Electronic Identity

Infraservices – Core Middleware Status in Swedish Higher Education

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Electronic Identity

Swedish Higher Education

- About 15 institutions with a "Faculty of..."
- About 20-25 other higher ed institutions
- Around 350-400k students
  - Around 50% in the 6 biggest universities
- Around 65k personnel

Increased Self-Service and Electronic Workflow

- Two general trends can be observed:
  - there is an increase in Self-Service in our IT Applications
  - non-specialist users are active in electronic workflow
- These trend tends to make all our students and/or all our personnel (non-specialist) users of more and more of our systems
  - Managing some Directory Information
  - Tur och Retur (travel expenses)
  - Ladok på webb (student records)
  - Nya (national student admittance system)
  - Diariet (workflow for formal business)
  - Personal portals
  - eInvoices
  - Salary specifications
  - Reservation of Seminar rooms
- It is accelerating!

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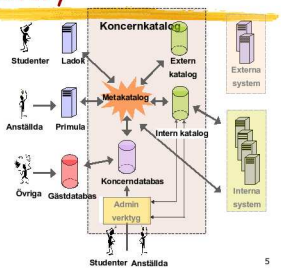
The Components of an AAI

- An Enterprise Directory that supports the other components
  - Principals, Organisational Units and Resources
- An Identity Management System
- An Authentication Service with ...
- At least one Authentication Mechanism
  - User Name/Password
  - PKI Certificates
- A Privilege Management System
  - Information to base authority decisions on
  - Maintained by those with authority to delegate and appoint
- An Authorisation Service
  - Content Access Control and
  - General Authorisation
- (A Network Logon Service)

The components of ONE Enterprise Directory

- Enterprise Information Repository
- Internal and External Access Directories
- Metadirectory
  - Synchronisation tool
- ID & Privilege Management Systems



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Enterprise Directory

- More than a telephone book or an e-mail directory!
- Every person affiliated with the organisation shall be in the directory
  - Present the list to the dean and say: This is my personnel!
- Attributes of relevance for authorisation shall be registered
  - The maintenance shall reflect the delegation of responsibility
  - If for ex authority follows with being a chairman, the assignment of that attribute shall be done by those who appointed her
- A metadirectory synchronises data
- All information in the directory must not be available through an anonymous LDAP-request
  - Question: What attributes shall on what grounds be made available to what application (privacy issue, and organisational security issues)

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Directories - Status

- Most higher ed institutions have some kind of directory
- Not many are enterprise directories (with a metadirectory) though
  - 7? SU, ÖU, LU, LiU, UmU, UU?
  - Several deployment projects – KI, UU, UmU
  - Broader projects often
    - One user account per person
    - ID and Privilege Mgmt
- Schema harmonisation
  - Most are said to use norEdu...

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Authentication Services - Status

- Homegrown, CAS, and Pubcookie (and Kerberos) are used
  - CAS dominates >5 and increases
  - I recommend that A-Select is tested as well as CAS

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Authentication mechanisms - Status

- Username Password is the only one used
- PKI-based is planned as a pilot this year
  - Uppsala
  - Stockholm – initial signon to get a Kerberos ticket

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SwUPKI - Status

- Club – around 8 members
- No person certificates yet
- SwUPKI2 is discussed
  - Self service based
  - More than one root (for different strengths)
- Certificate factory for certificates stored on Smart Cards to reasonable prices -3.5 €/yr

Electronic Identity
Authorisation

- **Authentication** – establishes identity to a certain strength
- **Authorisation** – controls what you may do
  - Policy Control, Access Control
  - Once authenticated, depending on the strength of the authentication and other information you will (not) be authorised to do …
- Authorisation – can be realised as a middleware service
  - Requires a high quality Enterprise directory to be really valuable
  - Can be implemented as a Server or an application Plug-in
- **Note!** - What from a simple application is considered authentication, is from an enterprise perspective an authorisation to use that application!

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Authorisation Service - Status

- Shiboleth – will probably be used for authorisation with content providers
- Spocp
  - Stockholm univ largest users
  - Deployed in UmU but not widely used yet
  - used in Directory deployment at KI and UmU
- Other
  - Uppsala - AKKA

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Network Logon – Status

- Wireless network logon
  - Several use web logon
    - requires access to the network – security risk?
    - Radius
  - 802.1x
- Eduroam
  - .1x
  - not a member but have started preparations

Electronic Identity
Development Projects

- Spocp
  - policy writing tool
  - documentation
- AKKA
  - Katalog och kontoadministrationssystem
- UDS
  - Roland
  - Universal Data Dispenser
  - Meta Directory tool
- GEANT2 jra5
  - AAI, Roaming, Single Signon, Future Technologies

