OPENNTF WEBINARS

April 20, 2023 OpenNTF Webinar:

Getting to Know Domino REST API

AGENDA

- Welcome
- Presentation
  - Paul Withers
- Q and A

THANKS TO THE OPENNTF SPONSORS

- HCL made a contribution to help our organization
  - Funds these webinars!
  - Contests like Hackathons
  - Running the organization
- Prominic donates all IT related services
  - Cloud Hosting for OpenNTF
  - Infrastructure management for HCL Domino and Atlassian Servers
  - System Administration for day-to-day operation

THIS IS OUR COMMUNITY

- Join us and get involved!
- We are all volunteers
- No effort is too small
- If your idea is bigger than you can do on your own, we can connect you to a team to work on it
- Test or help or modify an existing project
- Write guides or documentation
- Add reviews on projects / stars on Snippets

UPCOMING EVENTS

- Engage User Group Meeting
  The Future is NOW
  April 24-26
  Felix Meritis
  Amsterdam, Netherlands
- Collabsphere - MWLUG
  - In Person!
  - August 30 and 31
  - Chicago Botanical Garden

DEVELOPER REPAIR CAFE

- Bring your topic!
- Discuss ideas on how to tackle the issue
- **Live at Engage** on April 26 at 5:00 PM CET

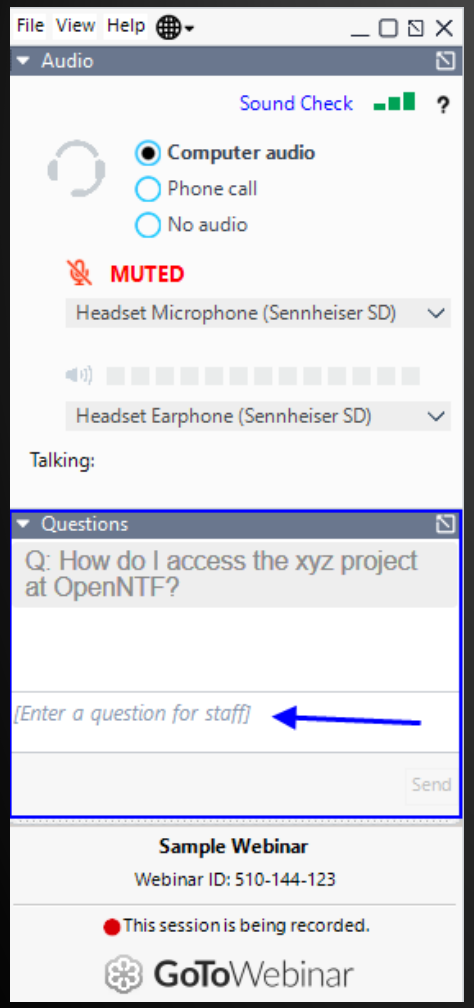
NEXT WEBINAR

May 18 Webinar:

Java Collections, Maps and Streams

Paul Withers

ASKING QUESTIONS



- First Question – Will this be recorded?
  - Yes, view on YouTube!!!
  - https://www.youtube.com/user/OpenNTF
- Use the Questions Pane in GoToWebinar
- We will get to your questions at the end of the webinar
- The speakers will respond to your questions verbally
  - (not in the Questions pane)
- Please keep all questions related to the topics that our speakers are discussing!!!
- Unrelated Question => post at:
  - https://openntf.org/discord

PRESENTATION

Getting to Know Domino REST API

HCLSoftware

Getting to Know Domino REST API

Paul Withers
Associate Director - Research
HCL Digital Solutions Software

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Contents

Overview and Design Goals

Domino REST API and Standards

Documentation

AdminUI

Schemas, Scopes and Applications

Applications

Identity Providers and Security

Demos

HCLSoftware

Overview and Design Goals

The challenge

Domino is a world-class **NoSQL** database (The first commercial > 30 years ago). It tightly-couples UI and data with business logic in @Formula language, LotusScript & Java. Domino provides excellent security with per-database access control and its unique declarative access to read and write protection.

AND

Applications written in any system, tooling and platform need secure, standard compliant access to Domino data: Angular, Spring, ReactJS, NodeJS, Volt MX, Command line tools, Middleware & [insert-your-favorite]

Design Goals

Access

Platform agnostic

Any language

Maintain security

Data

Schema

OData

Translation from/to Native

Documentation

API first (Swagger)

User contribution

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Domino REST API and Standards

Domino and Open Standards

Domino	Open Standard
Documents	JSON
NRPC	HTTPS
No Schema	JSON schema OData
NotesID	Access Token

