Delete
- ...
Client
App
IDP
Trust

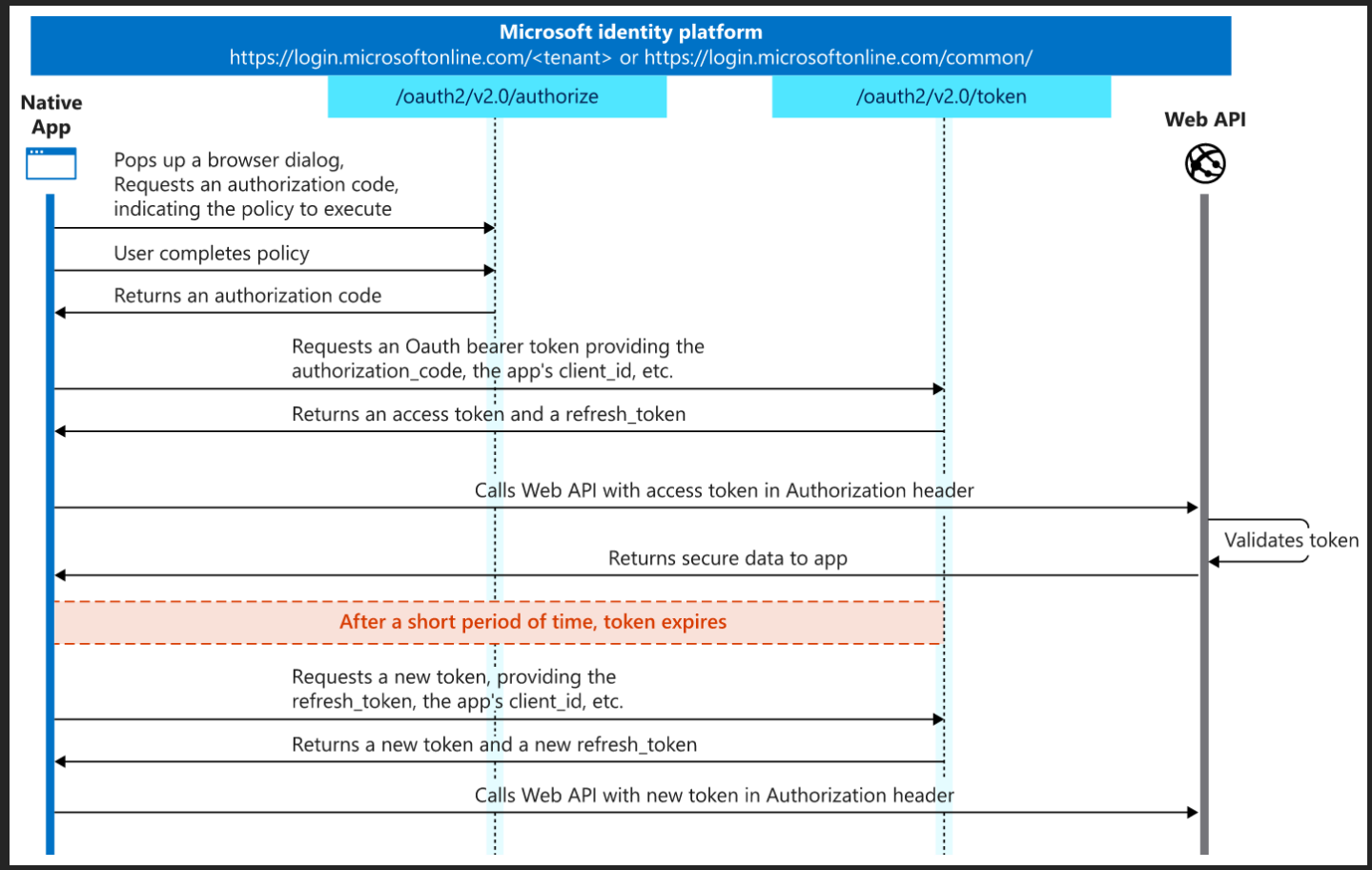

User
Client ID
&
Secret
Client App
Authorization
Code
Client ID
(Secret)
DATA
API
Scopes (Permissions /
Actions)
- Write
- Read
- Send
- Delete
- ...
Client
App
IDP
Trust


