JA-SIG

Central Authentication Service

Single Sign-on for the Web

Overview

Adam Rybicki

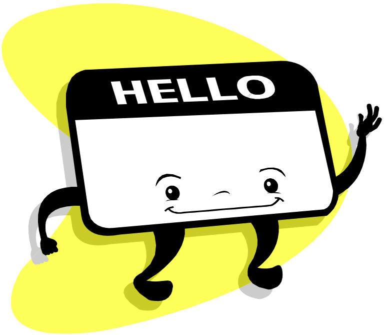
St. Paul, April 28, 2008

Some slides drawn from prior presentations at JA-SIG conferences.

UNICON

Hi. I’m Adam.

- V.P. of Technology at Unicon, Inc.
- Previously CTO at Interactive Business Solutions, Inc. (IBS)



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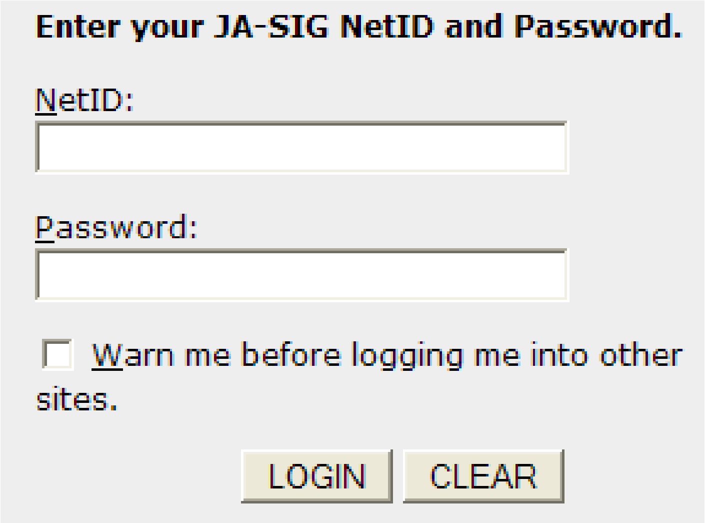
What is CAS?

- CAS is enterprise single-sign-on for the web.
  - Free
  - Open source
  - Server implemented in Java
  - Clients implemented in a plethora of languages



Enter your JA-SIG NetID and Password.

NetID:

Password:

□ Warn me before logging me into other sites.

Adam’s Involvement with CAS

- Got interested.
- Worked with several clients helping them to CASify their applications.
- Asked many questions of the CAS mail list
- Wrote a CAS self-study guide for Unicon developers. (https://confluence.unicon.net/confluence/x/XgZi) (authentication required)
- Answered some questions on the CAS list.
- Currently working with Unicon clients on CAS server implementations.

Some of the people involved as the project has evolved

- Scott Battaglia
- Shawn Bayern
- Susan Bramhall
- Marc-Antoine Garrigue
- Howard Gilbert
- Dmitriy Kopylenko
- Arnaud Lesueur
- Drew Mazurek
- Jan Van der Velpen (Velpi)

Many CAS deployers

- Appian Corporation
- Athabasca University
- Azusa Pacific University
- BCcampus
- California Polytechnic Institute
- California State University, Chico
- Campus Crusade for Christ
- Case Western Reserve University
- Columbia
- Employers Direct
- GET-INT
- Hong Kong University of Science and Technology
- Indiana
- Karlstad University, Sweden
- La Voz de Galicia, Spain
- Memorial University of Newfoundland
- Nagoya University
- NHMCCD
- Northern Arizona University
- Plymouth State University (used with SunGardHE Luminis)
- Roskilde University
- Rutgers, The State University of New Jersey
- SunGard HE Luminis
- Simon Fraser University (Vancouver, B.C.)
- Suffield Academy
- Tollpost Globe AS

… and more

- Universita degli Studi di Parma
- Universite de Bourgogne - France
- Universite de La Rochelle, France
- Universite de Pau et des Pays de l'Adour, France
- University of Nancy 1, France
- Universite Nancy 2, France
- Universite Pantheon Sorbonne
- Universiteit van Amsterdam
- University of Bristol, England
- University of California Merced
- University of California, Riverside
- University of Crete, Greece
- University of Delaware
- University of Geneva
- University of Hawaii
- University of New Mexico
- University of Rennes1
- University of Technology, Sydney
- Uppsala University
- Valtech
- Virginia Tech
- Yale University

- And likely more not well-enumerated…

CAS and Commercial

- CAS is embedded in at least two commercial products
- CAS support is baked into at least one hardware platform (a wireless Internet vending appliance)
- Commercial entities use CAS the their SSO

Reprise: What is CAS?