* Many more

Domino vs. JSON & JSON schema

- Text
  - Names
  - Readers
  - Authors
- Number
- RichText
- DateTime

*Multivalue

- String
- Number
- Integer
- Boolean
- Object
- Array

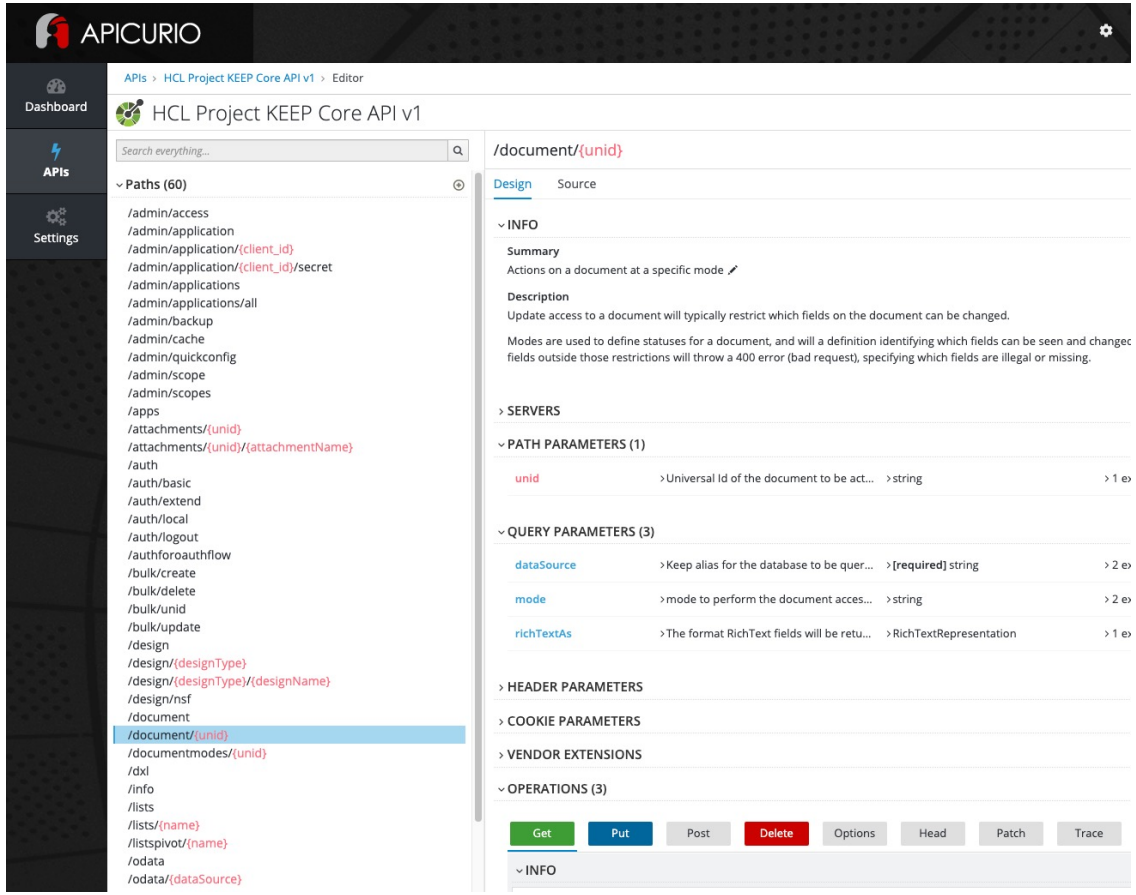
- float
- double
- int32
- int64
- date
- date-time
- password
- byte
- binary

… and others

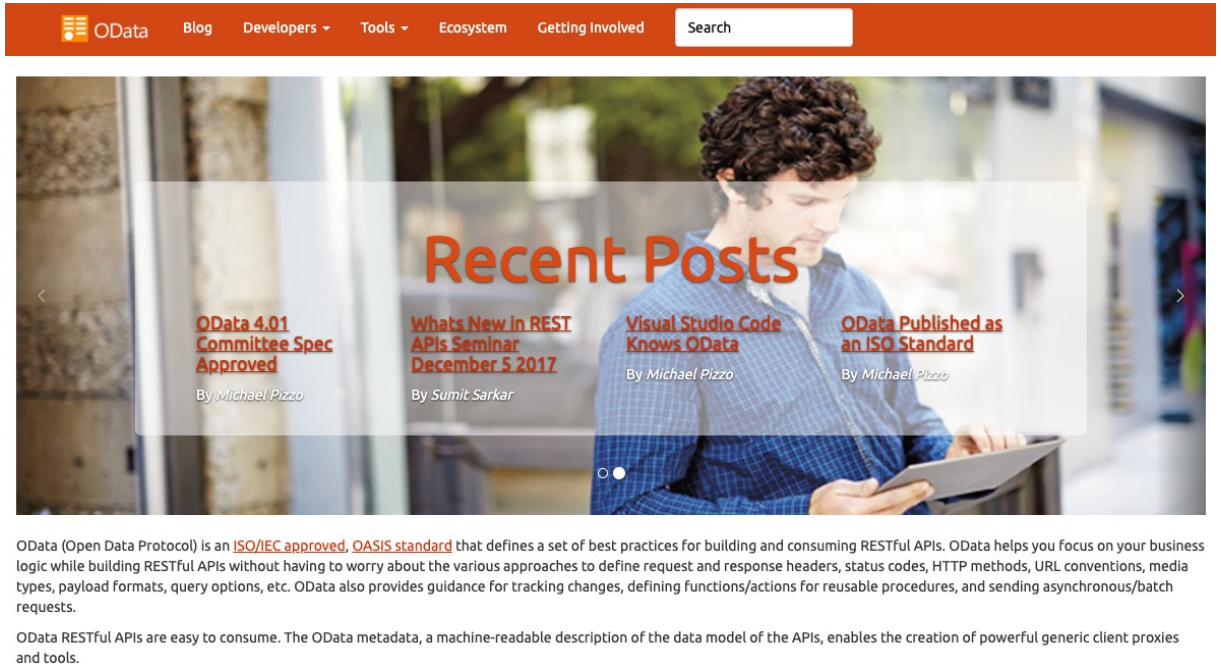
data CRUD of Domino NoSQL data in JSON format. Workhorse APIs, used by applications to operate

