AdminCamp 2013

Single Login/Sign On – Reloaded

Workshop Track 1 – Session 5

Christian Henseler, 24.09.2013

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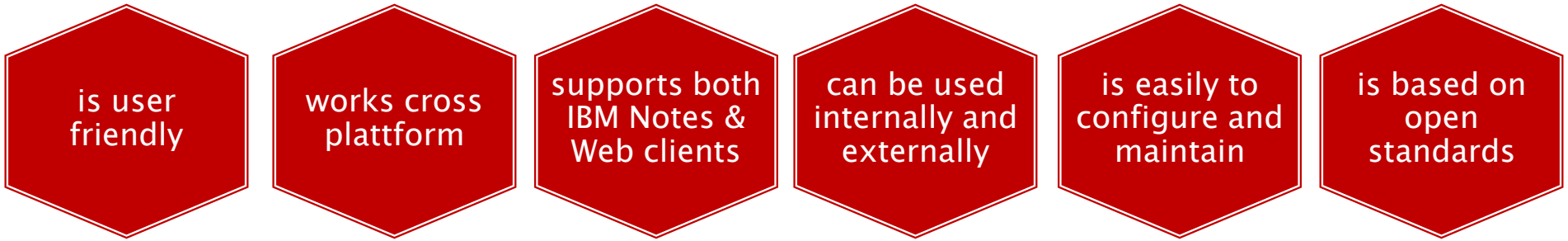
Agenda

- Introduction
  - What are we coming from
  - Yet another SSO mechanism!?
  - SAML basics
  - Domino 9 requirements and limitations
- SAML use cases
  - SAML based Web Server SSO
  - Notes Federated Login (Notes client)
  - Web Federated Login (iNotes)
- Troubleshooting
- Wrap Up

Introduction – What is it all about!?

- Users don‘t want to enter their credentials multiple times
- Wouldn‘t it be nice to have a SSO solution that



Introduction – Situation pre 9.0

We already have

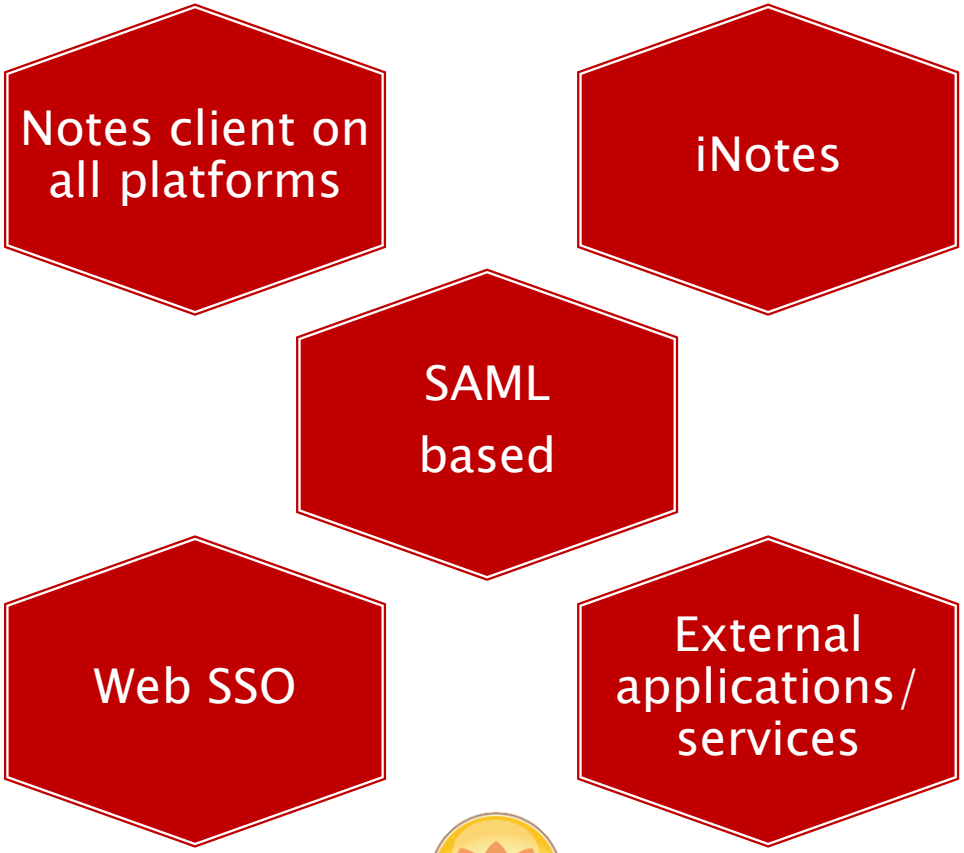
- Notes Single Login
- Notes Shared Login
- Domino Multi-session server Authentication
- SPENEGO/Kerberos

But all these mechanisms have limitations:

- Platform specific
- Not across DNS domains
- Missing flexibility
- Notes xor Web Client

Introduction – SSO in 9.0

IBM Domino 9.0 promises a new single SSO-mechanism:



Introduction – SAML

- Security Assertion Markup Language (sam-el)
  - XML based open standard
  - used for Authentication and Authorization

  - Roles
    - Principal
      - Notes 9.0/Web clients
    - Service Provider (SP)
      - Domino 9.0
    - Identity Provider (IdP)
      - Tivoli Federated Indentity Manager (TFIM)
      - Microsoft Active Directory Federation Services (ADFS) 2.0

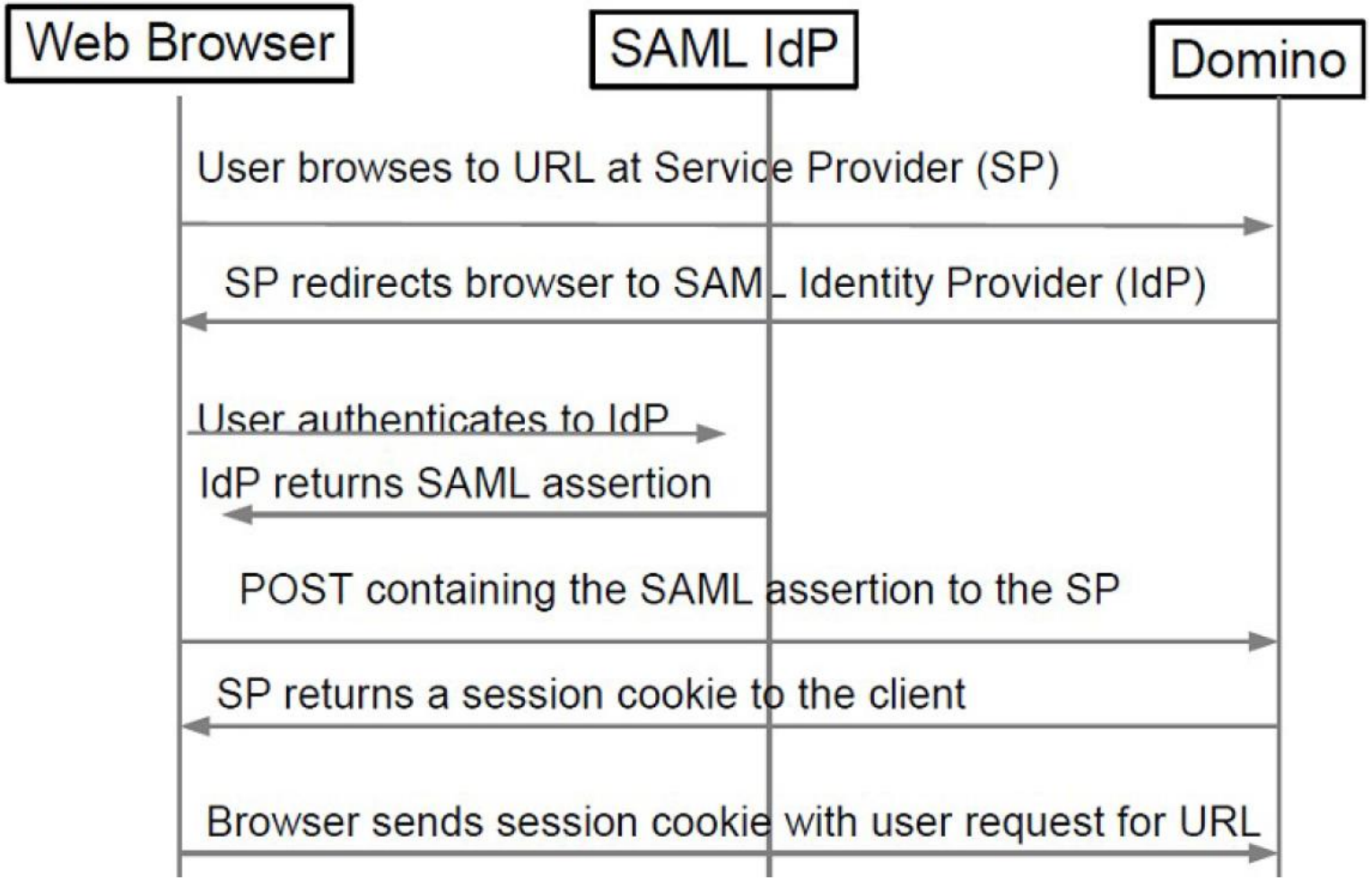
SAML 2.0 is recommended, but 1.1 is also supported (only by TFIM)

