

# OSLCFest 2021

## Deploying OSLC in the Enterprise

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## Who is SodiusWillert?

SodiusWillert designs and distributes software solutions for Enterprise Interoperability, Data Transformation, and Model-Based Code Generation to improve traceability, exchange, and sharing of engineering data in highly regulated industries.

With offices in France, Germany and the USA, we deploy our solutions worldwide in Aerospace, Automotive, Transportation, Defense and Medical industries.



# What we value in our products

- **Engineers working where they are productive**
  - Using tools of choice
  - Working simply and effectively
- **Tools that are flexible to the engineering needs**
  - Supporting Standards
  - Configurable to your workflow
- **Tools that work in the enterprise**
  - Secure systems of record (with no copies)
  - User authenticated access to data
  - Server-side integration to support deployment, support, availability

# Interoperability is an Enterprise Standard

## Preserve repositories

- Distributed systems of record.
- Unique data models.

## Support linking within and cross projects

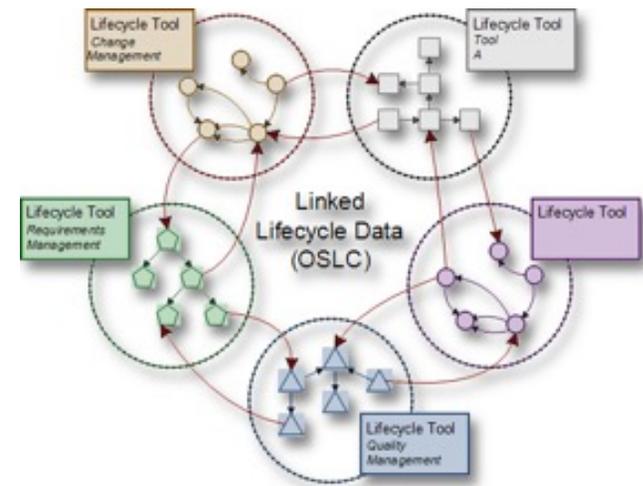
- Semantics of links & ownership.
- Integration points (pickers & previews).

## Support for configurations

- Versioning artifacts.
- Selection of the version of artifact target of a link.

## Enterprise Approved

- Authentication and Audit Controls.
- Distributed & Connected topologies.



# Our Deployment Experience

# What have we experienced

- IBM Jazz Deployments
- Creator of RLIA for Windchill
  - Unique App Server to provide OSLC Services for PLM
- Creator of OSLC Connect for Windchill
  - Integrated Windchill OSLC Services
- Creator of OSLC Connect for Jira
  - Jira OSLC Services for connecting to IBM ELM, DOORS Classic, Siemens Polarion, Windchill ...
- Custom OSLC Services
- 100s of deployments of OSLC Tooling

# Basics of OSLC

## (That affect deployment)

# OSLC Interactions (Simplified)

- Connectivity and Discovery
  - Visibility, Network Connectivity
- Authentication and Authorization
  - Authentication Methods
- Embedding and Linking
  - iFrames and Links

### Friends

Use this page to manage friends of this application. A friend is an application to which this application is allowed make outbound requests, in order to consume the services provided by the friend. A consumer key and secret are used for secure communications between the friends. To register a friend you will need its location information (Root Services URI) and consumer information. Consumers are defined in the corresponding provider's administration page (typically in sections Communication/Consumers (Inbound)).

Friend Name	Root Services URI	Friend Key	State	Action
CCM (Buffalo)	https://cm-606-buffalo.sodius.cloud/8443/cm/rootservices	9086df7eb4b4c5db4f0b12361a0db	OK	
DOORS (Toronto)	https://doors-toronto.sodius.cloud/8443/owa/public/rootservices	a04705d0-345b-4af5-ba12-a434606ae60b	OK	
Detroit	https://jira-7-detroit.sodius.cloud/8443/rest/oslc/1.0/rootservices	691c6784-0841-40d5-b3a7-7341e6694608	OK	
GC (Buffalo)	https://cm-606-buffalo.sodius.cloud/8443/gc/rootservices	8353c0f3026e487baee44b014c2c04	OK	
Miami 702 CCM	https://miami-elm-702.sodius.cloud/cm/rootservices	a7e064993549478489c09a6042b6a9fc	OK	
Miami 702 GC	https://miami-elm-702.sodius.cloud/gc/rootservices	ae358b0fc34430a2b28c0f612960e63		
Miami 702 QM	https://miami-elm-702.sodius.cloud/qm/rootservices	7e033ad63d59444c787490b6902c440c		
Miami 702 RM	https://miami-elm-702.sodius.cloud/rm/rootservices	30179ead45149ec9f8e465db241c0f5		
Polar 18	https://polar-183-llk.sodius.cloud/polarion/oslc/rootservices	3754425c-a1c3-447f-9662-c836a03165		
Polar 21	https://polar-211-brest.sodius.cloud/polarion/oslc/rootservices	d774515-fba-4892-a16d-a12c1476d0		

