

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

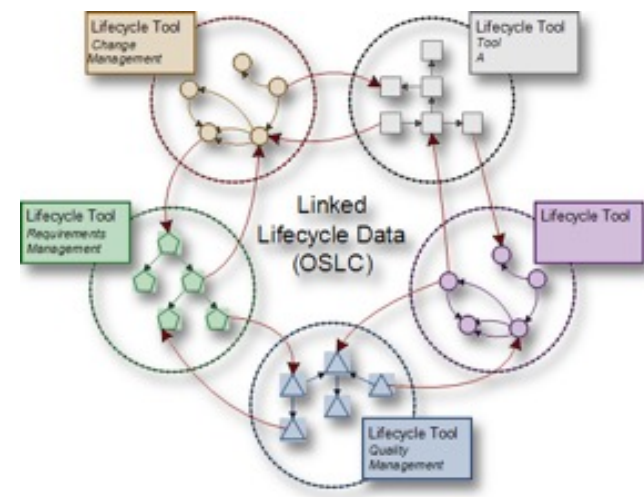
- Semantics of links & ownership.
- Integration points (pickers & previews).

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)).

Refresh State

Friend Name	Root Services URI	Friend Key	State	Action
CCM (Buffalo)	https://cim-606-buffalo.sodius.cloud/8443/cim/root/services	9086df7eb6ab4c5dbafdb8123fa1a0db	OK	
DOORS (Toronto)	https://doors-toronto.sodius.cloud/8443/owa/public/root/services	a04705d0-345b-44f5-fa12-a4346d5ae60b	OK	
Detroit	https://jira-7-detroit.sodius.cloud/8443/rest/oslc/1.0/root/services	691c6784-0841-40d5-b3a7-7341e66946b8	OK	
GC (Buffalo)	https://cim-606-buffalo.sodius.cloud/8443/gc/root/services	8353c0f3026e487baeeea4b014c2d94	OK	
Miami 702 CCM	https://miami-elm-702.sodius.cloud/cim/root/services	a7608493549478d89c9a6402b6a9fc	OK	
Miami 702 GC	https://miami-elm-702.sodius.cloud/gc/root/services	ae358b0efc3443a0e2b6c6f512960e63		
Miami 702 QM	https://miami-elm-702.sodius.cloud/qm/root/services	7e033ad53d59444c787499b6902c440c		
Miami 702 RM	https://miami-elm-702.sodius.cloud/rm/root/services	30179ead45149ec9f5e46db241c8f5		
Polar 18	https://polar-183-sile.sodius.cloud/polarion/oslc/root/services	375e425c-a1c3-447f-9662-c836a03165		
Polar 21	https://polar-21r1-brest.sodius.cloud/polarion/oslc/root/services	d7f4515-fba-48b2-a16d-a12c1479d5		

Log in to IBM Engineering Lifecycle Management

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

User ID
jehlicia

Password

☐ Remember my User ID

Log In

AMRMIAMI-4 / AMRMIAMI-4

Failing Test Case "My First Test Case"

Edit Comment Assign More To Do In Progress Done Admin

Details

Type: Story Status: Unresolved (View Workflow)

Priority: Highest Resolution: Fix Version/s: Release 1.0, Release 2.0

Affects Version/s: Release 1.0 newLabel

Labels: newLabel

Sum of episodes: 17m 3s

Story

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

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

Attributes

Test Type: Stakeholder Requirement Format: Test

Accepted Description: Need Questions: None

To be Scheduled: None

215: Team Ownership: AMR 702 (RM)

Other: Verification Method

When Used In: AMR Stakeholder Requirements Specification

Links

Affected By: (2) https://jira-7-detroit.sodius.cloud/8443/rest/oslc/1.0/issue/AMRMIAMI-3, https://jira-7-detroit.sodius.cloud/8443/rest/oslc/1.0/issue/AMRMIAMI-4

Validated By: (1) My First Test Case

In Modules

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 ...