Introduction – SAML Assertions

```
<samlp:Response ID="_93e965fe-d658-4fe3-83b4-e21c9eec825f" Version="2.0"
        IssueInstant="2013-08-27T00:04:19.705Z"
        Destination="https://demail01.henseler.org/names.nsf?SAMLLogin"
        Consent="urn:oasis:names:tc:SAML:2.0:consent:unspecified" xmlns:samlp="urn:oasi
<Issuer xmlns="urn:oasis:names:tc:SAML:2.0:assertion">
        http://dc.henseler.org/adfs/services/trust
</Issuer>
<samlp:Status>
        <samlp:StatusCode Value="urn:oasis:names:tc:SAML:2.0:status:Success" />
</samlp:Status>
<Assertion ID="_ae4d2a14-6406-4a9a-b503-bc88cbb1a02b" IssueInstant="2013-08-
27T00:04:19.660Z" Version="2.0" xmlns="urn:oasis:names:tc:SAML:2.0:assertion">
<Subject>
        <NameID>
                christian.henseler@henseler.org
        </NameID>
        <SubjectConfirmation Method="urn:oasis:names:tc:SAML:2.0:cm:bearer">
                <SubjectConfirmationData NotOnOrAfter="2013-08-27T00:09:19.707Z"
                Recipient="https://demail01.henseler.org/names.nsf?SAMLLogin" />
        </SubjectConfirmation>
</Subject>
```

Assertions are using time stamps, IDP and SP must be **time sync'ed**!
Assertions can be encrypted, if sensitive data is exchanged.

Introduction – SAML protocol flow



Introduction – SAML Requirements

To use SAML based SSO mechanisms you need:

- Notes 9.0 Clients for Notes Federated Login
- Domino 9.0 Vault-Servers
- Domino 9.0 for Service Provider servers
- Domino Directory 9.0 Design for security settings
- User credentials hosted on IdP, e.g. Active Directory user account (and computer account)
- SAML compatible Web-browsers
- IdP – ADFS 2.0 or TFIM are currently supported
- A good relationship to your IdP Administrators!

Limitations

- You can‘t use SAML, when you are using
  - Smartcard protected ID
  - Roaming users with ID files in PAB
  - Notes on a USB device
  - Notes user IDs with multiple passwords
  - Notes Single Login
  - Basic Client & Admin Client
  - Lotus Notes Traveler (for LNT authentication)

- Password management settings should be disabled:
  - Check password on Notes id file
  - Update Internet Password When Notes Client Password Changes
  - Enforce Internet Password Lockout

SAML use cases

SAML is used in 9.0 for the following use cases:

- SAML-based Web SSO
  - Web Access with SAML-based SSO
- Notes federated Login
  - Notes client with SAML SSO
- Web federated Login
  - iNotes (with mail encryption, ID access)

Not covered here:

- Federated Login to externally-based services
  (see Andrews Pollack's session on Wednesday)

SAML based Web SSO

Used as SSO mechanism for Web Application servers.

1. ADFS Trust Relationship
2. Attribute Mapping Domino vs. ADFS
3. IDP-Catalog on SP
4. IDP-Document for Web Server working as SP
5. Authentication method in Server or Internet Site documents
6. Optional: Integrated Windows Authentication (SPNEGO/Kerberos)

ID-Vault and security policies are not involved!

IdP Configuration – ADFS 2.0

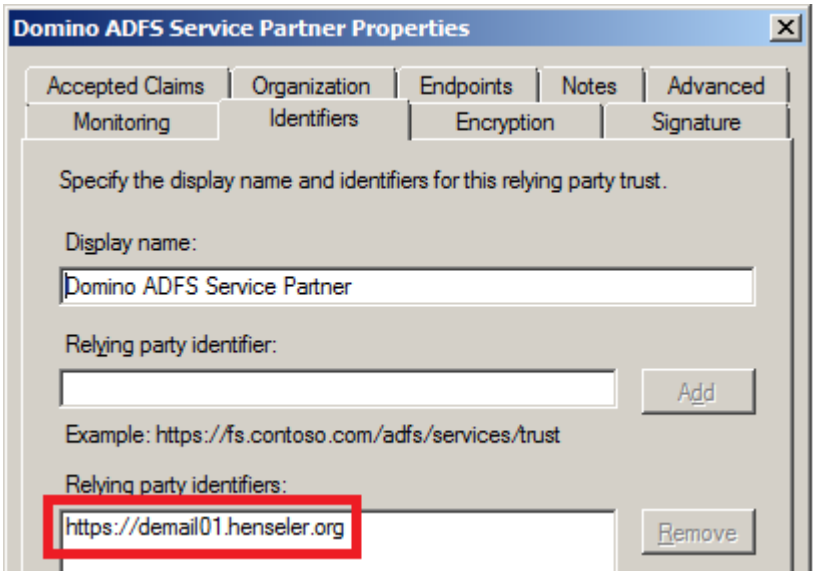
- Separate download for Windows Server 2008 R2!
- User account must be available in Active Directory
- AD user and Domino Person document must have an attribute used for matching, usually the Internet Address
- SSL must be configured

- For Integrated Windows Authentication:
  - User Account and computer must be Active Directory members
  - Integrated Windows Authentication configuration of the ADFS-servers
  - Exented Protection must be turned off for Notes Federated Login and Non-IE-Browsers

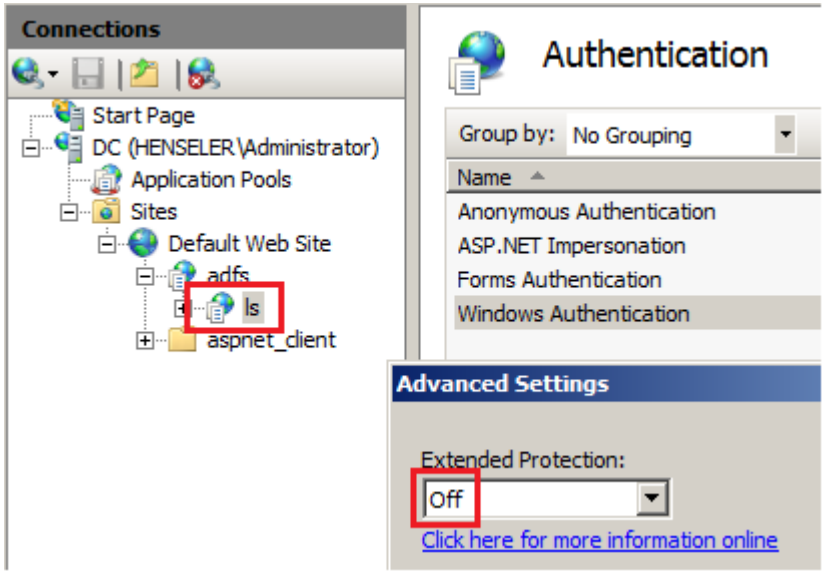
- Very well documented in the Lotus Notes and Domino Wiki

ADFS Trust Relationship

Important ADFS 2.0 configuration details:



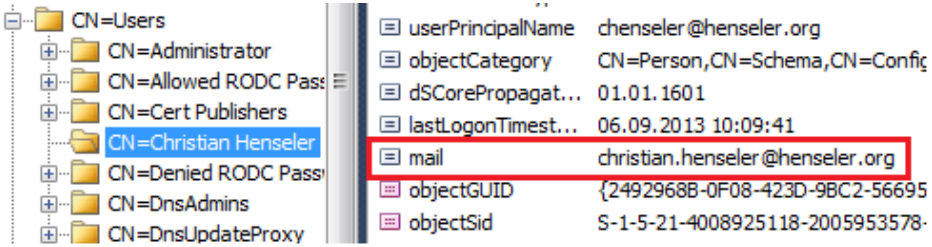
The Relying party identifier is used in the IdP configuration document