### Log in to IBM Engineering Lifecycle Management

Provide your User ID and password to log in to miami-elm-702.sodius.cloud

User ID:

Password:

Remember my User ID

### AMRMAMI-4 Failing Test Case "My First Test Case"

AMRMAMI-4

Type: Story | Priority: Highest | Status: Unresolved | Affects Version/s: Release 1.0 | Fix Version/s: Release 1.0, Release 2.0

Labels: newLabel

When used in AMR Stakeholder Requirements Specification

Location: AMR 702 (RM) | AMR 702 (RM) | AMR Stakeholder Requirements Specification

Test: AMR Stakeholder Requirements Specification

Attributes: Stakeholder Requirement

Format: Text

Accession: Stakeholder Requirement

Description: Stakeholder Requirement

Priority: Stakeholder Requirement

Schedule: Stakeholder Requirement

Stability: Stakeholder Requirement

Team Owner/s: AMR 702 (RM)

Verification Method: Stakeholder Requirement

When used in AMR Stakeholder Requirements Specification

Links: AMR 702 (RM) | AMR 702 (RM) | AMR Stakeholder Requirements Specification

Affected By: (2) | https://jira-7-detroit.sodius.cloud/8443/rest/oslc/1.0/c/m/issue/AMRMAMI-4 | https://jira-7-detroit.sodius.cloud/8443/rest/oslc/1.0/c/m/issue/AMRMAMI-4

Verified By: (1) | My First Test Case

Requirements Specification: 11 | Stakeholder Specification: 8

155: All portable equipment should survive multiple 6 ft/1.8 m drops on to concrete across the operati...

250: The AMR system shall be able to operate in the market environments for which it is targeted and ap...

273: Any portable equipment shall have an Ingress Protection Rating of IP65 or better in accordance with...

317 -2 General Description

207 -2.1 Scope of the System

98 The system will initially include water service for customers inside 10 miles square area.

<https://jira-7-detroit.sodius.cloud/8443/rest/oslc/1.0/c/m/issue/AMRMAMI-4>

Log in to jira-7-detroit.sodius.cloud:8443 to view this content.

### AMRMAMI-5 Create Story

AMRMAMI-5

Type: Story | Priority: Low | Status: Unresolved | Affects Version/s: None | Fix Version/s: Release 1.0

Description: Sample

Issue Links: implements requirement (9) 163: The handheld device shall have a human readable display for information collected from the meter. [...] related change request (1) AMRMAMI-4: Failing Test Case Reports My First Test Case/quote

Views: Search Views

27 1.3 Definitions, Acronyms, and Abbreviations

118 AMR Stakeholder Requirements Specification

317 -2 General Description

207 -2.1 Scope of the System

98 The system will initially include water service for customers inside 10 miles square area

203 The desired solution leverages the existing infrastructure of AMRMI-4, but new service

### Create Link

Kind of link to create: Link type: implemented by | From artifact: 293: The desired solution leverages the existing in...