POST	`/attachments/{unid}`	Creates a new attachment in an existing document	`createDocumentAttachment`
DELETE	`/attachments/{unid}/{attachmentName}`	Removes an attachment	`deleteDocumentAttachment`
GET	`/attachments/{unid}/{attachmentName}`	Retrieve a document's attachment	`getDocumentAttachment`
POST	`/bulk/create`	Create multiple documents in a single call	`bulkCreateDocuments`
POST	`/bulk/delete`	Delete multiple documents in a single call	`bulkDeleteDocuments`
POST	`/bulk/unid`	Retrieve multiple documents in a single call by unid	`bulkGetDocumentsByUnid`
PATCH	`/bulk/update`	Update multiple documents in a single call	`bulkUpdateDocumentsByQuery`
POST	`/document`	Create a new document for a specified form.	`createDocument`
DELETE	`/document/{unid}`	Delete the given document	`deleteDocument`
GET	`/document/{unid}`	Retrieve a given document at its appropriate mode	`getDocument`
PATCH	`/document/{unid}`		`patchDocument`
PUT	`/document/{unid}`	Perform an update on the document at the relevant mode	`updateDocument`
GET	`/documentmodes/{unid}`	Returns the modes available and fields that can be edited	`getDocumentFormModes`
GET	`/lists`	Provide information on available views/folders	`fetchViews`
GET	`/lists/{name}`	Pulls in view data	`fetchViewEntries`
GET	`/listspivot/{name}`	Processes view data as pivot	`pivotViewEntries`

apicur.io & OData



OData



OData (Open Data Protocol) is an ISO/IEC approved, OASIS standard that defines a set of best practices for building and consuming RESTful APIs. OData helps you focus on your business logic while building RESTful APIs without having to worry about the various approaches to define request and response headers, status codes, HTTP methods, URL conventions, media types, payload formats, query options, etc. OData also provides guidance for tracking changes, defining functions/actions for reusable procedures, and sending asynchronous/batch requests.

OData RESTful APIs are easy to consume. The OData metadata, a machine-readable description of the data model of the APIs, enables the creation of powerful generic client proxies and tools.

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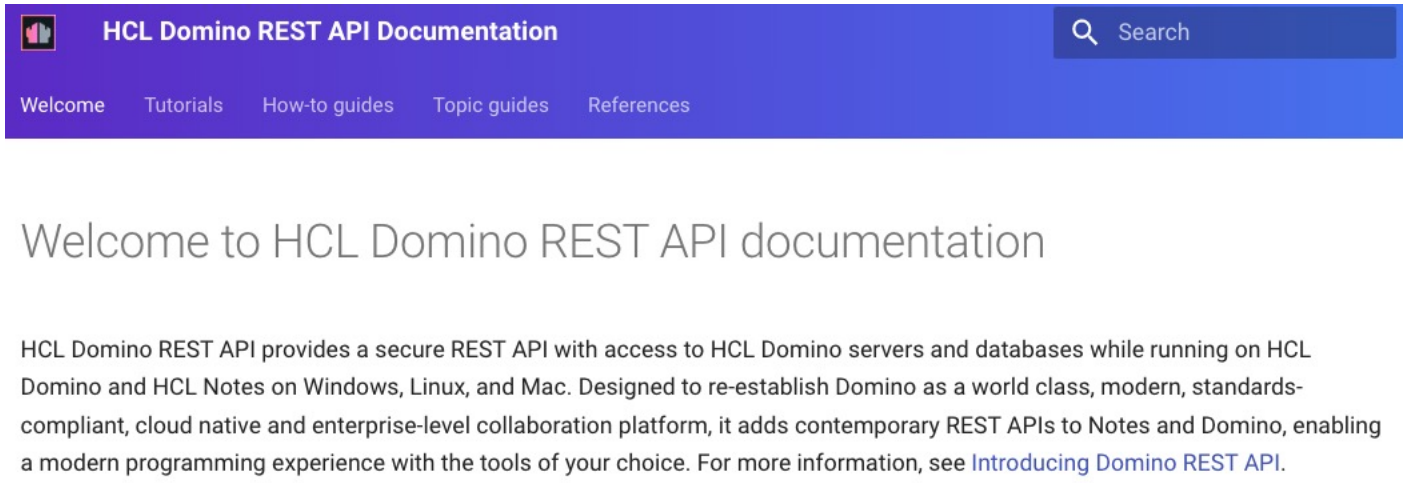
Documentation

https://opensource.hcltechsw.com/Domino-rest-api



https://diataxis.fr/

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AdminUI

HCL Domino REST API v1.0.5-BETA

Configuration and Documentation

Configuration
Configure schemas, scopes & applications

OpenAPI v3
Review and interact with the 7 configured OpenAPI v3 schemas

OData
Databases (if any) configured for OData access

Documentation
Official Domino REST API documentation, Pull requests welcome

Tutorials
Tutorials to learn about the features and possibilities using the Domino REST API

Discord
Discuss the Domino REST API on the OpenNTF discord server

Applications

Approval SPA
Where requests are treated with respect

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Database icons made by monkik from www.flaticon.com and icon8