Extended Protection must be turned off NFL and Non-IE-Browsers

SAML attribute matching

The E-Mail Adress in Active Directory…



… is mapped to the Internet Address of the Person document

Alternatively: DA to AD with Domino Distinguished name mapping

IdP Catalog & Configuration docs

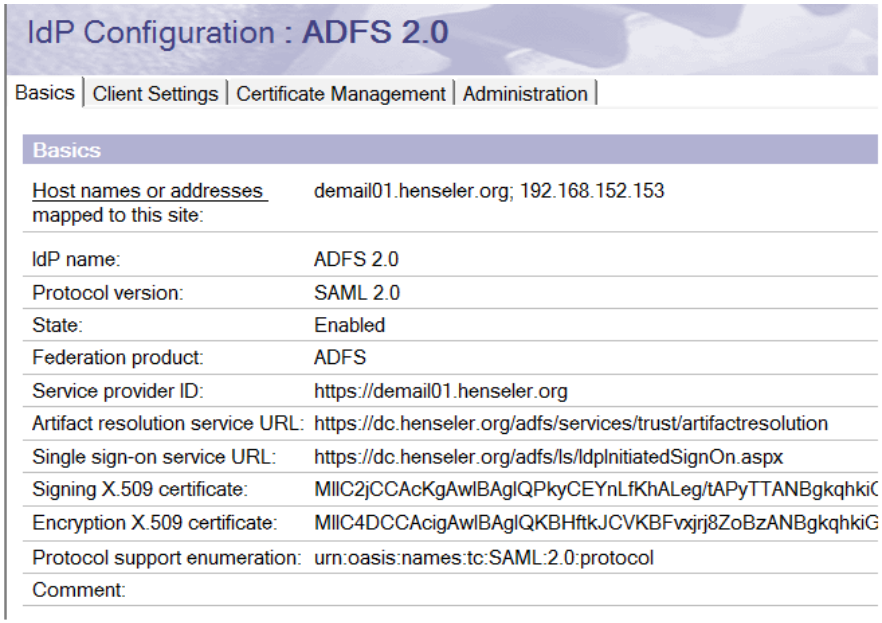
The IdP Catalog is used to define trust relation-ship on the domino side

- Filename must be **idpcat.nsf**
- Database must be located on Service Provider
- Use **IdP Catalog** template
- Admin must have the rights
  - „Full Access administrators“
  - „Sign or run unrestricted methods and operations”
  - ACL should be restricted to SP servers and IdP admins

Manual process using *certmgmt* if

- Server.id is password protected
- Admin does not have appropriate rights

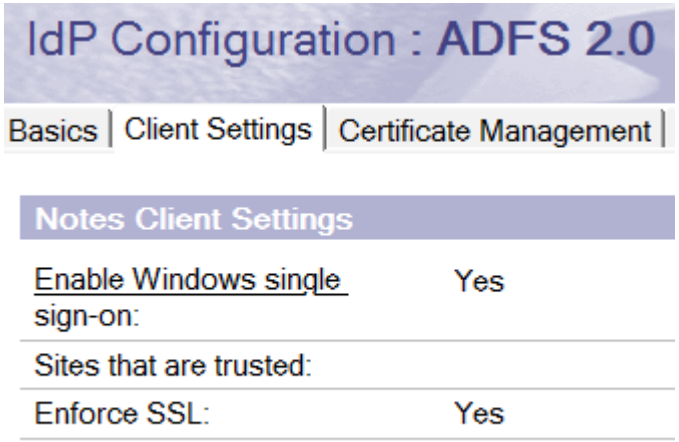
IdP Configuration – Basics



- Add IP address if ADFS 2.0 is used (because of SSL)
- ADFS needs SAML 2.0 protocol version
- *Service Provider ID* must match *Relying party identifiers* in the ADFS configuration!
- Other fields are imported using the 

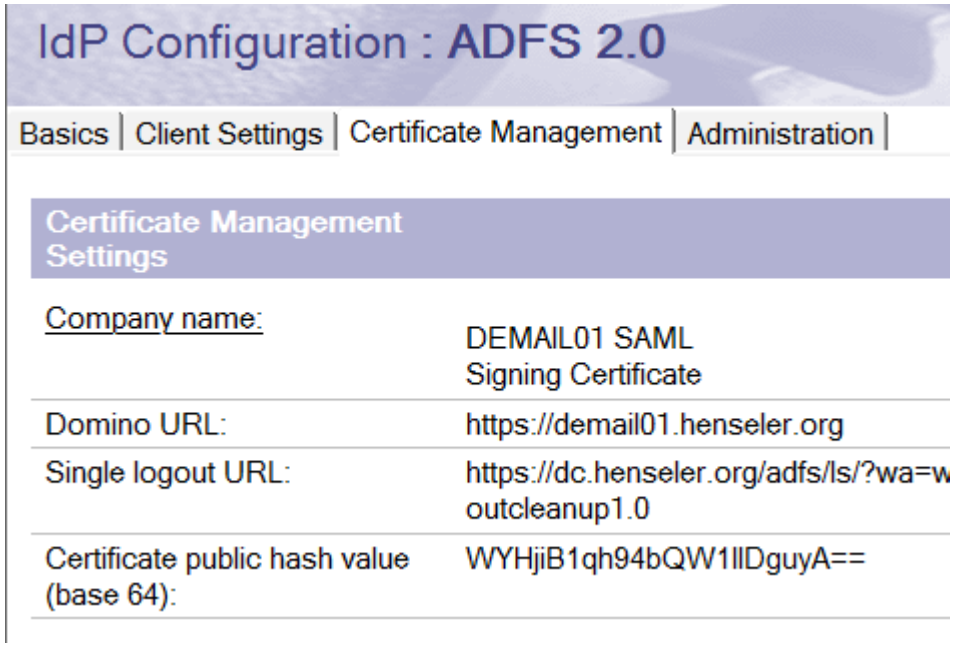
button
- Imported IdP X.509 certificates are used for SAML Assertion Verification & optionally for Encryption

IdP Configuration – Client settings



- *Enable Windows single sign-on* is needed for Notes federated Login
- Enforce SSL is used for ADFS 2.0

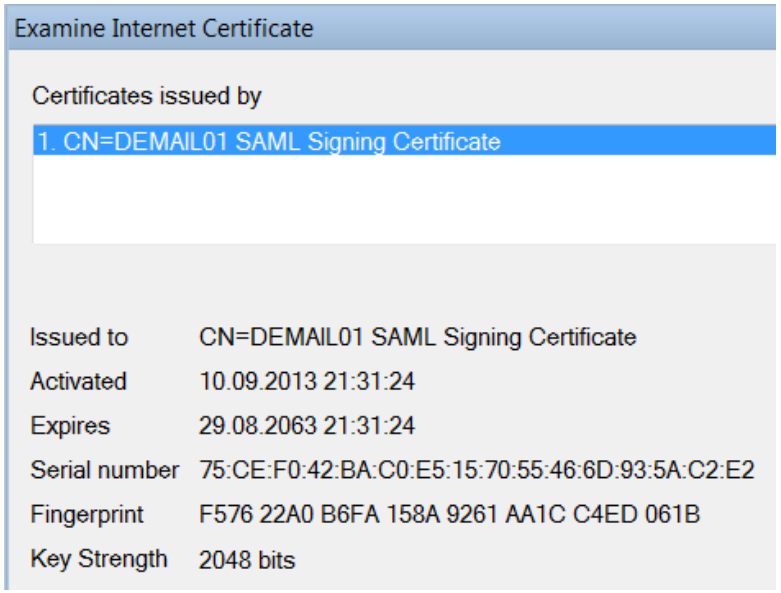
IdP Configuration – Certificate Management



- Company name is used to create the SAML Signing Certifcate using the Create Certificate button
- Domino URL is (in most cases) the same as the Service Provider ID (on Basics tab)

IdP – SAML Signing Certificate

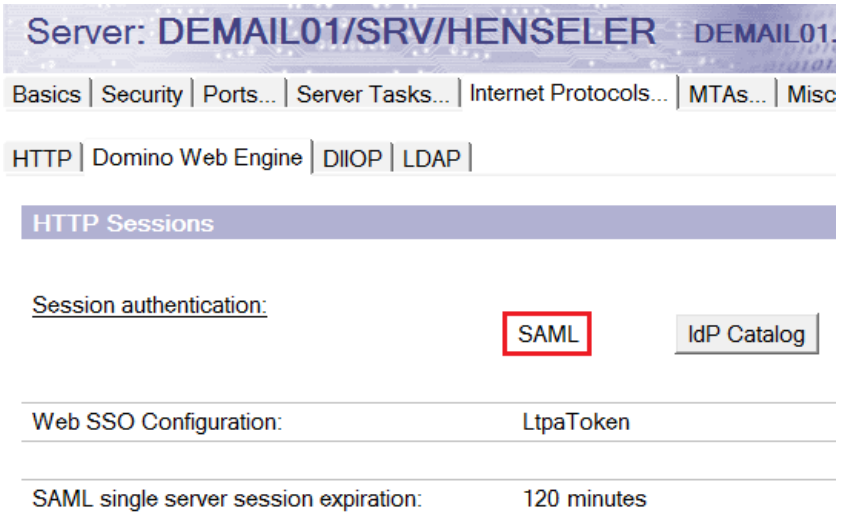
Create Certificate is creating a X.509 certificate in the server.id:



- Is used for SAML Assertion encryption.
- Is exported to idp.xml by using the Export XML button

Authentication configuration

Select SAML in the Server or Internet site document:

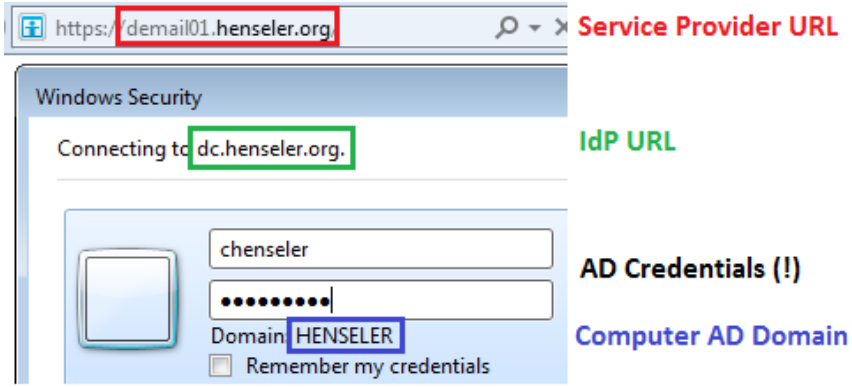


- If Web SSO Configuration is empty: Single Server authentication
  - IdP vs. SP Trust relationship configuration for every server using SAML
- As soon as an IdP Config document exists, it takes precedence:

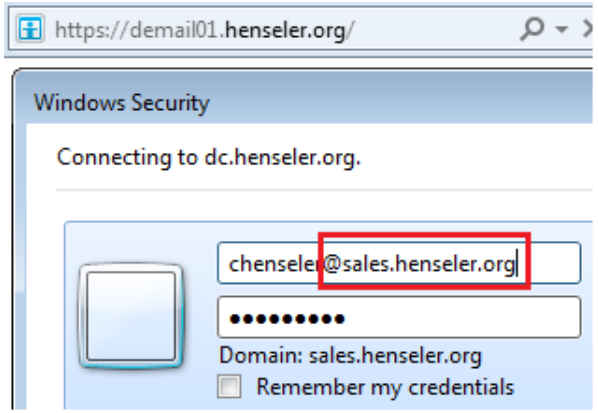
  HTTP Server: Error processing authentication configuration for demail01.henseler.org: Active IdP catalog entry found. **Overriding configuration and enabling SAML authentication** at demail01.henseler.org

Integrated Windows Authenticatoin

If not configured, the user is prompted for IdP(!) login credentials:



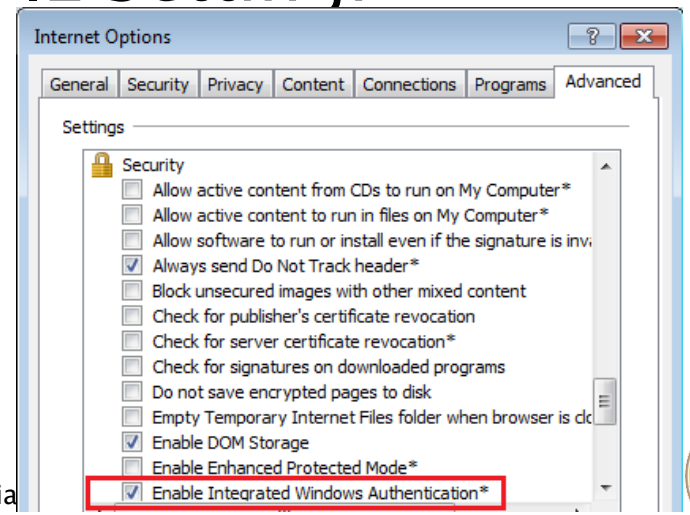
or cross(!) domain:



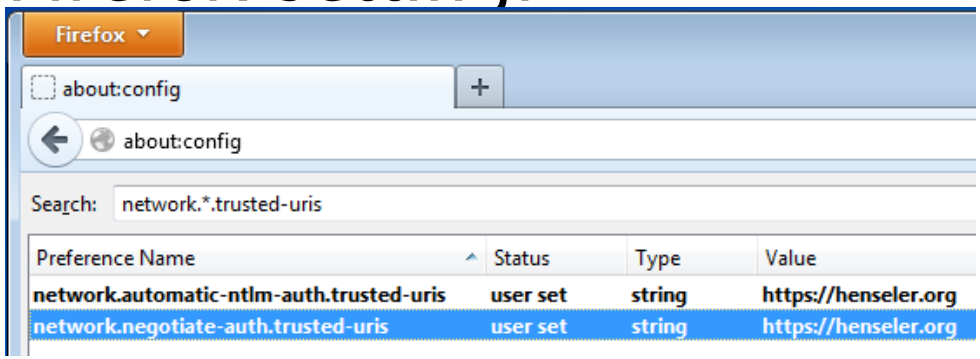
Integrated Windows Authenticaton

- SPNEGO/Kerberos available since 8.5.1
- Use ***setspn*** utility on ADFS server side
- Disable Windows Single Sign-on integration in the Web SSO configuration document:

- IE Setting:

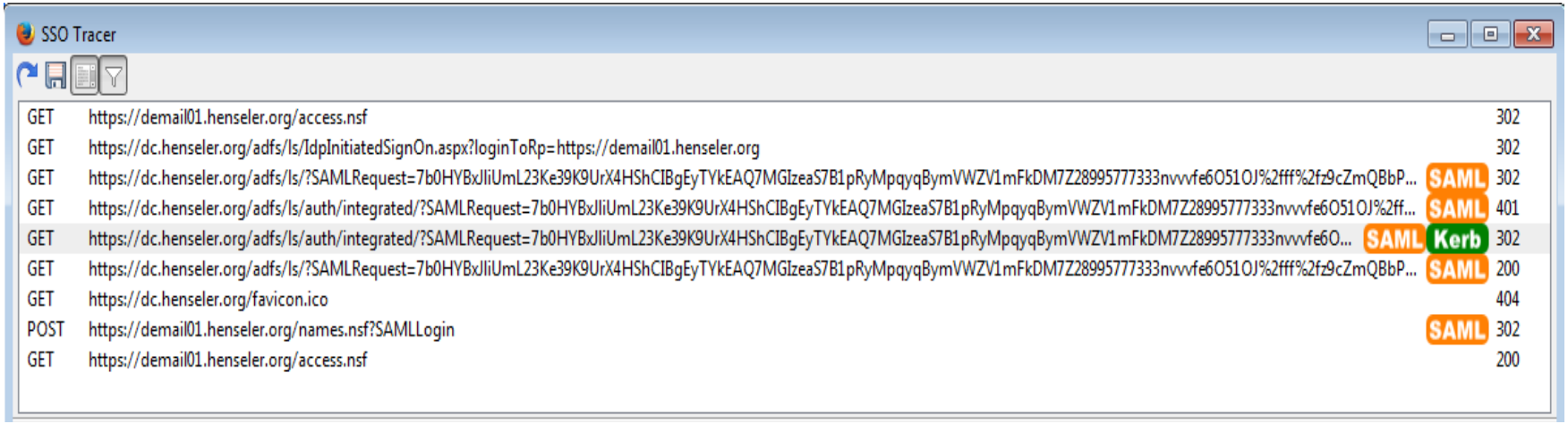


Firefox setting:



Putting all together

Web-based access to a Domino resource using SAML & Integrated Windows Authentication



Notes Federated Login

1. ADFS Trust Relationship
2. Attribute Mapping Domino vs. ADFS
3. ID Vault & Vault Configuration
4. IDP-Catalog on Vault-Server
5. IDP-Document for SP
6. Internet Cross Certificate IdP
7. Security Settings document
8. Integrated Windows Authentication is mandatory

- SP is not necessarily the Vault-Server!
- HTTP task is neither on SP nor on Vault-Server necessary!

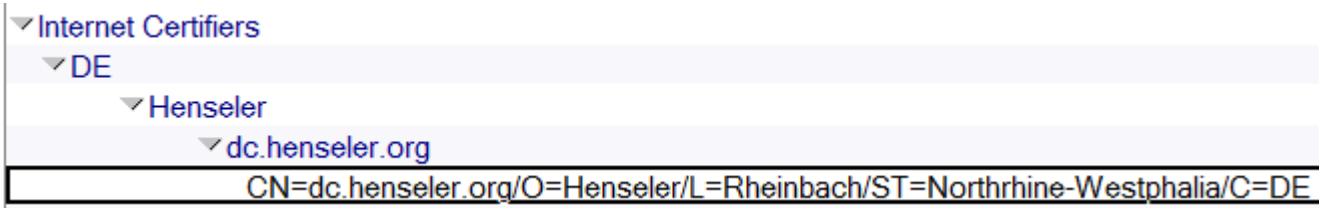
Notes Federated Login

- ADFS Relying Party Trust configuration for SP as explained
- Users IDs must be in the ID Vault
  - Automatic download should be enabled
- IdP Catalog must reside on Vault server
  - Replica of SP‘s idpcat.nsf

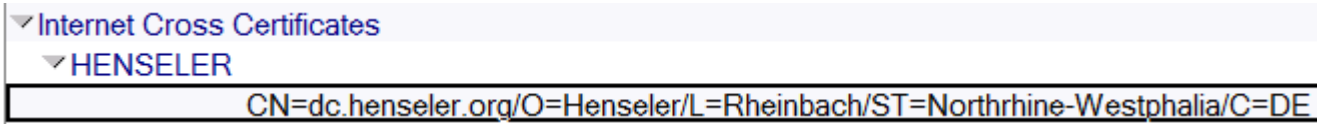
IdP Internet Cross Certificate

An Internet cross certificate for the IdP is necessary in the Domino directory:

1. Import Internet Certifcate

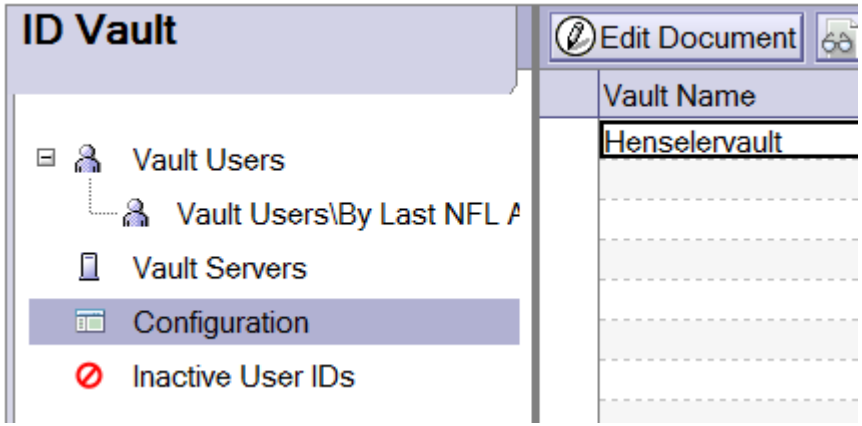


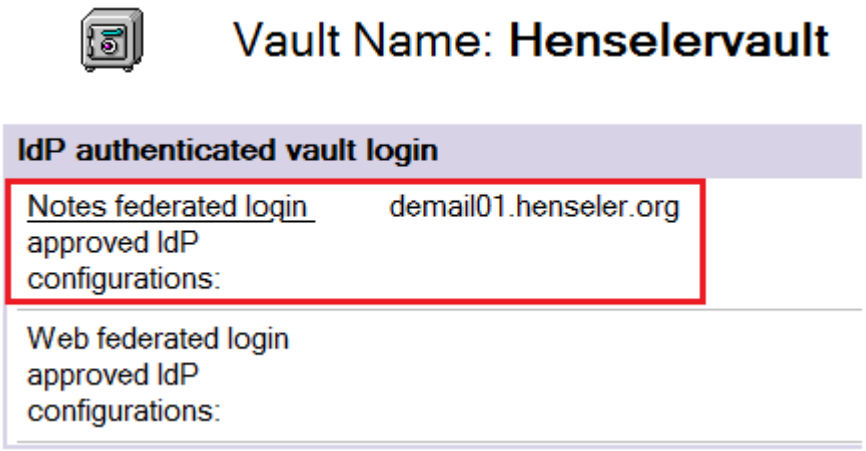
2. Create Internet Cross Certificate



ID Vault configuration

Add all IdP configurations used for NFL to the Vault configuration:

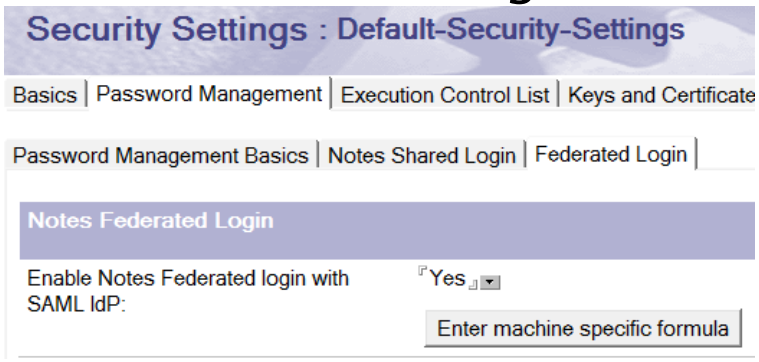




The Vault server must be able to find the IdP configuration document in the **local** idpcat.nsf

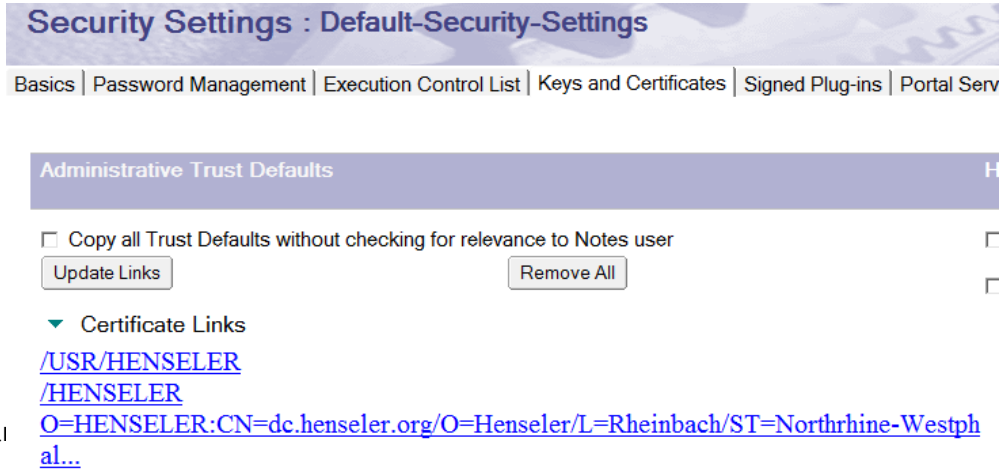
Security Settings document

- Notes Federated Login must be activated

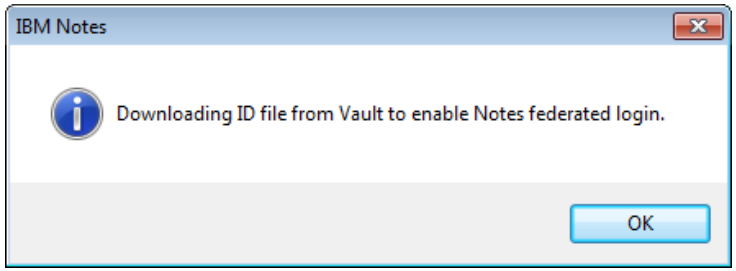


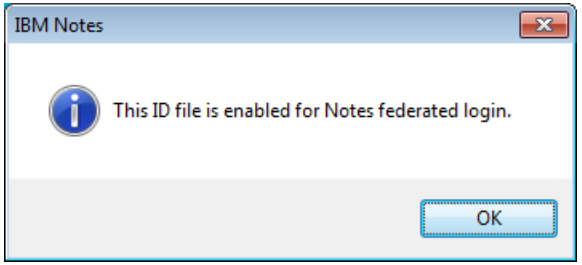
You should use Machine specific formulas to exclude Notebooks

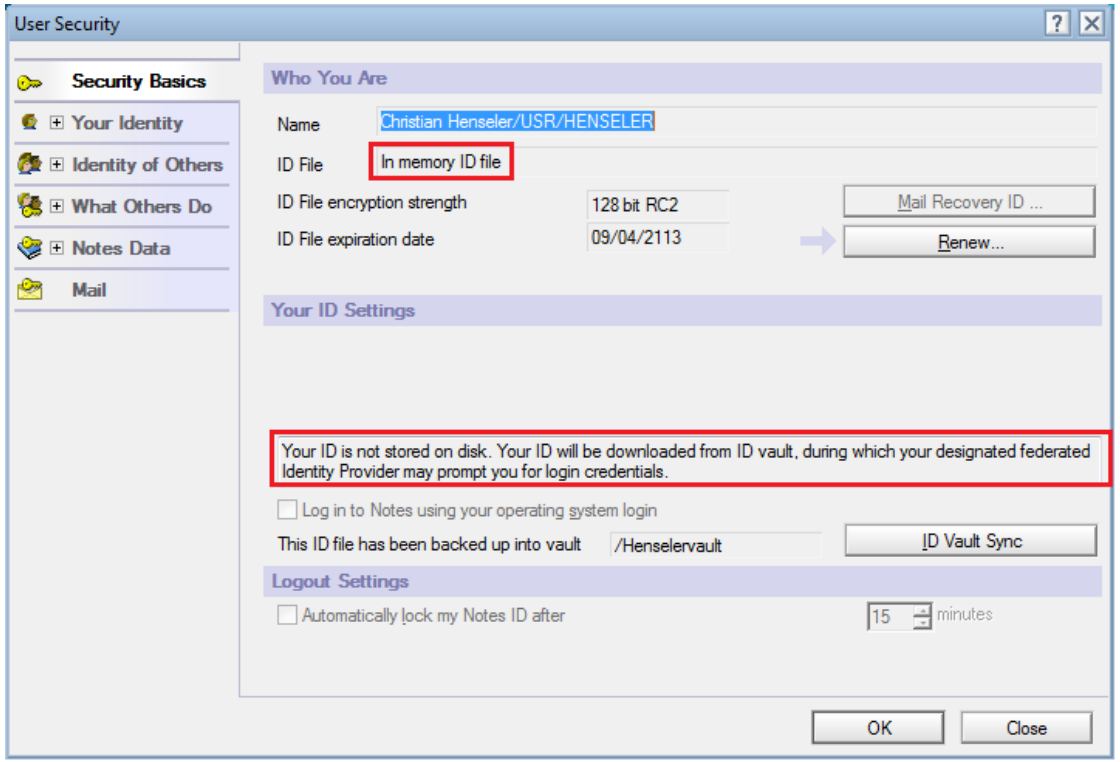
Internet Cross Certificate & Notes certifier must be added to Administrative Trust Defaults