Artifact Container: AMR MIAMI

Choose Existing | Create New

Filter: Open | Story | Filter issues with key/summary | Search

Show only issues related to the current Global Configuration

Key	Summary	Reporter	Status	Created
AMRMAMI-4	Failing Test Case "My First Test Case"	Administrator	TO DO	21/Sep/21 11:15 AM
AMRMAMI-5	Create Story	Administrator	TO DO	14/Oct/21 11:20 AM

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Create Story

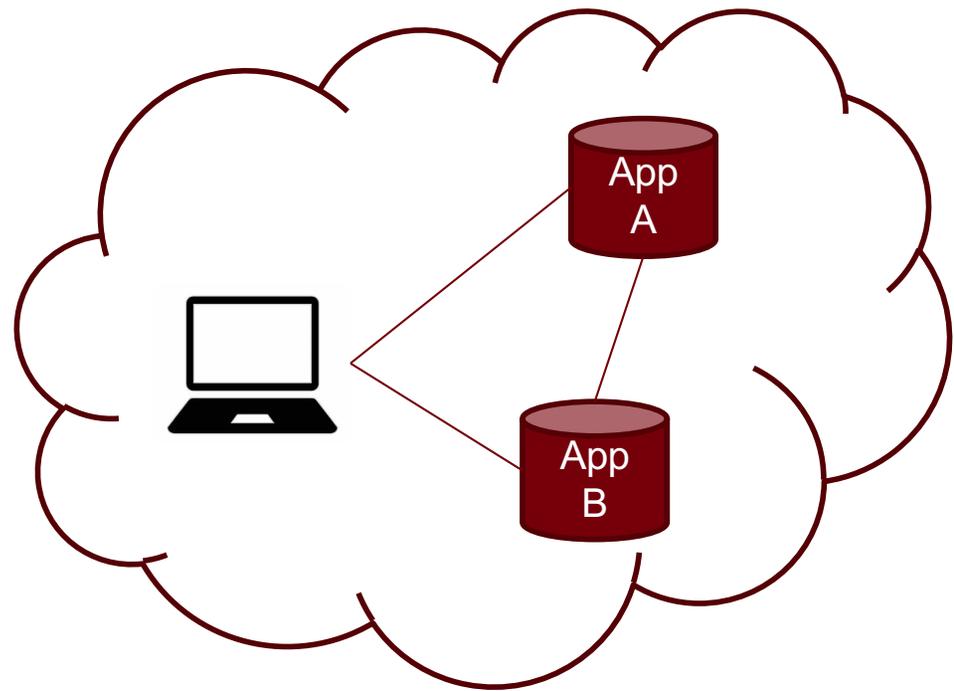
OSLC Connect for Jira



# Topology Basics

# Most Basics of Topologies

- Single Client
  - Single Domain
  - Private Network
  - Two Applications
- 
- Interactions
    - Friending (key & secret exchange)
    - Authentication
    - Authorization
    - Embedded User Experiences
    - Client-Server, Server-Server Interactions



Interactions are safe, simple, and private

## Enterprise Issues are Simply

- Connectivity
- Security
- (Long-Term) Consistency

Once deployed, OSLC Integrations are extremely stable and robust



# OSLC And Security

# Security & OSLC Impacts

- Block Server Interactions
  - Preventing access to a server from unexpected locations
    - *Block access*
    - *Filter (content and speed) access*
    - *Modify access*
- Block Browser Interactions
  - Prevent browsers from
    - *Displaying remote site content*
    - *Allowing display of your content remotely*
    - *Providing auth/session tokens to a remote site*