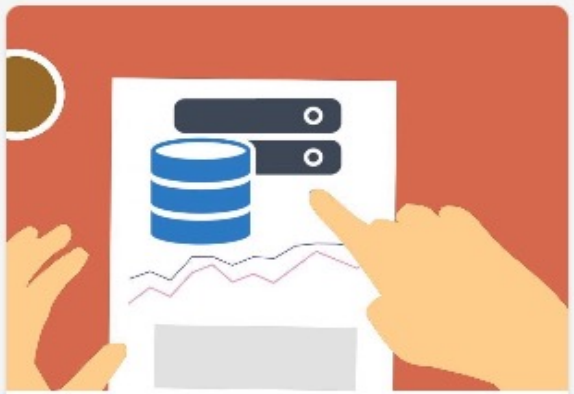
HCL Domino REST API

- Overview
- Schemas
- Scopes
- Quick Config
- Applications

Doctor Notes
Administrator

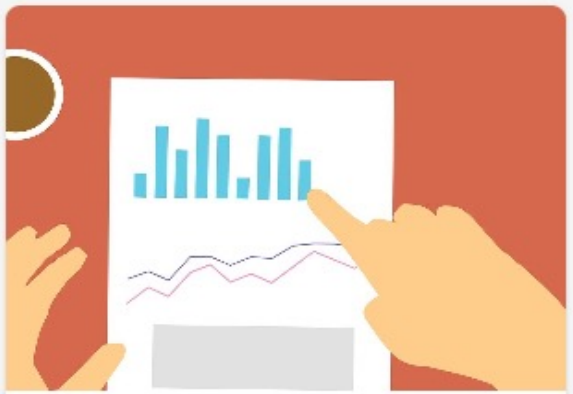
SIGN OUT

HCL Domino REST API Administrator



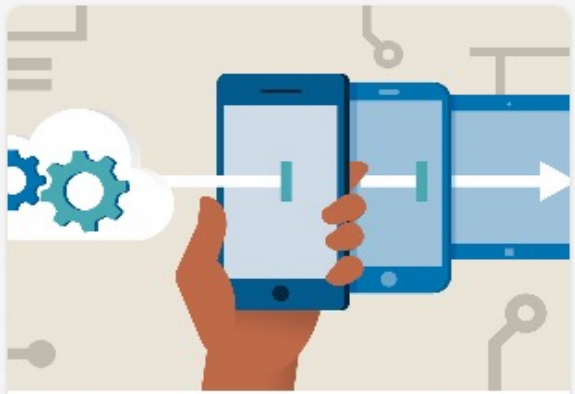
Database Management - REST API

CREATE/UPDATE SCHEMA



Database Management - Activation

CREATE/MANAGE SCOPES



Application Management - OAUTH

ADMIN

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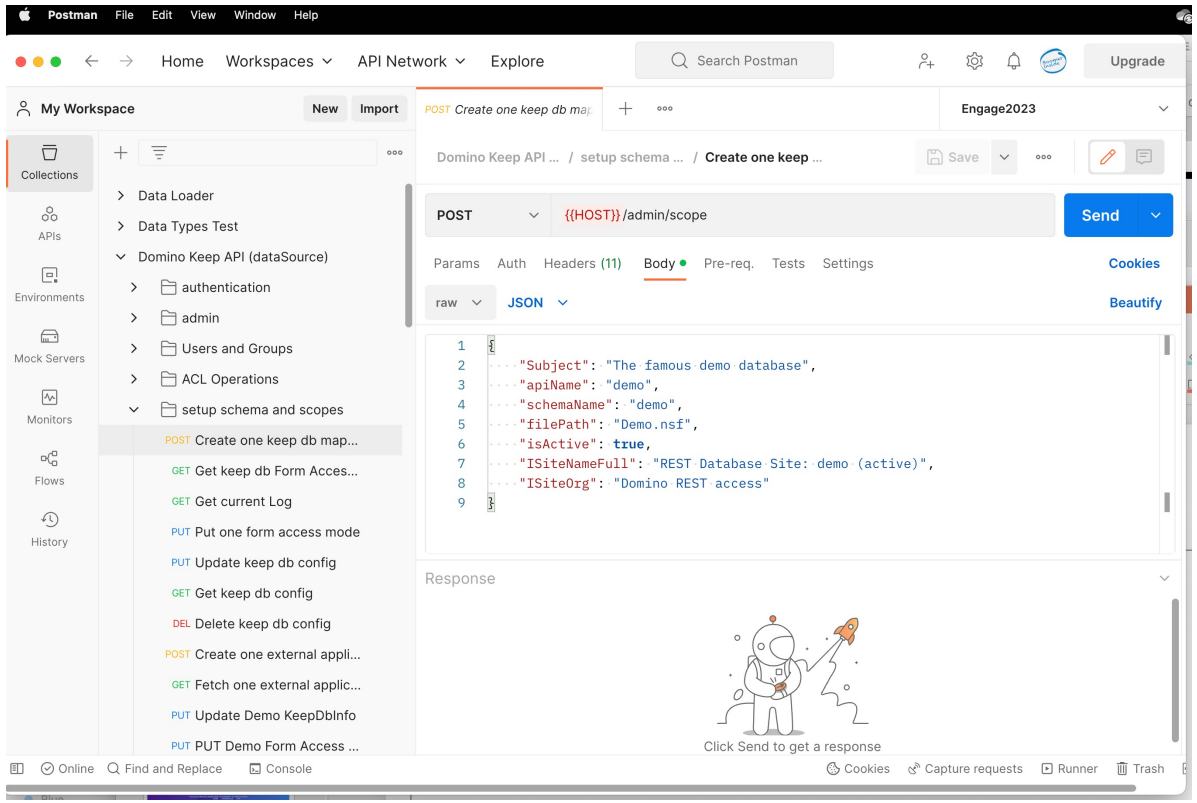
The REAL admin UIs




```
stw@ ~
  keep login
server [https://localhost:8880]:
Username [John Doe]:
Password:
accessing https://localhost:8880 as John Doe

eyJ0eXAiOiJKV1QiLCJhbGciOiJSUzI1NiIsImtpZCI6Im15a2V5In0.eyJpc3MiOiJ
DTj1TdGVwaGFuIFdpc3NlbC9PVT1TaW5nYXBvcmUvTz1QTlBIQ0wvRj1mYXRDZXJ0Mi
IsInN1YiI6IkNOPUpvaG4gRG9lL089TWF1cmFkZXJzIiwiaWF0IjoxNjc5OTQyNjc3L
CJleHAiOjE2Nzk5NDk4NzcsImF1ZCI6IkRvbWlubyIsIkNOIjoiQ049Sm9obiBEb2Uv
Tz1NYXVyYWRlcnMiLCJzY29wZSI6Ik1BSUwgJERBVEEgJERFQ1JZUFQiLCJlbWFpbCI
6ImpvaG5AZG9lLmNvbSJ9.ASjkHT6AFz3U2pGDfAWpm1SqGd8nX4h9kLGuWohFo5vNd
-rQvN_wRAF5eXkaGrYu6M1tThOP_5aDkg6io5QNmch9kj9KGxl_LCFgeMt98Vh_wjqT
ErUk2_PLuhJxDOG90mg83JODLY5RV1aOqW9Pm6hCH1MVYQHGBsIuDKJdnGrYjSZlUkp
x3GmEaavwWWzE6rE5jrEuM2LSNvzJRjSWlWlMTyWLrA2_1xzN-vri45oQg1_u3kh6xM
gpHV365qDMwrhUpPpQVTpP1SAzUbFU6hsuOcQn6pJWXcTCq-jkLG72CncMhxzpGFaI5
et4BRQku1HFAvw3plps7gBLembk3Q
stw@ ~
```