Electronic Identity
Interinstitutional AAIs

- Model for an AAI between organisations
  - Device: Authenticate at home and Authorise at the Resource institution
  - Need a trust fabric – Build an Identity Federation!
    - Federation Document
      - Who gets a user account
      - Harmonised identity information
      - Requirements of ID & Priv Mgmt procedures
      - Minimum Authentication strength
  - Implement Federation Services for AuthN and AuthZ

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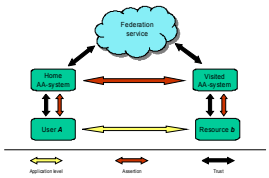
Federated AAI

- Assertions from others must be understood
- Info for Authorisation must be available and understandable to the resource institution
- Requires Schema harmonisation



Electronic Identity
GN2 JRA5

- The AAI to be developed by GN2 JRA5 shall support seamless, and location independent network access to application services and other resources and shall provide authentication and authorisation services to other GN2 activities.

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Assumptions

- Any user U is given an identity by his home institution HI.
- The identities are trusted and valid in a federation.
- The control of the authority to operate on a resource R is decided (or delegated) by an Authorization Service at the institution RI.
- There is a federation service for the delivery of messages to the authentication service of the HI.
- There is a federation aware AAI component that decides whether an authentication request shall be handled locally or by the federation.
- In particular, if U wants to access or operate on resource R, the identity has to be considered valid by the resource owner or service provider in the institution RI.

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Generic Scenario

- U requests that RI shall authorize U to use R.
- If U is not authenticated yet, or if the authn is too weak, RI refers U to HI for authentication.
- When RI can assert that U has been properly authenticated, RI processes and responds to the authorisation request and provides the required access.

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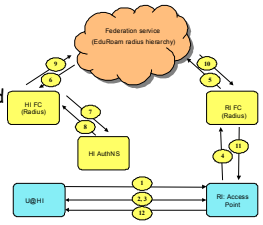
Net Logon in Eduroam

- 1-4 Since U is not authn he is referred to the RI Fed Connector
- 5-10 who uses the fed service to authn U at his HI
- 10-12 tells AP who gives U access to the network



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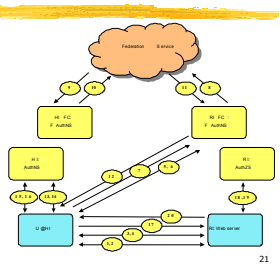
Web Resource Access

- 1-5 Since U is not authn he is redirected to the RI FC
- 6-12 who locates HI AuthN service and redirects U there
- 13-17 U is authn and comes back with an identity assertion
- 18-20 U is authorised to use the web resource and gets access to the resource.



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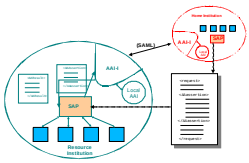
SAP



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Web Service Infrastructure

- We will all be members of several virtual communities and will increasingly expect to be able to use the same authentication credentials in all of them.
- AA model: The resulting infrastructure contains the following services
  - A commonly accepted, federated authentication services
    - Federated - the authentication is done where the user belongs and the result is communicated in a uniform format
  - An authorisation attribute server – enterprise directory
    - Web Services will require "standardised" external attributes – eduPerson as a base
    - I believe Authorisation will use attribute servers
  - Policy based, trusted authorisation services
    - controlled/accepted by the individual web service and vice versa
    - using attribute servers

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Vi måste samarbeta!

- Samma problem hos alla
- Det är först när lösningarna harmonierar vi kan realisera scenarierna
  - Kataloginnehåll
    - hur representeras en identitet
    - hur ser man att en individ tillhör personalen
- Mycket genomgripande förändringar
  - Centralisering
  - Svår teknik
  - Anpassning av applikationerna

Electronic Identity

Vi måste samarbeta! ....

- Nationellt, i Norden, Europa med USA
  - 24h-myndigheten
  - Gnomis
  - GEANT
  - Internet2s middleware initiative
  - Vi har i Sverige och Norge har en stark ställning internationellt
    - SPOCP är tillsammans med ett engelskt auktorisationssystem de som övervägs
    - Internet2 deltar i mötena i europa

Electronic Identity

Cooperation model

- It is a complicated field - we need a sustainable model
- Inner circle of experts that design and recommend an Infraservice Infrastructure Architecture.
- Cooperate with an alliance of higher ed institutions who is focused on deploying an Infraser... whose members
  - is the steering group
  - takes part in projects to reach the common goals
  - provides the alliance with development and deployment personnel
  - contributes to the maintenance of the components of the infrastructure
- Organise the work in projects with partners from the alliance and other higher ed institutions
  - the partners shall be prepared to contribute financially to the projects they participate in
  - results shall be available to higher ed (even internationally -> project documents in english)
- Invite "early adopters" who get support with deployment

Electronic Identity

Authentication & Authorisation Infrastructure

(Middleware = Network Based Infrastructural Services)

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