User
Client ID
&
Secret
Client App
Access Token
Refresh Token
(Identity Token)
DATA
API
Scopes (Permissions / Actions)
- Write
- Read
- Send
- Delete
- ...
Client App
IDP
Trust


User
Client ID
&
Secret
Client App
Access Token
Request
DATA
API
Scopes (Permissions /
Actions)
- Write
- Read
- Send
- Delete
- ...
Client
App
IDP
Trust


User
Client ID
&
Secret
Client App
Response
DATA
API
Scopes (Permissions / Actions)
- Write
- Read
- Send
- Delete
- ...
Client App
IDP
Trust

This is how it flows … in AAD



And what about AAD now?

User

Client App

DATA

API

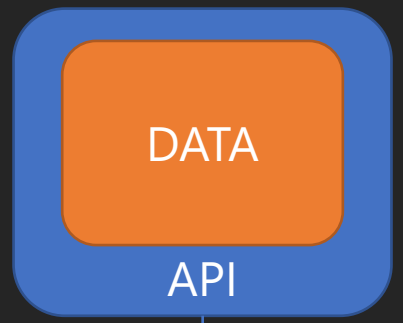
Scopes (Permissions / Actions)

- Write
- Read
- Send
- Delete
- ...

IDP

Trust

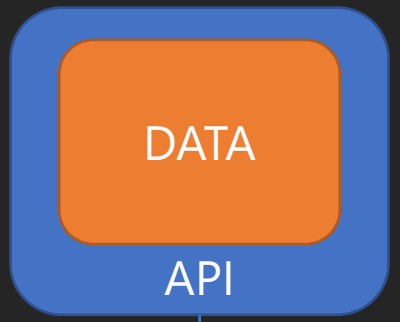
User



Scopes (Permissions / Actions)
- Write
- Read
- Send
- Delete
- ...

Trust

User



Scopes (Permissions / Actions)

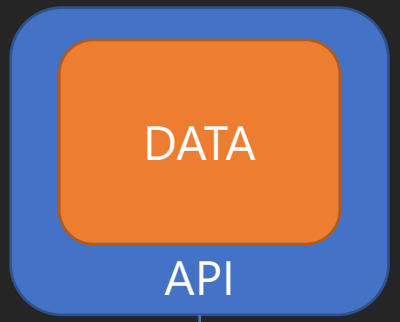
- Write
- Read
- Send
- Delete
- …

Azure AD

Trust

User

App Registration
Unique ID
Scope
Secret



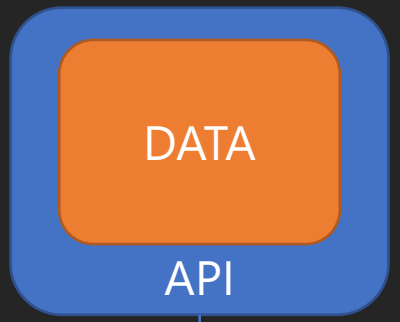
Scopes (Permissions / Actions)
- Write
- Read
- Send
- Delete
- …

Azure AD

Trust

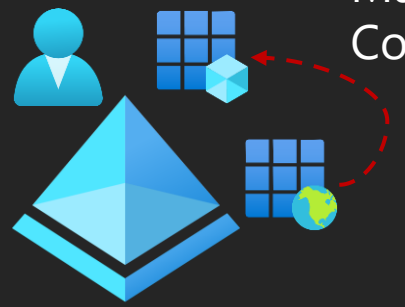
DEMO?!

User



Scopes (Permissions / Actions)
- Write
- Read
- Send
- Delete
- ...

Service Principal Management Consent



Azure AD

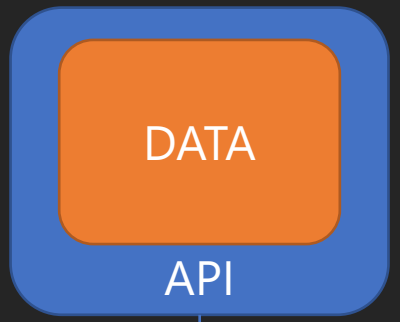
Trust

DEMO?!