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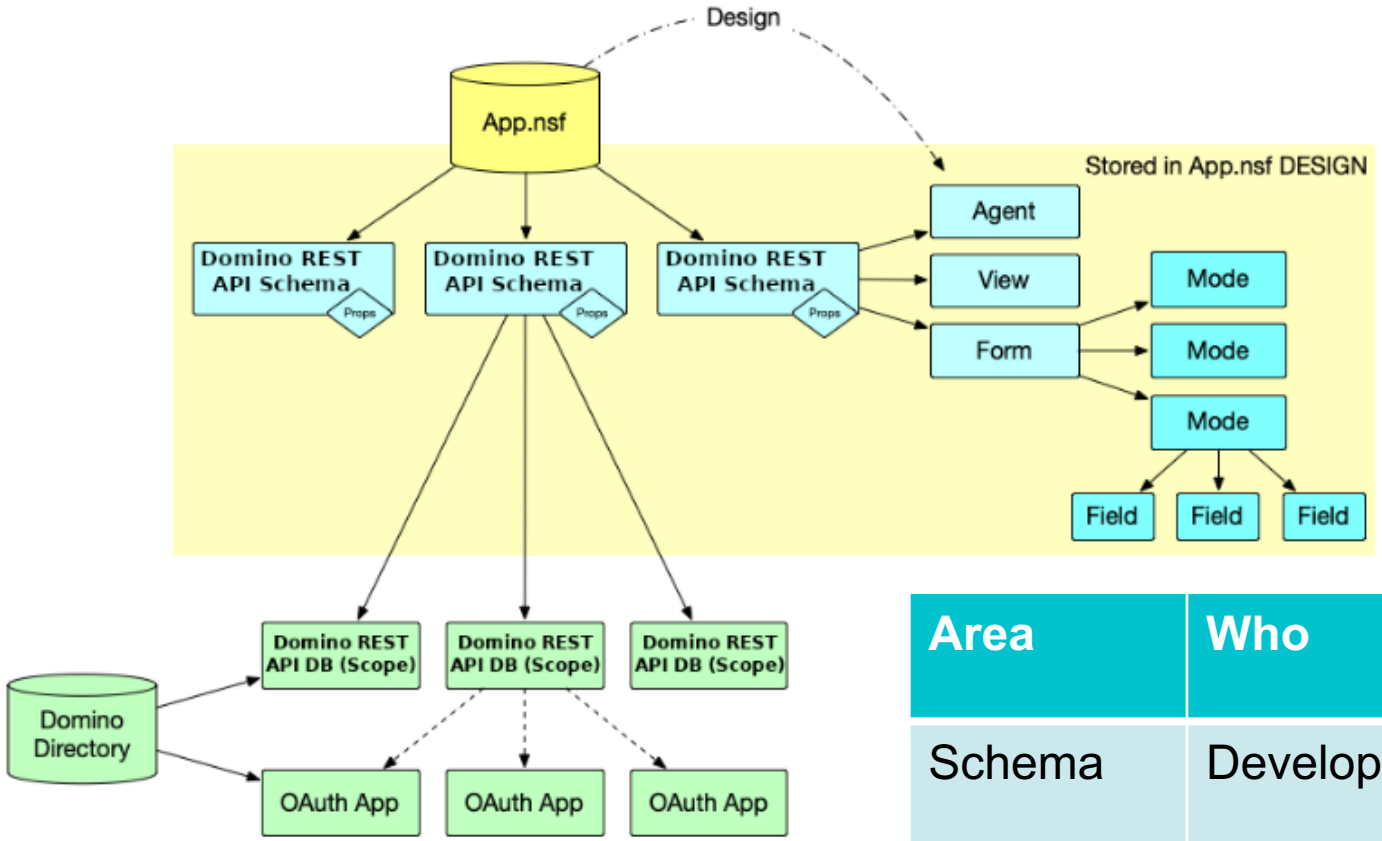
Schemas, Scopes and Applications

What is What?