APPROVE

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/AMRMIAMI-5>

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

Views

Search Views

Old AMRMIAMI-5 Create Story

Details

Project: AMRMIAMI-5

Type: Story

Priority: Low

Affects Version/s: None

Status: Unresolved

Resolution: Fix Version/s: Release 1.0

People

Assignee: Unassigned

Reporter: Administrator

Dates

Created: 14/Oct/21 11:20 AM

Updated: 3 days ago 1:37 PM

Description

Sample

Issue Links

implements requirement (0) 163: The handheld device shall have a human readable display for information collected from the meter. [...]

related change request (0) AMRMIAMI-4: Failing Test Case RequestMy First Test Case

Views

10

Contents

27

118

317

207

98

203

1.3 Definitions, Acronyms, and Abbreviations

Term: AMR Definition: Automatic Meter Reader

BBMU: Multi-Channel Meter Interface Unit

CTRL: Control Center

-2 General Description

-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 meters, 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: AMRMIAMI-4

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
AMRMIAMI-4	Failing Test Case "My First Test Case"	Administrator	10 DO	21/Sep/21 11:15 AM
AMRMIAMI-5	Create Story	Administrator	10 DO	14/Oct/21 11:20 AM

Select Cancel

Create Story

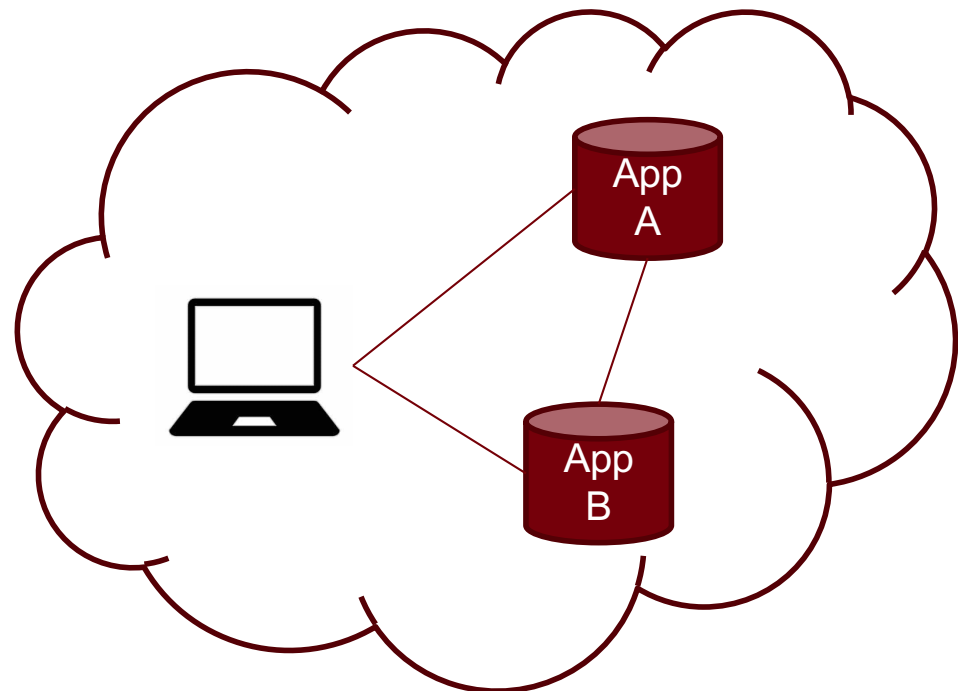
OSLC Connect for Jira



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

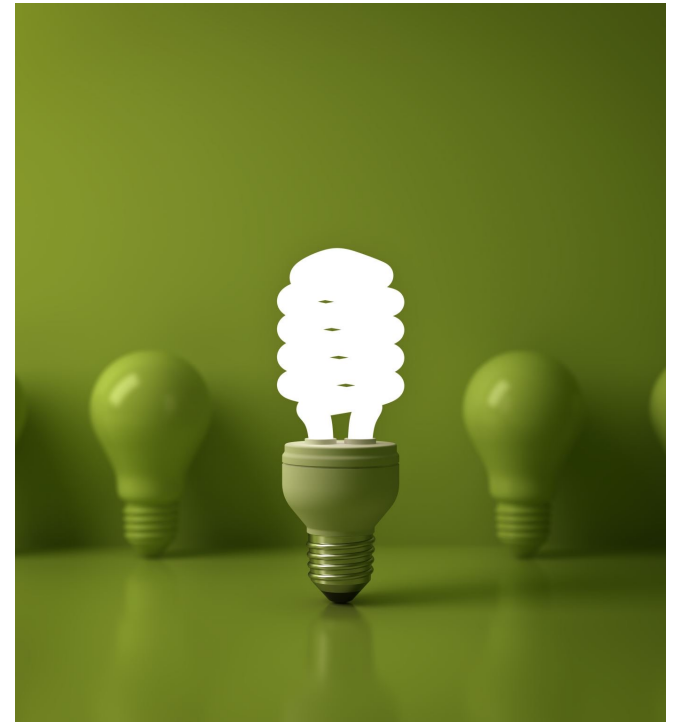


Interactions are safe, simple, and private

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*

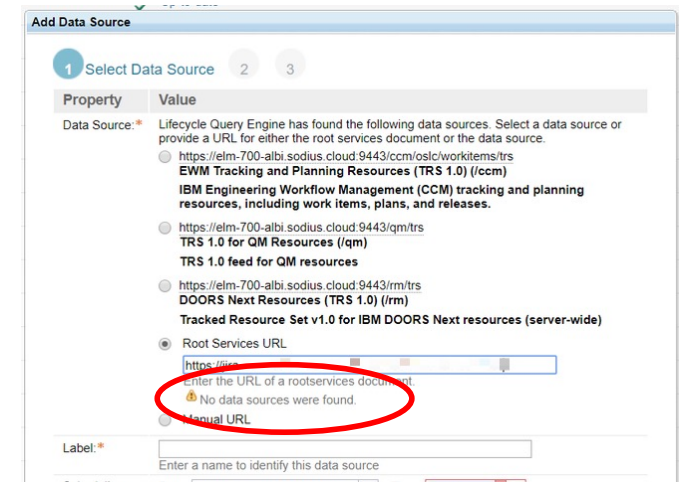


Goals of our IT Teams can be different than those of our OSLC Repositories

Common Challenges (& why they are hard to diagnose)

Example 1: TLS 1.2 Error

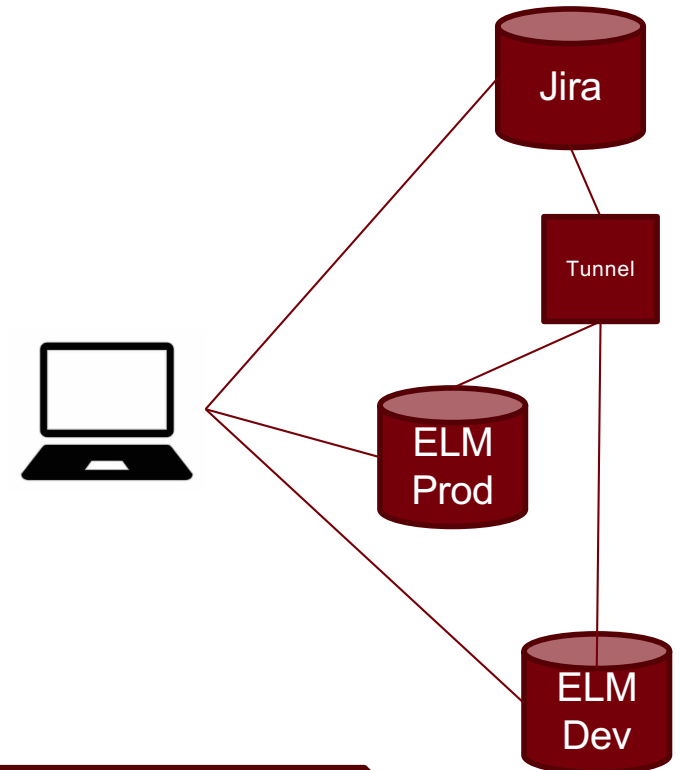
- Context
 - Connecting to TRS in Jira from IBM ELM
 - *IBM ELM attempting to retrieve Jira rootservices document*
 - Failure shows inability to retrieve document
- IBM and Atlassian can Friend
 - Jira -> IBM
 - IBM -> Jira
- Rootcause
 - IBM LQE HTTP Client configured only to support TLS 1.0/1.1
 -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