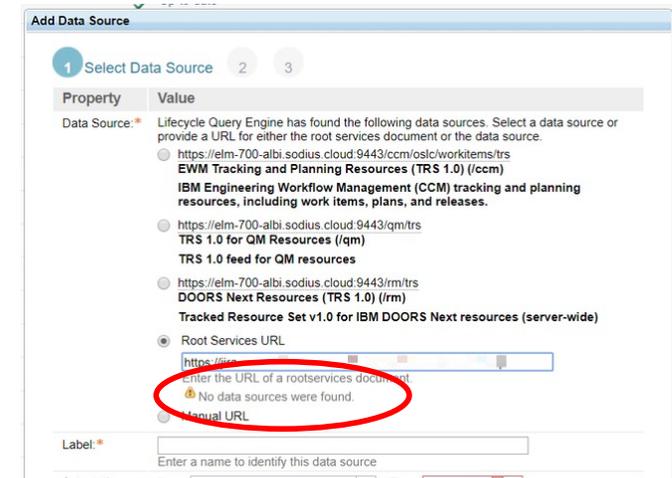


Goals of our IT Teams can be different than those of our OSLC Repositories

# Common Challenges (& why they are hard to diagnose)

## Example 1: TLS 1.2 Error

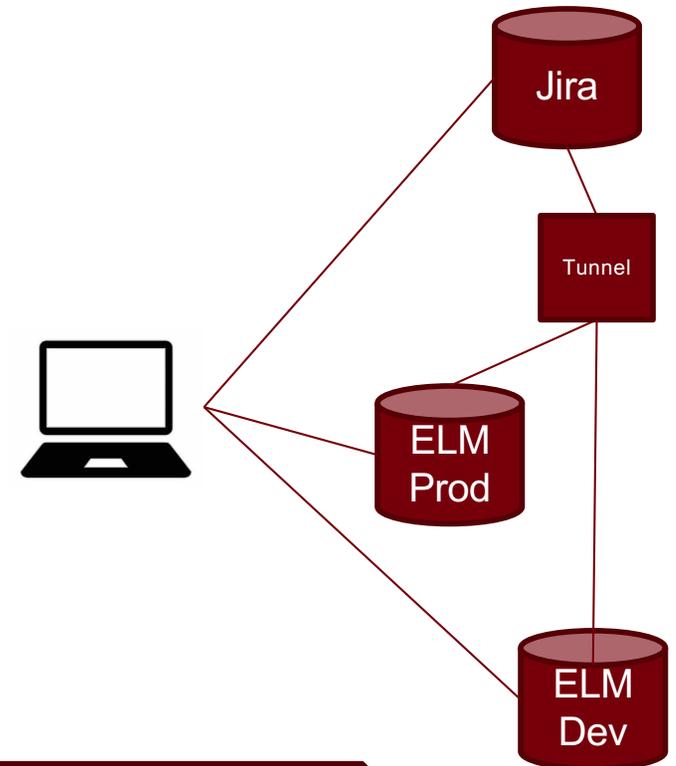
- Context
  - Connecting to TRS in Jira from IBM ELM
    - *IBM ELM attempting to retrieve Jira rootservices document*
  - Failure shows inability to retrieve document
- IBM and Atlassian can Friend
  - Jira -> IBM
  - IBM -> Jira
- Rootcause
  - IBM LQE HTTP Client configured only to support TLS 1.0/1.1
  - Jira configured to require TLS 1.2 causing security negotiation failure and failure to download



Security configurations can be opaque to the application admins

## Example 2: Misconnected Tunnel

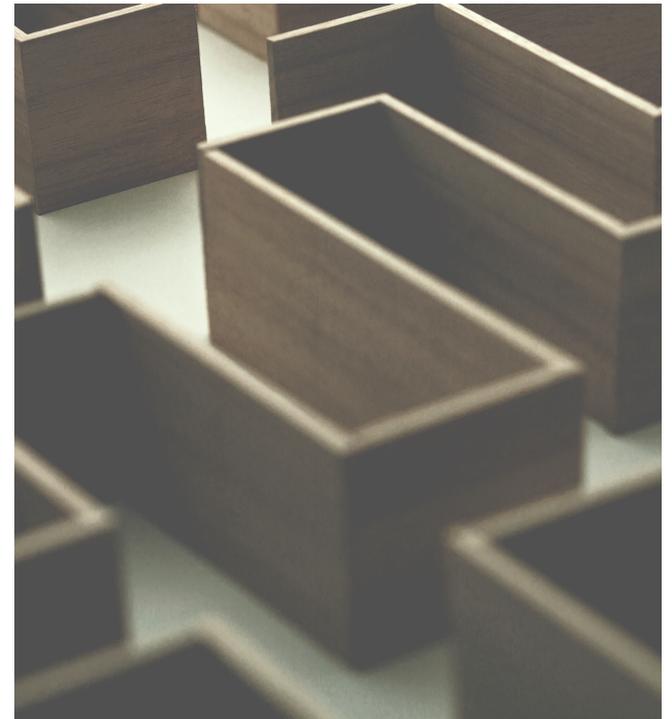
- Context
  - Connecting Jira to IBM ELM through a private tunnel
  - Failure to Friend between ELM to Jira
- Friending from ELM is successful with Jira
- Friending from Jira to ELM fails with incompatible server
  - Rootservices is downloadable but what is seen by the Jira Server is different from what you see as a client