Area	Who	What	Where
Schema	Developer	Configures what can be done	NSF Replicated
Scope	Administrator	Enables schema for this server	Server
Application	Developer / Administrator	Allows OAuth access to scope	Server

Landing Page

Applications

Sheet Loader

Upload your Excel records to Domino documents

Approval SPA

Where requests are treated with respect

Project Castle

The project that shall not be named

jmmRecipeApp

Access from John's Foundry

paulfoundry

test application

Gab Demo

LDC Fir

raptor2

raptor2 qs foundry

Rock Demo App

art9qs

art9 quickstart foundry

tevRecipe

Tony's Recipe Samples

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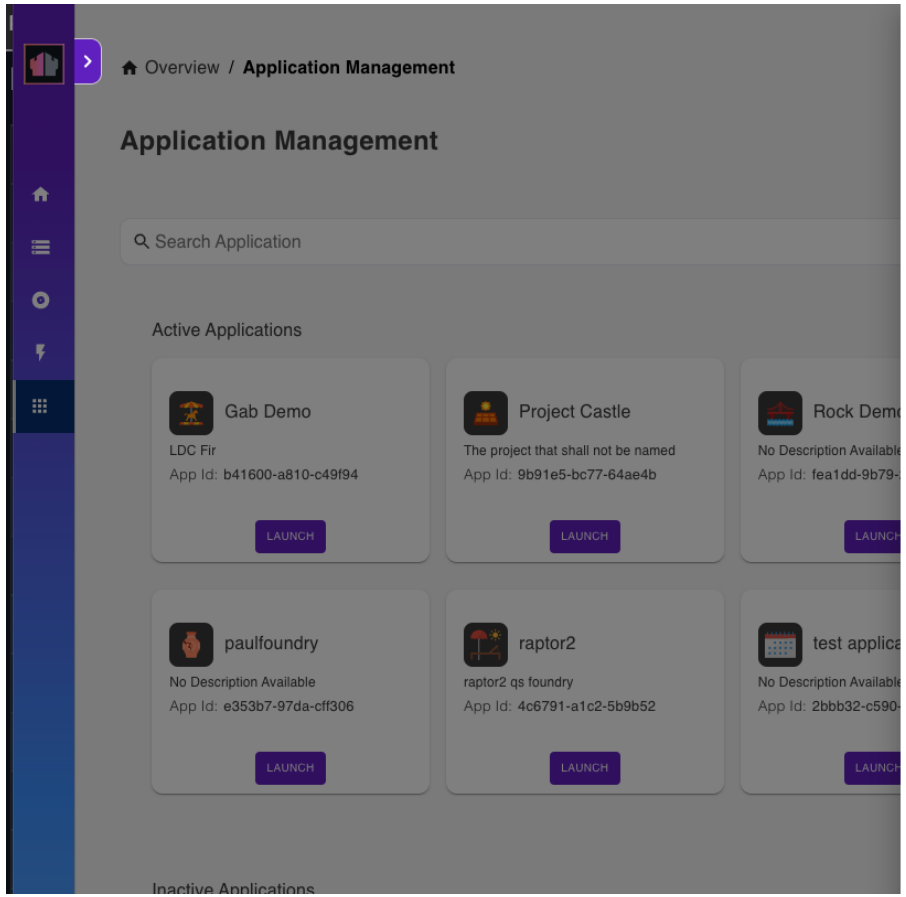
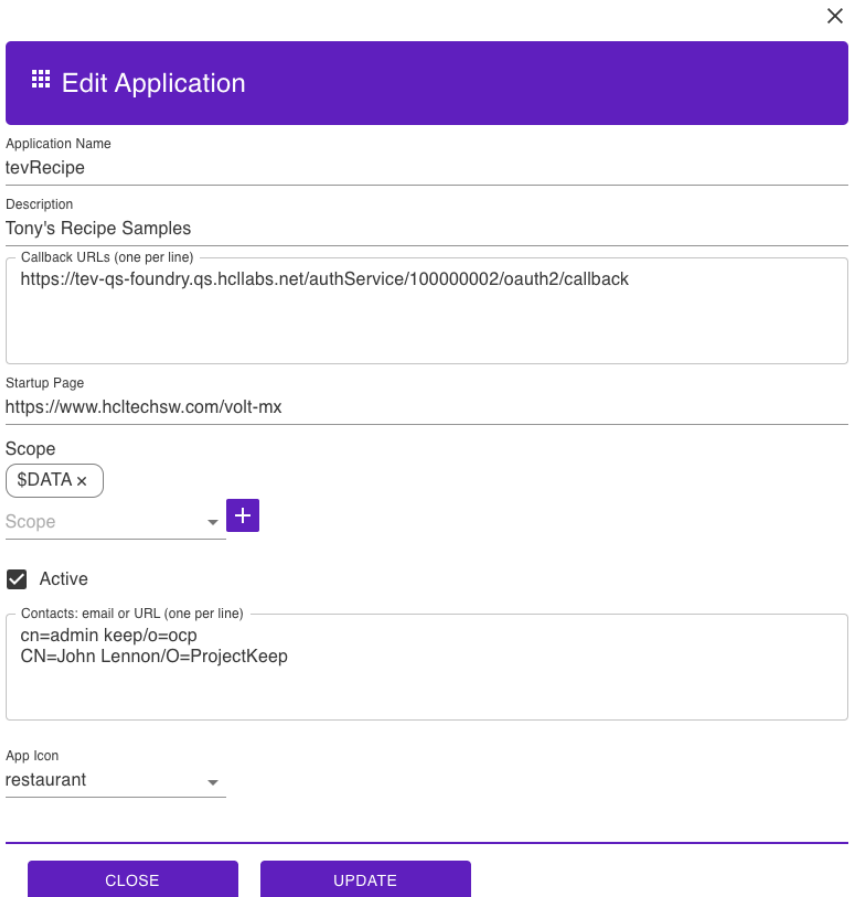
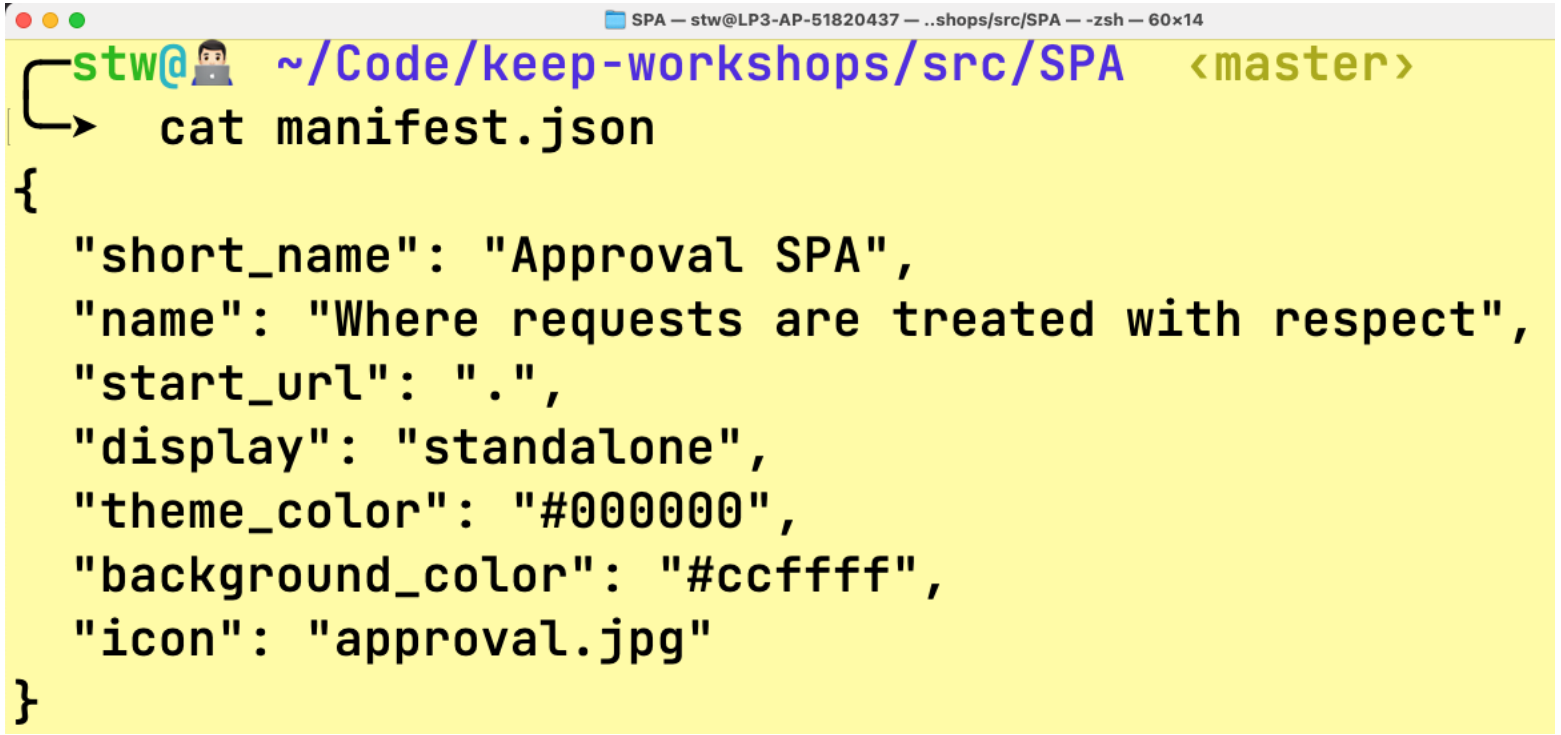
OAuth applications