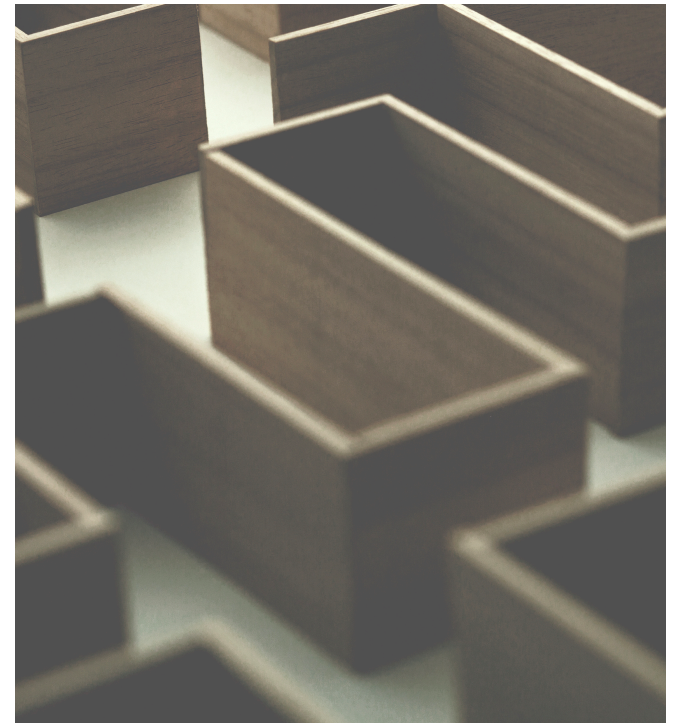
- Context
 - Connecting Jira to IBM ELM through a private tunnel
 - Failure to Friend between ELM to Jira
- Friending from ELM is successful with Jira
- Friending from Jira to ELM fails with incompatible server
 - Rootservices is downloadable but what is seen by the Jira Server is different from what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