When clients and servers take different routes the real view of the situation is difficult to diagnose

# Why are (common) mistakes difficult to diagnose?

- Applications use Standard Web Protocols
  - Example: 401 (Unauthorized) , 500 (internal server error), ...
- Users can see symptoms but not causes
  - Blank windows
  - Blocked content
  - 'not found'
- Debug tools are focused on Developers
  - Network traffic
  - Web Headers
- Access to logs can be limited in enterprises
- They serve another (valid) intention
  - Security blocks and filters
- Many individuals involved
  - Application Admins
  - Network Admins
  - Application Users



# Common Challenges & Impacts

- **Http & Https Mixed**
  - Browser blocked content
- **Invalid Certs or Certificate Authority**
  - Failure to connect
- **Clock skew (no or different NTP)**
  - Oauth can fail (sometimes sporadically)
- **Shared Reverse Proxy for several apps**
  - Web resources (often javascript) load issues
- **Localhost**
  - Non-stable connections and link resources
- **Lack of Fully Qualified Domain Names**
  - Overly complex security as they are assumed on unique domains
- **Filters on Reverse Proxies**
  - Stripping of web headers or cookies can cause authentication/session issues
- **Throttling**
  - Failure of large feeds for reporting
- **Load Balancing**
  - Session changing while switching nodes causing inconsistent behavior
- **Firewalled Network Segments**
  - Servers unable to connect apps (even with clients having connectivity)

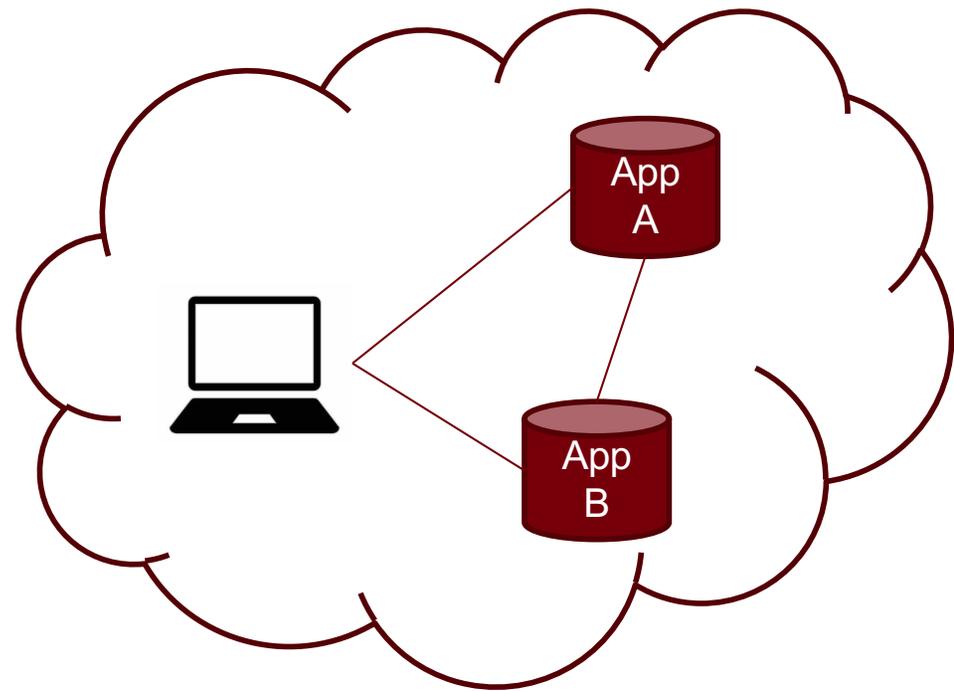


So how do we minimize this?