SPA and others



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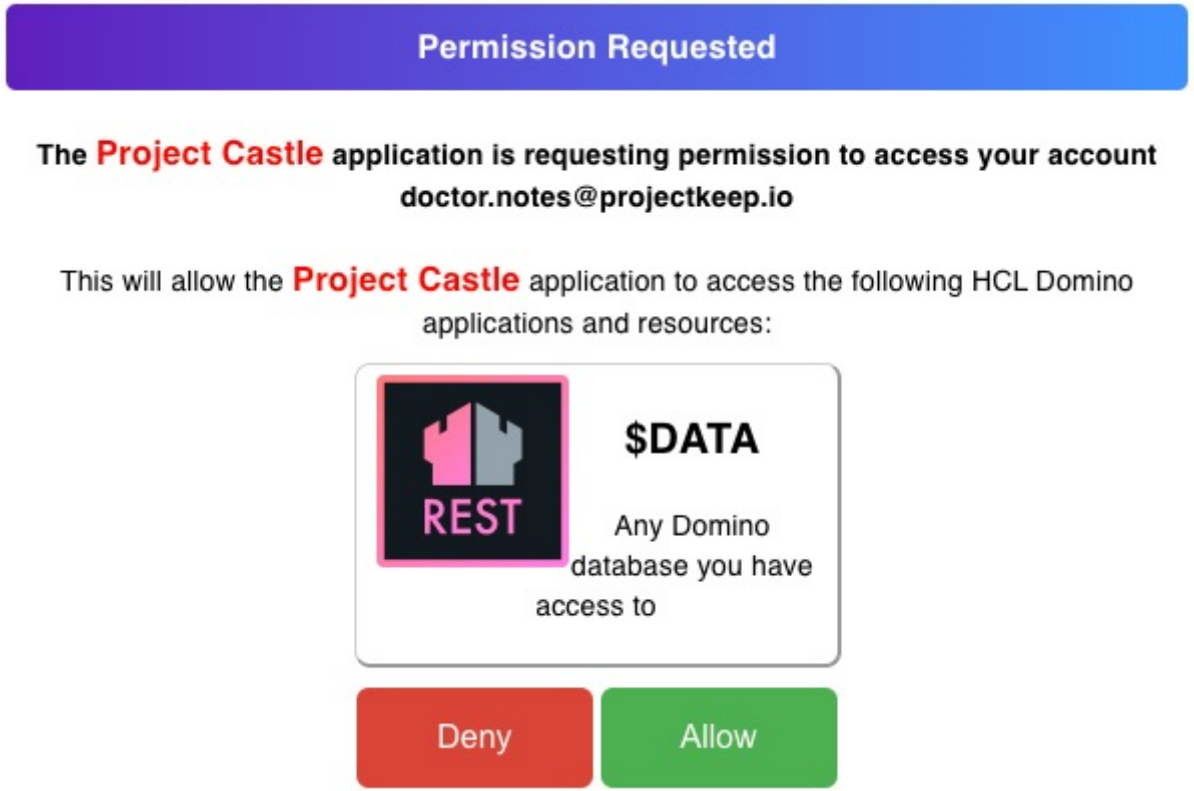
Identity Provider and Security

Domino REST API contains an OAuth compliant IdP

- Use JWT for access tokens
- Use Domino as IdP
- Bring your own IdP


```
{
  "response_types_supported": [
    "code",
    "token"
  ],
  "token_endpoint_auth_methods_supported": [
    "client_secret_post",
    "client_secret_basic",
    "none"
  ],
  "grant_types_supported": [
    "authorization_code",
    "refresh_token"
  ],
  "issuer": "https://acra.projectkeep.io",
  "authorization_endpoint": "https://acra.projectkeep.io/oauth/authoriz
ation",
  "token_endpoint": "https://acra.projectkeep.io/oauth/token",
  "scopes_supported": [
    "MAIL",
    "$DATA",
    "$DECRYPT",
    "Domino.user.all",
    "openid",
    "email",
    "keepconfig"
  ],
  "jwks_uri": "https://acra.projectkeep.io/.well-known/jwks.json",
  "userinfo_endpoint": "https://acra.projectkeep.io/api/v1/userinfo"
}
```

Permission dialogue



Specific Access

- **Domino REST API Admins (Scopes and OAuth)**
  - LocalKeepAdmins group
  - Editor Access to KeepConfig.nsf
- **Domino Developers (Schemas)**
  - Designer access to relevant NSF
  - Reader access to KeepConfig.nsf
- **Functional Accounts**
  - Management Console (Port 8889), Metrics (Port 8890), Health Check (Port 8886)
  - Stored in keepconfig.d/functionalUsers.json
  - secret = salted and encrypted password retrieved from Management Console

Actually….

Try it out - now

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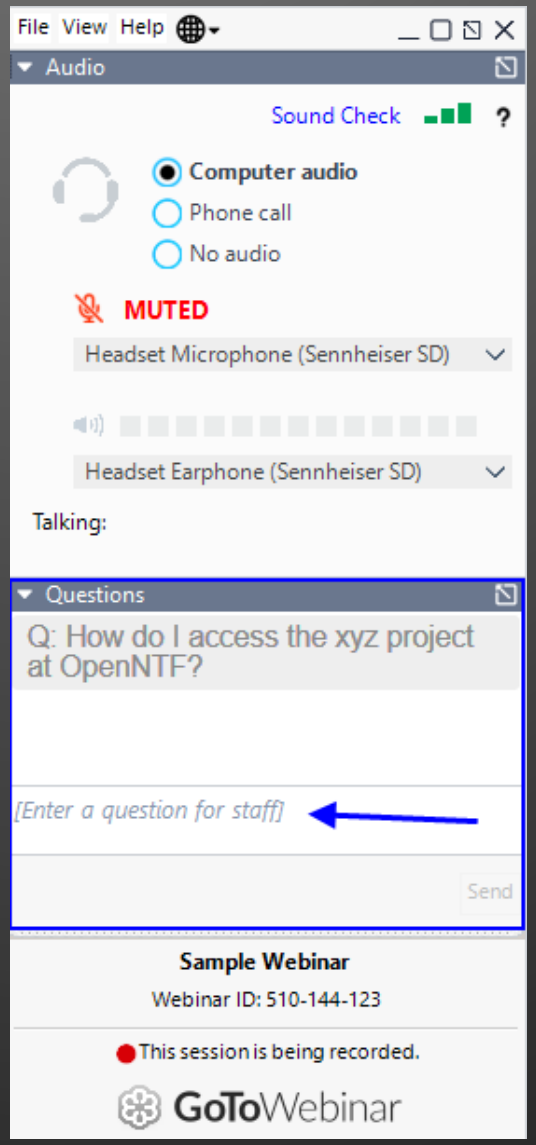
hcltechsw.com

QUESTIONS?

Use the GoToWebinar Questions Pane

Please keep all questions related to the topics that our speakers are discussing!!!

Unrelated Question => post at:

https://openntf.org/discord