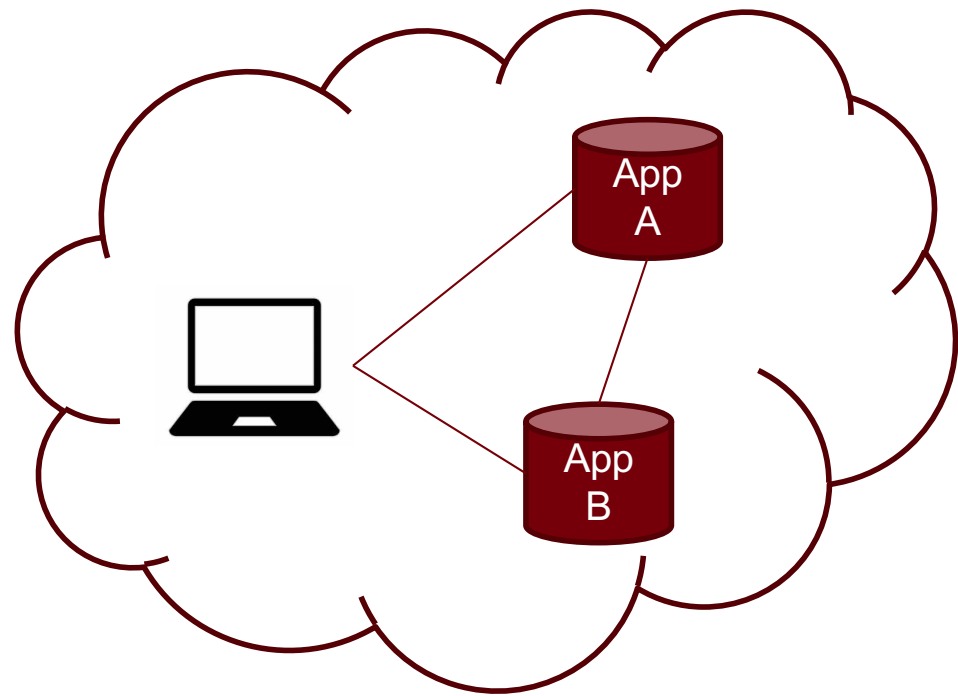


So how do we minimize this?

Standard Topology

Baseline Recommended Topology

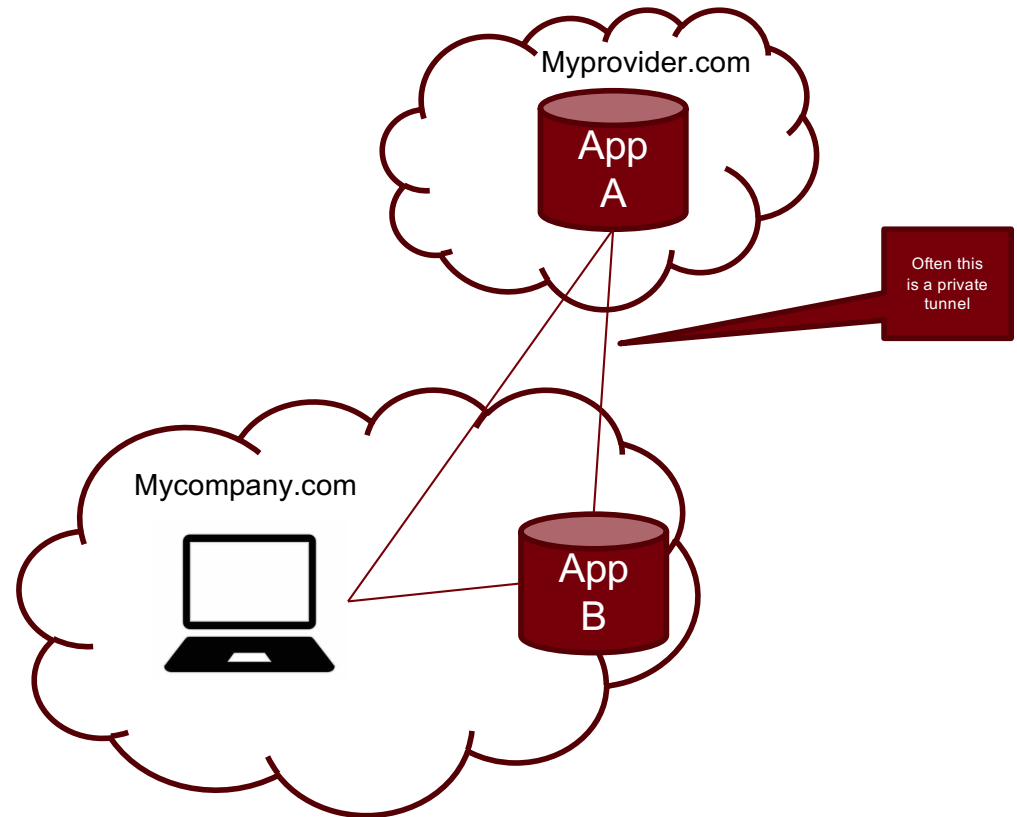
- Basics of the Topology
 - Single Domain
 - Multiple Applications
 - Private Network
- The Details
 - Fully Qualified Domain Names
 - Valid Certs and Certificate Authorities
 - Standard Authentication
 - No advanced web security headers
 - *Check Reverse Proxy and App Server Settings*
 - (Encouraged)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



Topology Deviations (and Impacts)