Notes Federated Login enablement





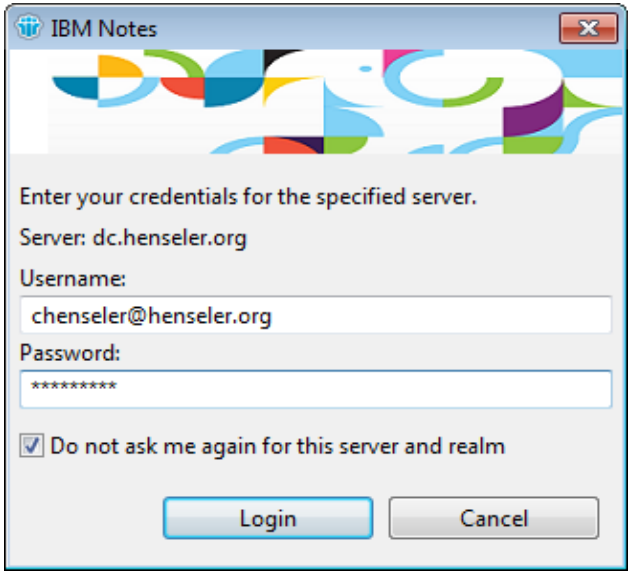


Please note:

- User.ID password is still **required** for First time setup
- User.id **remains** on disk (not automatically deleted)

NFL vs. IWA

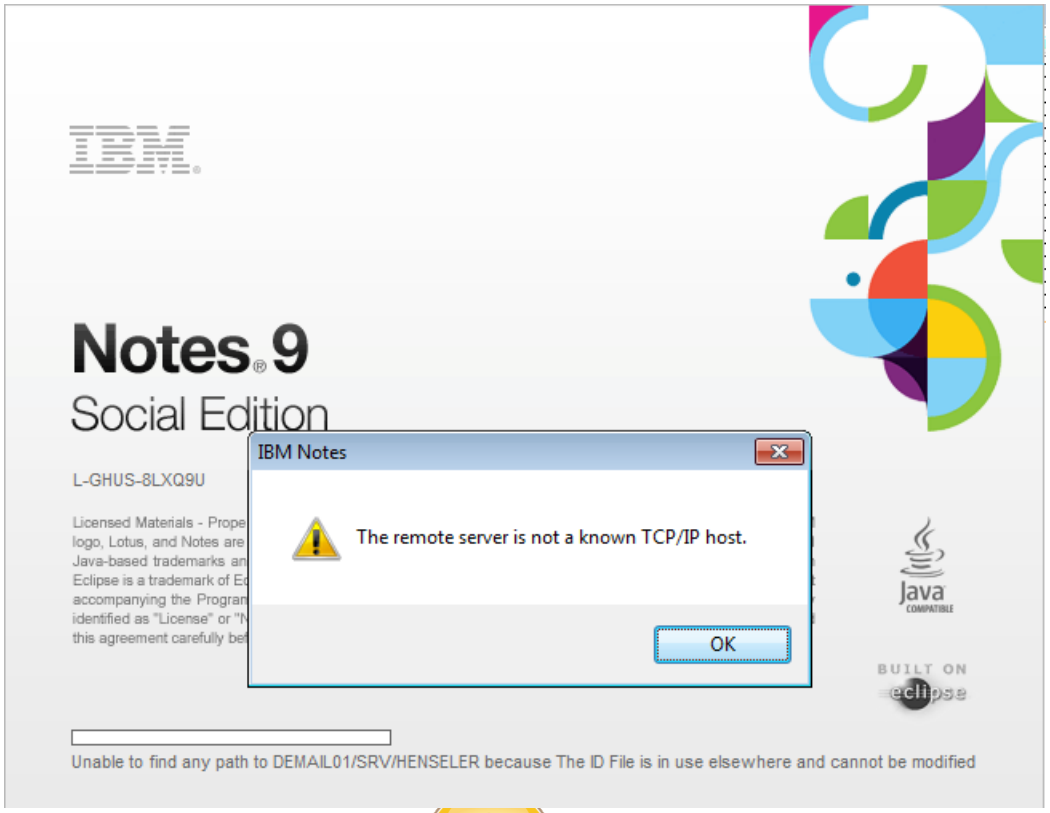
The previous slide omitted one step if Integrated Windows Authentication is not available:



If Notes 9.0 is used on Windows AD integrated computers, IWA should be used for user convenience

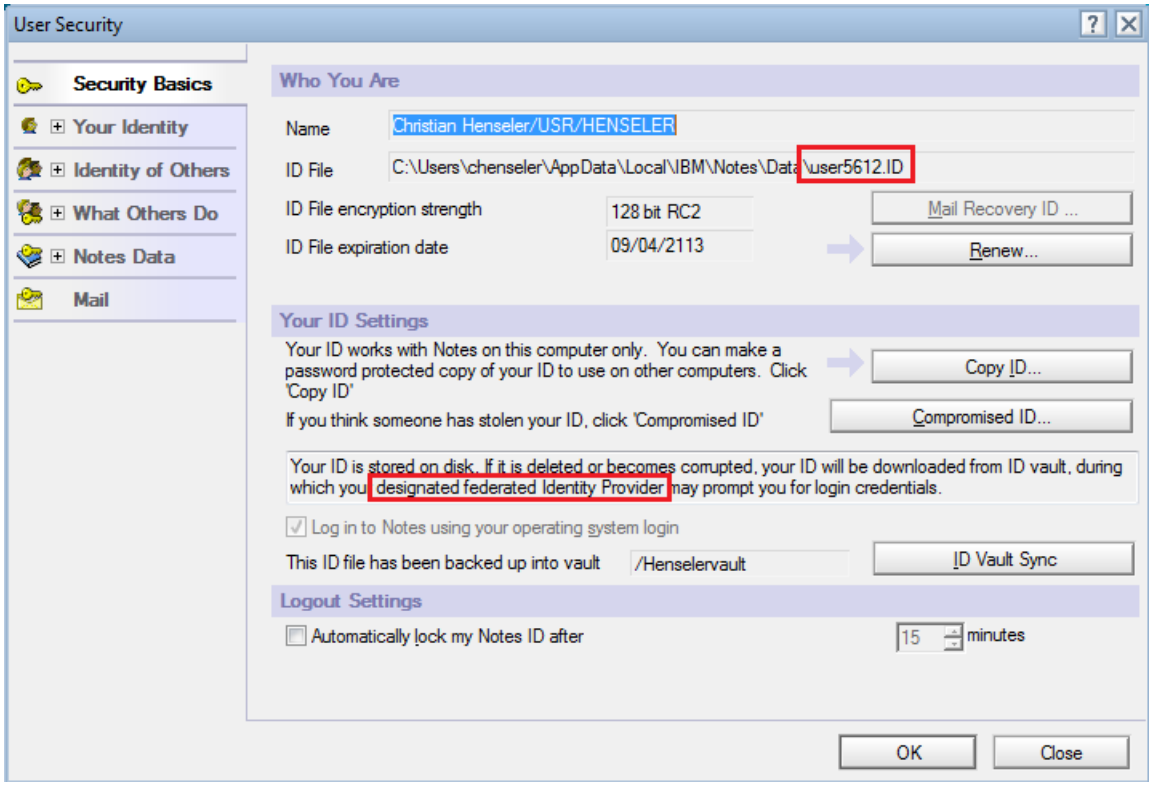
…and Notebook users !?

What happens with NFL enabled users when they are working without connection to the IdP?