# Standard Topology

# Baseline Recommended Topology

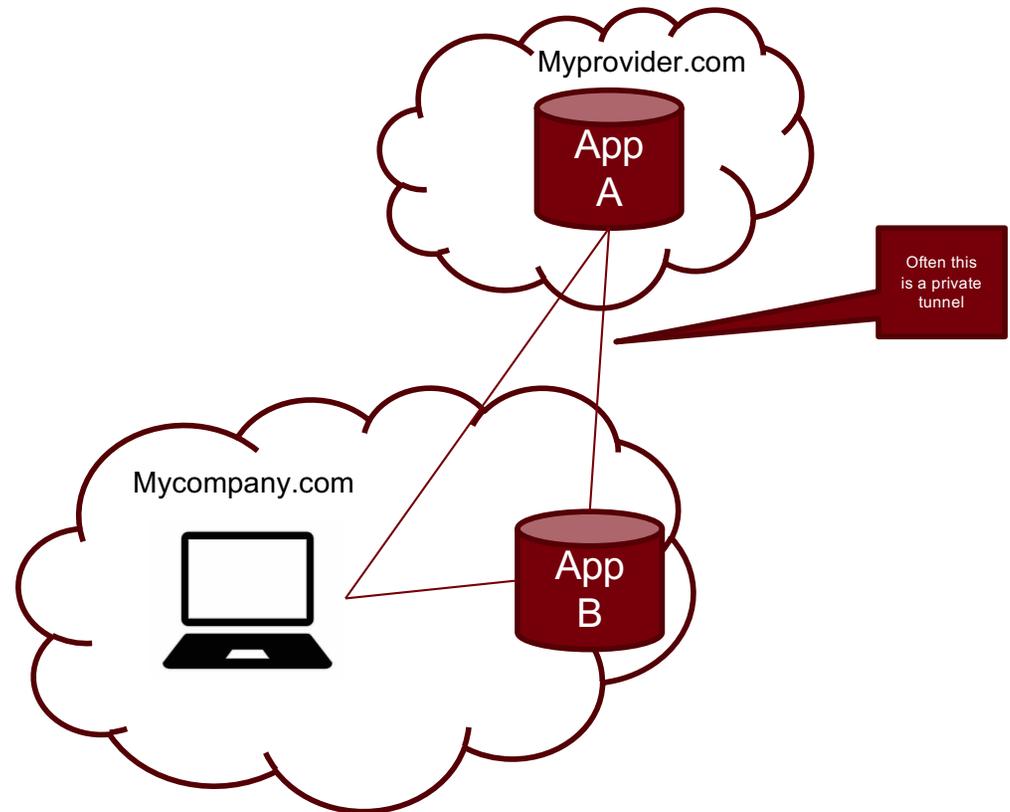
- Basics of the Topology
  - Single Domain
  - Multiple Applications
  - Private Network
- The Details
  - Fully Qualified Domain Names
  - Valid Certs and Certificate Authorities
  - Standard Authentication
  - No advanced web security headers
    - *Check Reverse Proxy and App Server Settings*
  - (Encouraged) Reverse Proxies for Applications