(Virtual Private) Cloud Service Topology

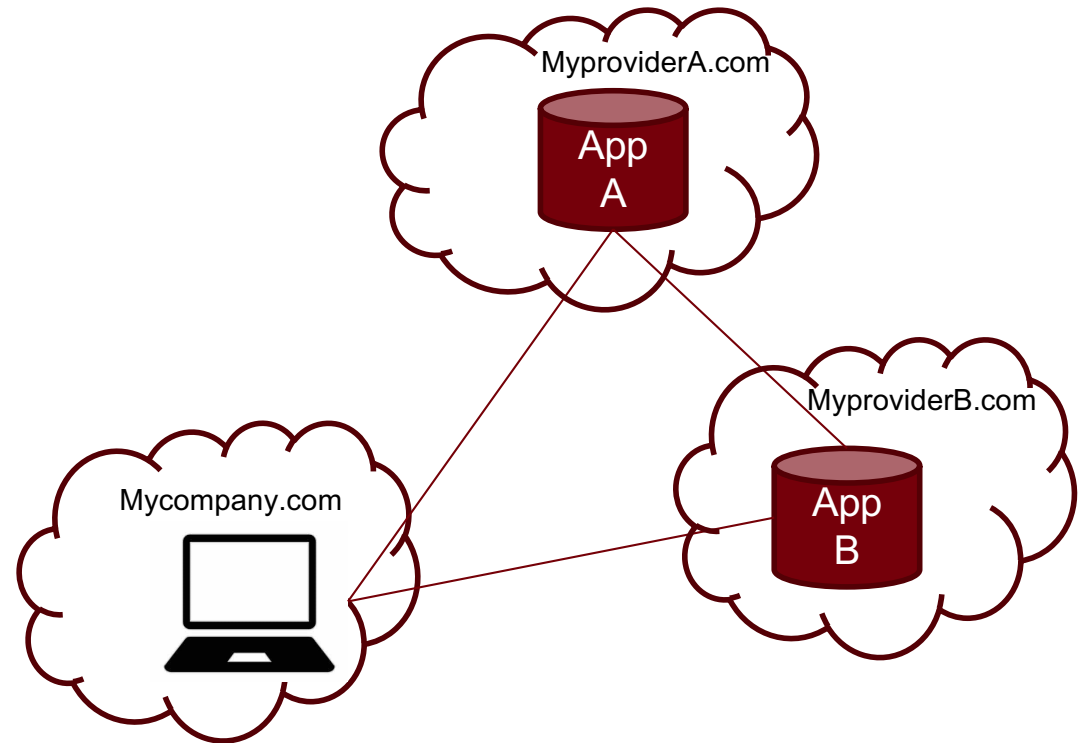
- Basics of the Topology
 - Similar Structure
 - One Application in a Unique Domain Namespace
- The Details
 - Fully Qualified Domain Names
 - Valid Certs and Certificate Authorities
 - Management of same-site configuration
 - *SameSite=none*
 - *CSRF Token for Mutable interfaces*



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*

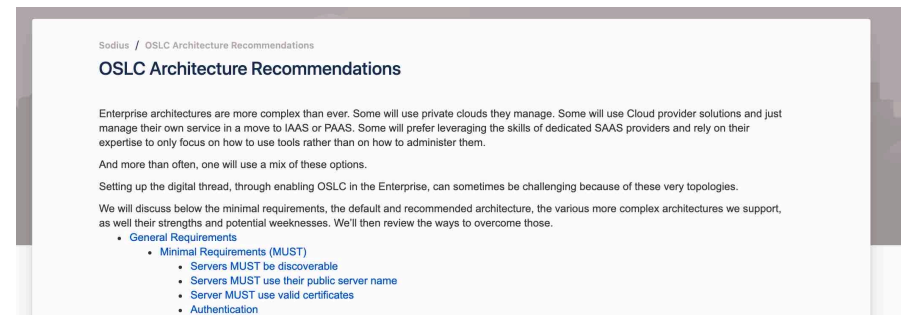


The common issue without special configuration is broken login behavior (fails or flashes) because session tokens are not being shared in embedded frame contents

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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