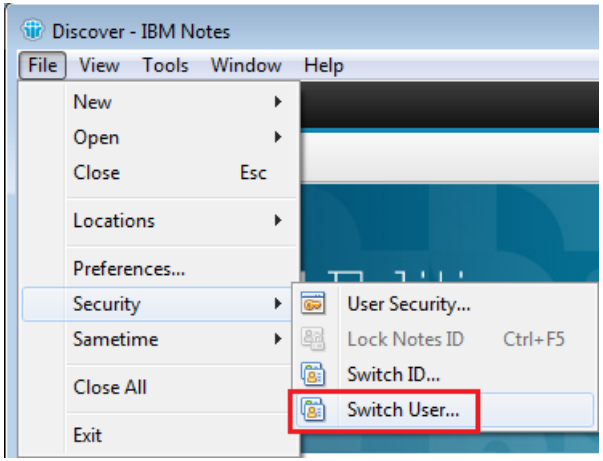
NFL vs. NSL

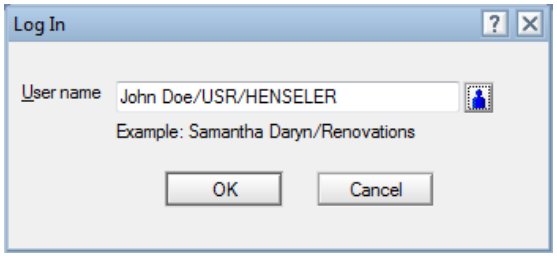
- Use standard Notes Shared Login for users that need to work disconnected from the IdP:

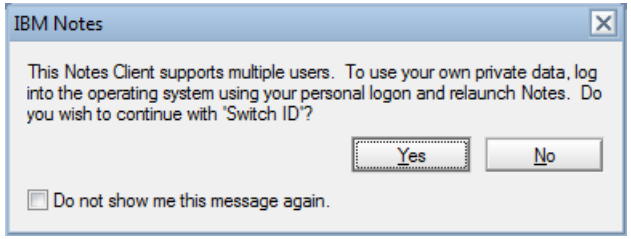


Switching users …

- In theory, because no ID is stored on disk, you have to use Switch User…



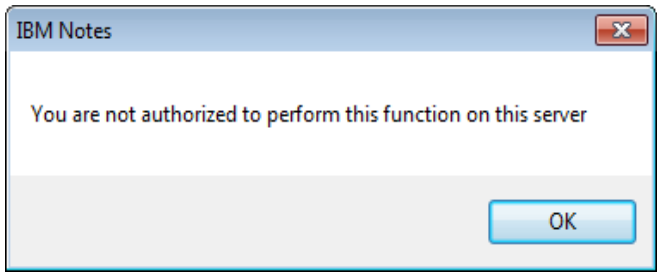




but ….

Switching users…

…when IWA is configured, you will most propably run into:



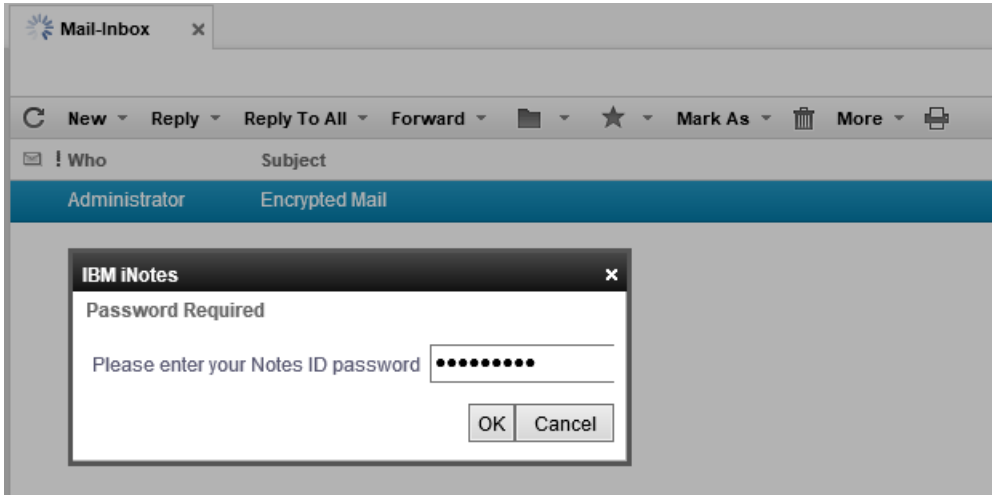
The problem is that you cannot map a unique matching attribute to different accounts and IWA is handing over the OS credentials

Web Federated Login

Web Federated Login combines

- SAML-based SSO for Webservers (iNotes)
- SAML-based access to ID files (ID-Vault)

Major goal is to eleminate:



Web Federated Login

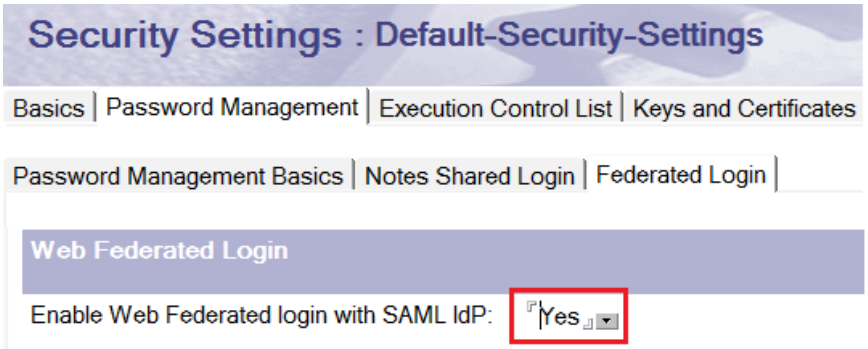
Based on a SAML-based SSO Web configuration you need additionally:

- Security Policy Settings
- iNotes vs. ID Vault Server Trust
- ID Vault configuration

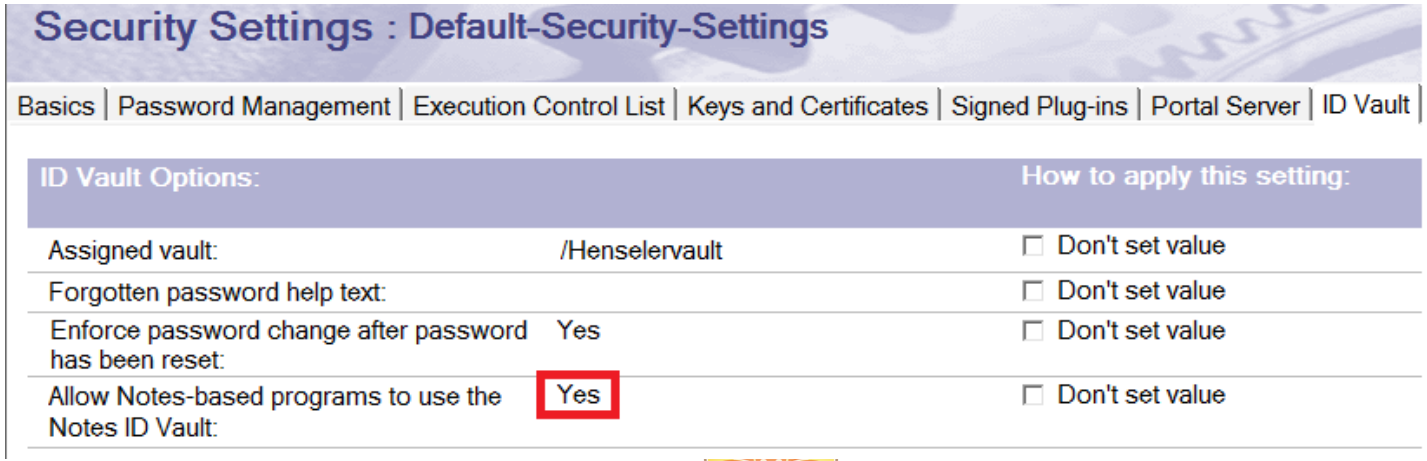
Still no HTTP-Task on ID-Vault(!)

WFL – Security Settings

Web Federated Login must be enabled in the Security Settings document:

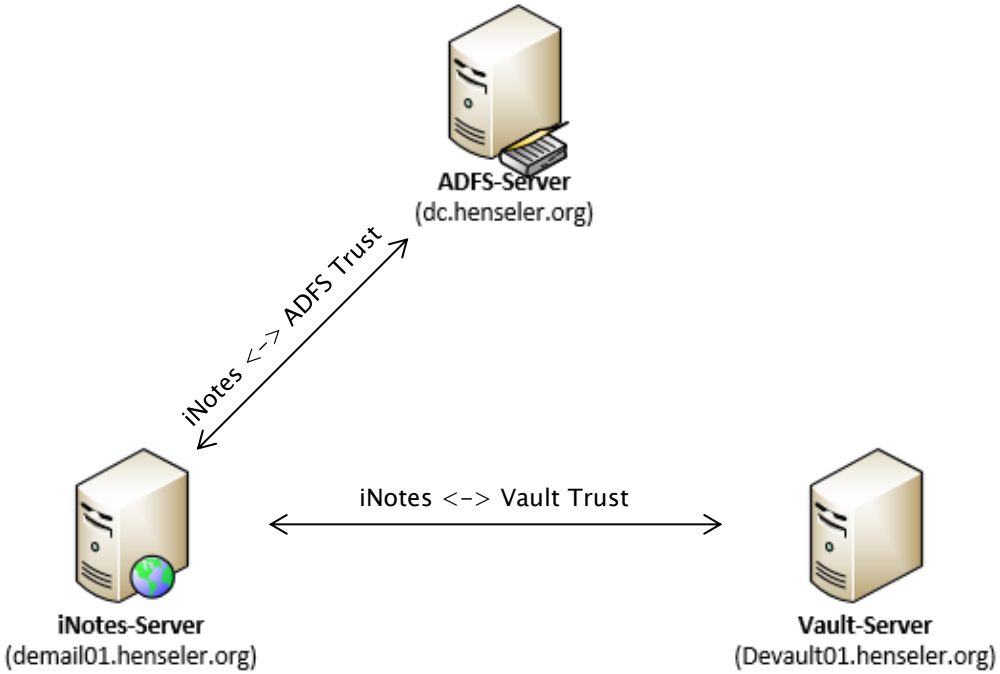


It must be activated in the ID Vault configuration:



WFL – IdP Configuration

- If the iNotes server is separated from the Vault server:
  - 1st document for iNotes as SP
  - 2nd document for iNotes „interfacing“ the vault server



WFL – IdP Configuration

IdP config field	iNotes vs. IdP	iNotes vs. Vault-Server
Host names or addresses mapped to this site	https://demail01.henseler.org; 192.168.152.153	vault.demail01.henseler.org
Service provider ID	https://demail01.henseler.org	https://vault.demail01.henseler.org
Company Name	DEMAIL01 SAML Signing Certificate	DEVAULT01 SAML Signing Certificate
Domino URL	https://demail01.henseler.org	https://demail01.henseler.org

- The virtual FQDN for the Vault-server should not exist in DNS!
- IP address is not necessary for the Vault-server

WFL – ID Vault configuration

The virtual FQDN of the Vault-server is used:

Vault Name: **Henselervault**

IdP authenticated vault login	
Notes federated login approved IdP configurations:	
Web federated login approved IdP configurations:	vault.demail01.henseler.org

Debug_SAML

0x0001 (1) – Debug output contains information from http side.
0x0002 (2) – Debug output contains SAML parse information.
0x0004 (4) – Debug output only contains errors.
0x0008 (8) – Debug to dump decoded assertion.
0x0010 (16) – Debug to trace idpcat activity
0x0020 (32) – Trace replay prevention
0x0080 (128) – Dump the entire XML tree
0x0100 (256) – Dump canonicalized buffers
0x0200 (512) – Debug for the library sort
0x0800 (2048) – Debug for namespace use
0x2000 (8192) – Debug output for certificate management

Client side debugging

Notes.ini

DEBUG_SAML=31
DEBUG_CONSOLE=1
DEBUG_CLOCK=32
DEBUG_OUTFILE=<outfile>
DEBUGGINGWCTENABLED=4294967295
CONSOLE_LOG_ENABLED=1
DEBUG_DYNCONFIG=1
DEBUG_TRUST_MGMT=1
DEBUG_IDV_TRACE=1
DEBUG_TRUSTCERT=1
DEBUG_ROAMING=4
DEBUG_BSAFE_IDFILE_LOCKED=8
STX9=2

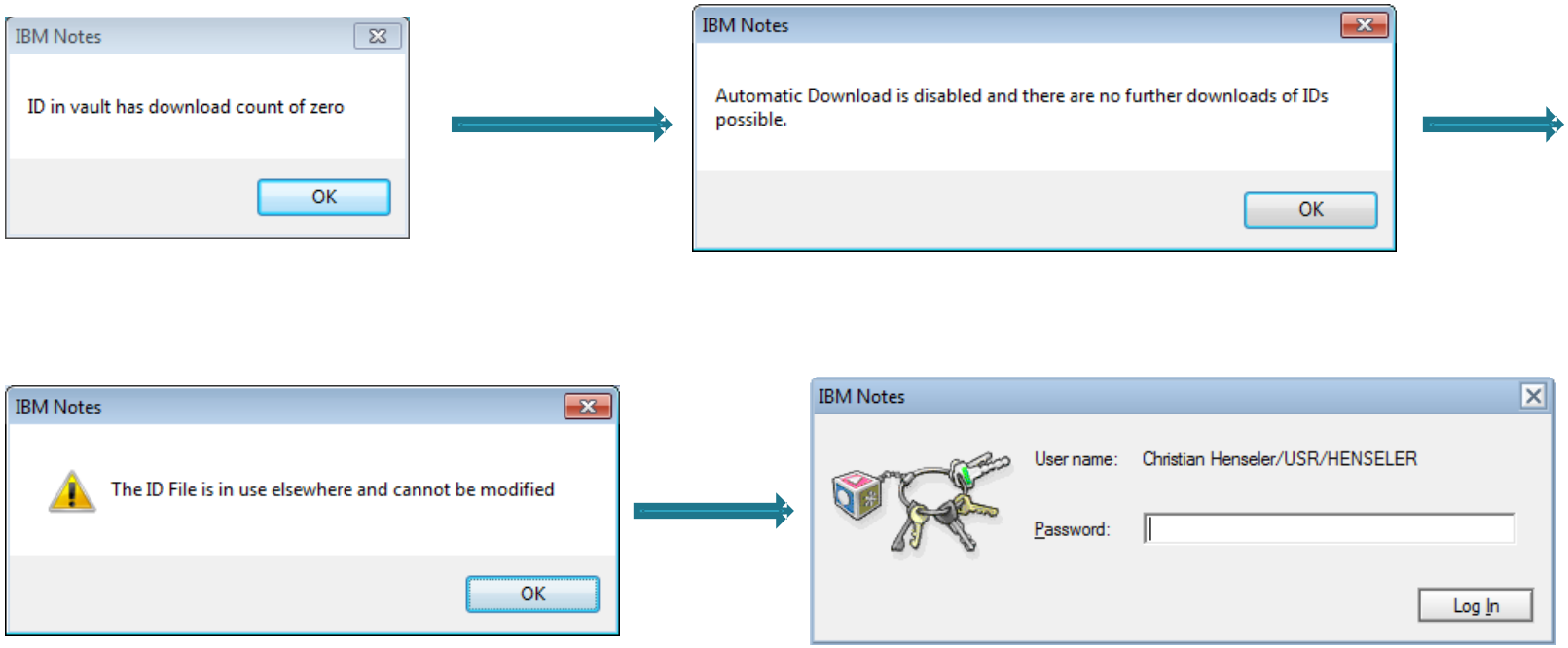
Client side debugging

Java logging with rcpinstall.properties

com.ibm.rcp.internal.security.auth.samlsso.level=FINEST
com.ibm.rcp.internal.security.auth.dialog.level=FINEST
com.ibm.rcp.core.internal.launcher.level=FINEST
com.ibm.notes.internal.federated.manager.level=FINEST
com.ibm.notes.java.api.internal.level=FINEST
com.ibm.notes.java.init.level=FINEST
com.ibm.notes.java.init.win32.level=FINEST
com.ibm.workplace.noteswc.level=FINEST
com.ibm.workplace.internal.notes.security.auth.level=FINEST
com.ibm.workplace.internal.notes.security.level=FINEST

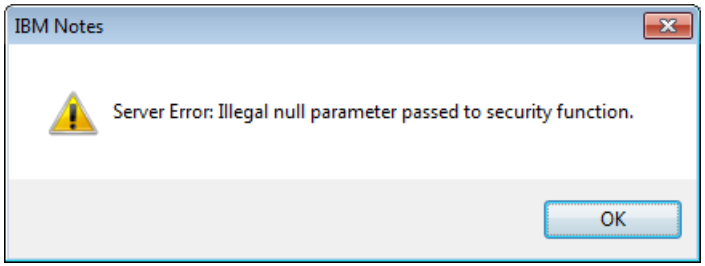
Troubleshooting – NFL Examples

- If ID Vault Automatic download is disabled and Download counter is 0:



Troubleshooting – Examples

- NFL enablement: If idpcat.nsf is not on Vault server:



- Saml configured for server, but no Idpcat.nsf or idp config document:

HTTP Server: Error reading IdP configuration for server :**Entry not found in index**

HTTP Server: SAML configuration error. SAML is enabled for server [], but **no active IdP configuration could be loaded**.

Troubleshooting – Examples

- **Problem when using Create Certificate:**

SECMakeInetSAMLCert> **SAML signing key already exisits** in ID file: **Cannot accept** internet certificate because the certificate is already in the ID file.

- **If the cross certificate is not included in the security settings document for NFL:**

	com.ibm.rcp.internal.security.auth.samlsso.SAMLBrowserHandleSSLCrossCertValidationFailed	CWPST0117E:	Certificate chain of SSL server dc.henseler.org is not trusted.

Wrap Up

SAML-based authentication

- Provides a cross plattform SSO mechanism
- Frees users from managing credentials in Notes
- Reduces administrative costs

You may not use SAML for

- Notebook users (exclude per machine specific policy)
- Administrators (because Ids cannot be extracted from ID Vault)
- Developers

Thank you very much!

Resources

Links

- Supplementary information on Security Assertion Markup Language (SAML) configuration combinations of IBM Domino and other products
- Configuring an IBM Domino Web server to use SAML-based single sign-on (Open Mic)

AdminCamp 2013

- Workshop Track 1 – Session 8: SAML OAUTH and Session sharing (Andrew Pollack)