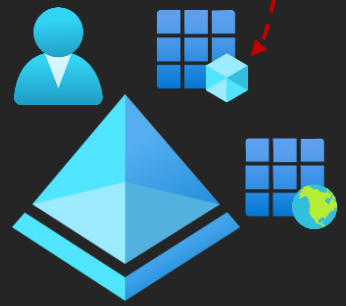
User

Service Principal Management Consent

Azure AD 2



Scopes (Permissions / Actions)
- Write
- Read
- Send
- Delete
- ...



Azure AD

Trust

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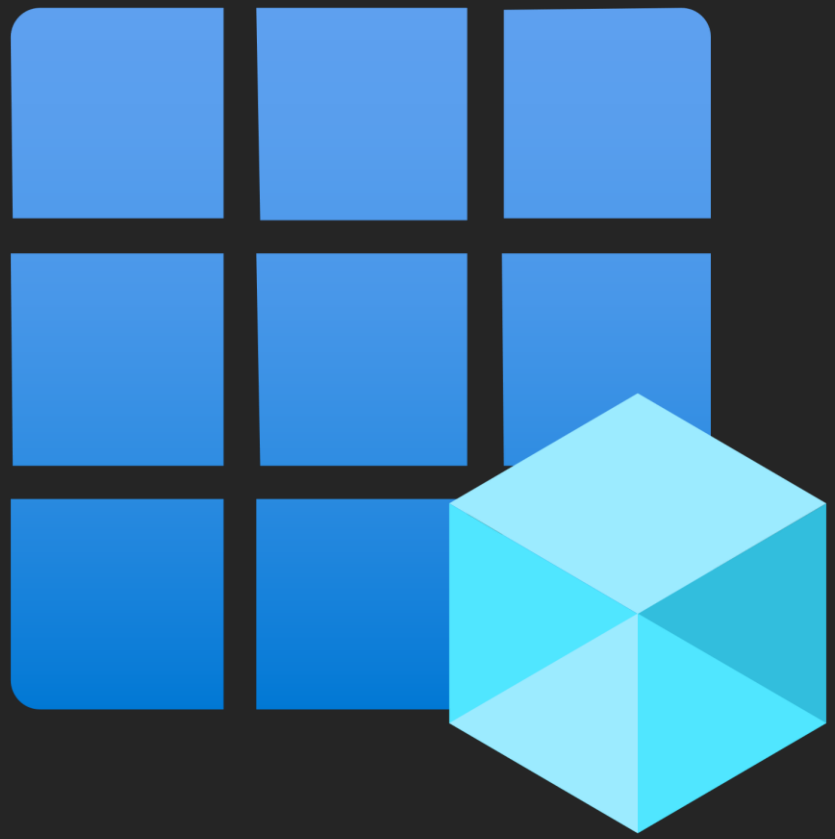
How to define it?

Application Object – App Registration

- Created in “Home tenant”
- App Registration stays here
- App Object used as blueprint to create service principals in every tenant the app is used
- Defines 3 aspects
  - How to issue tokens
  - Resource access
  - Actions



Service Principal Object – Enterprise App

- To access resources secured by AAD you need entity represented by security principal
  - Users = user principal
  - Applications = service principal
- Security principal defines
  - Access policy
  - Permissions

Service Principal Object – Types

- Application
  - Representation of an app object from a single tenant
  - SPO defines what app can do, who can access, and resource access
- Managed Identity
  - Auto-managed inside Azure
  - Linked to Azure Resource
  - System or User Assigned
- Legacy
  - Legacy was created before app registration
  - Only used in tenant where it was created

How to use it?

Create them

- App registration
  - Create AAD Integration
  - Portal
  - PowerShell / CLI / Graph
- Enterprise App
  - IT Admin
  - Log in to 3rd party app
  - Consent

DEMO?!

Use them

- Access 3rd Party Apps
  - e.g. Calendly, Sessionize or others
- Assign roles in Azure
  - e.g. KeyVault Access, Resource Graph or
- Allow graph access
  - e.g. Profile, Mail or Calendar
- Service Connections
  - e.g. Azure DevOps, Management Tools or DevTools

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