# Topology Deviations (and Impacts)

# (Virtual Private) Cloud Service Topology

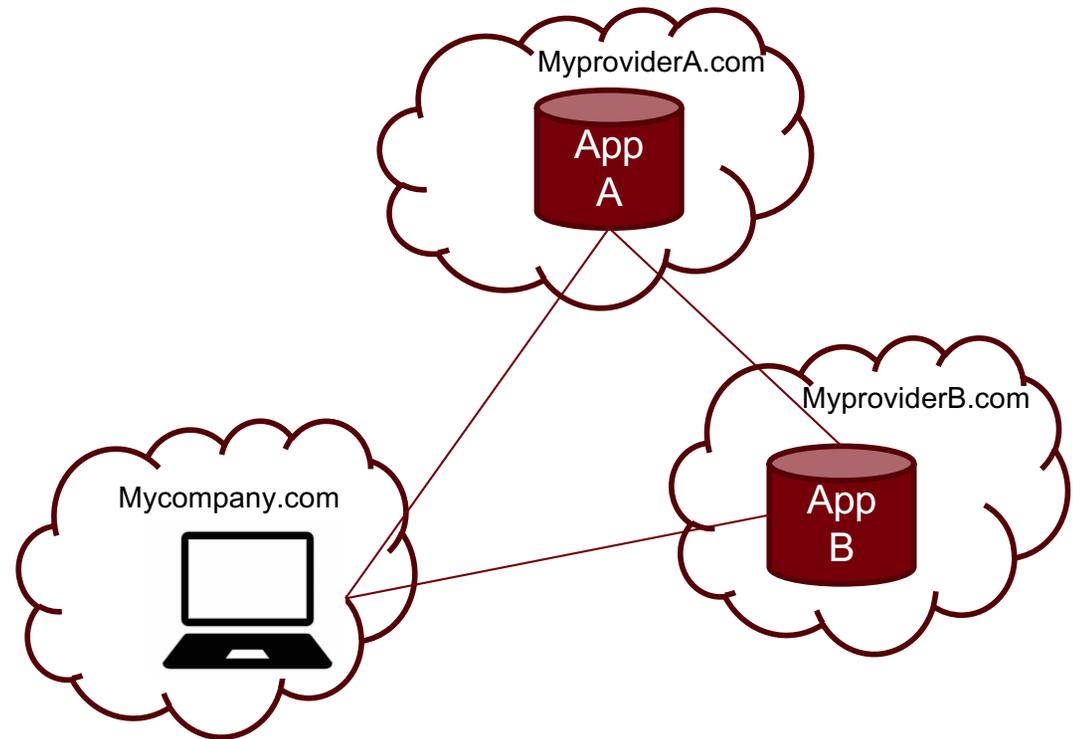
- Basics of the Topology
  - Similar Structure
  - One Application in a Unique Domain Namespace
- The Details
  - Fully Qualified Domain Names
  - Valid Certs and Certificate Authorities
  - Management of same-site configuration
    - *SameSite=none*
    - *CSRF Token for Mutable interfaces*



The common issue without special configuration is broken login behavior (fails or flashes) because session tokens are not being shared in embedded frame contents

# Multi Domain Cloud Service Topology

- Basics of the Topology
  - Multiple Domains
  - Likely Open Internet Accessible
    - *IT Security becomes*
- The Details
  - Each domain has unique security norms
  - SameSite issue must be addressed
  - Active security reviews
    - *APIs*
    - *Load Testing*
    - *Restrictive Headers*

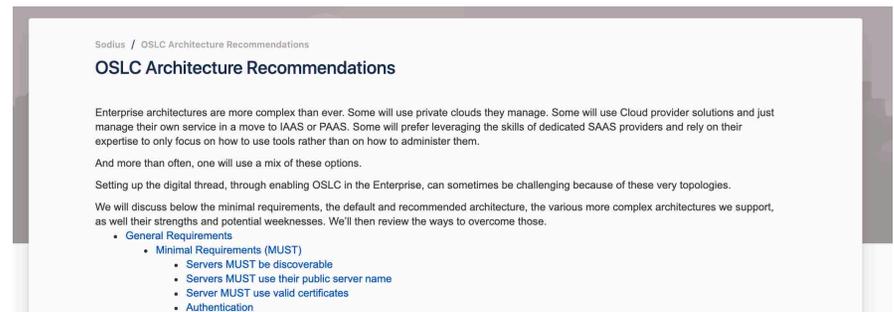


The common issue without special configuration is broken login behavior (fails or flashes) because session tokens are not being shared in embedded frame contents

# The Future of OSLC Deployments

# What is SodusWillert doing about this?

- Education of our Users
  - Basics of OSLC
  - Basics of OSLC Architecture
    - *And Maintaining*
- Active Guidance
  - General Guidance
    - *Deployment & Persistent Architecture*
  - Product Specific Guidance
  - Symptom Based Diagnostic Practices
- Application Enhancements
  - Architecture Alignment for OSLC Extensions
    - *Tool Compatibility*
    - *Enterprise Support (Auth, Scale, Security)*
  - Error Handling & Messaging
    - *Error Details*
- Support Desk, Lab, and Knowledge Base



# Making Deployments More Stable

- Architecture of your Applications
  - Long-Term Plan and Maintenance
    - *Reverse Proxies and Load Balancers*
  - Manage the support profile of
    - *Applications*
    - *Browsers*
    - *Providers*
- Plan your interaction patterns
  - Content Security Policy can be helpful
  - Controlling Network Paths
- Validate Application Security Practices
  - Authentication
  - Audit Controls

**Thank You**



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