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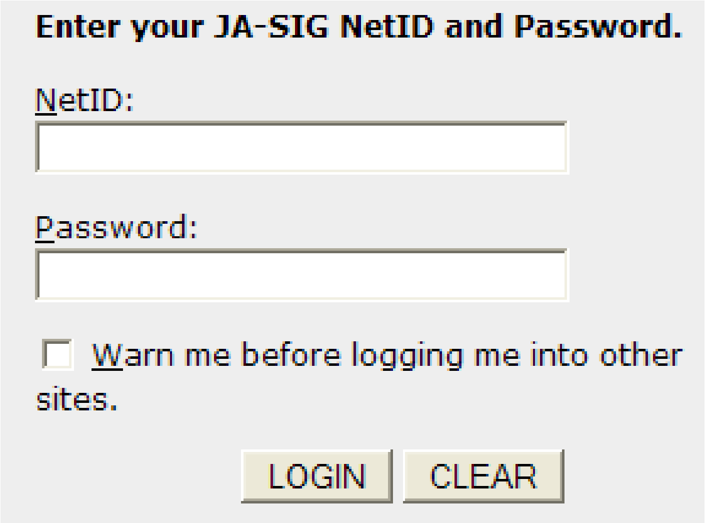

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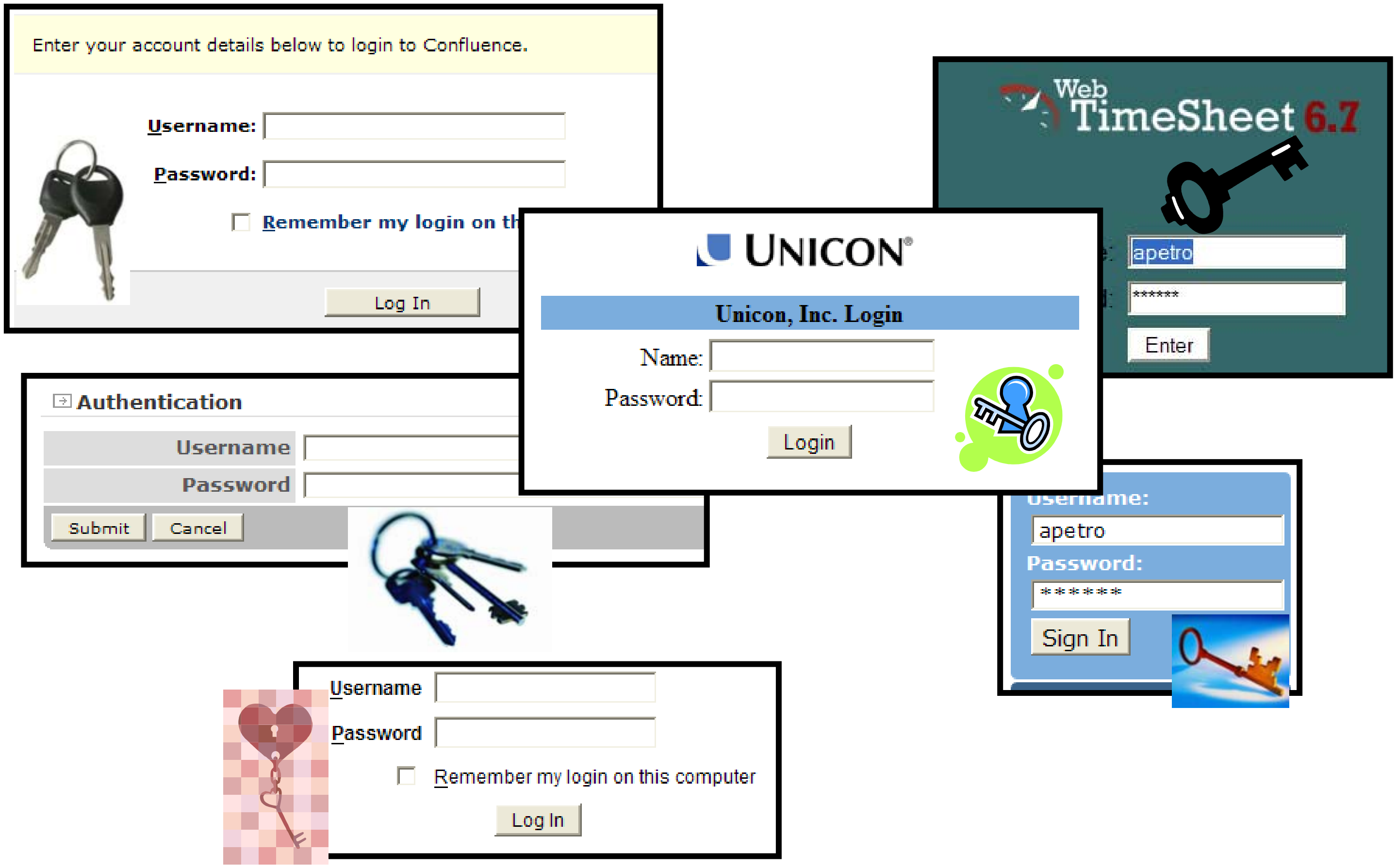
Multi-sign-on for the Web



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□ Remember my login on th

Log In

Web TimeSheet 6.7

e: apetro

d: ******

Enter

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Unicon, Inc. Login

Name:

Password:

Login

Authentication

Username

Password

Submit Cancel

Username:

apetro

Password:

******

Sign In

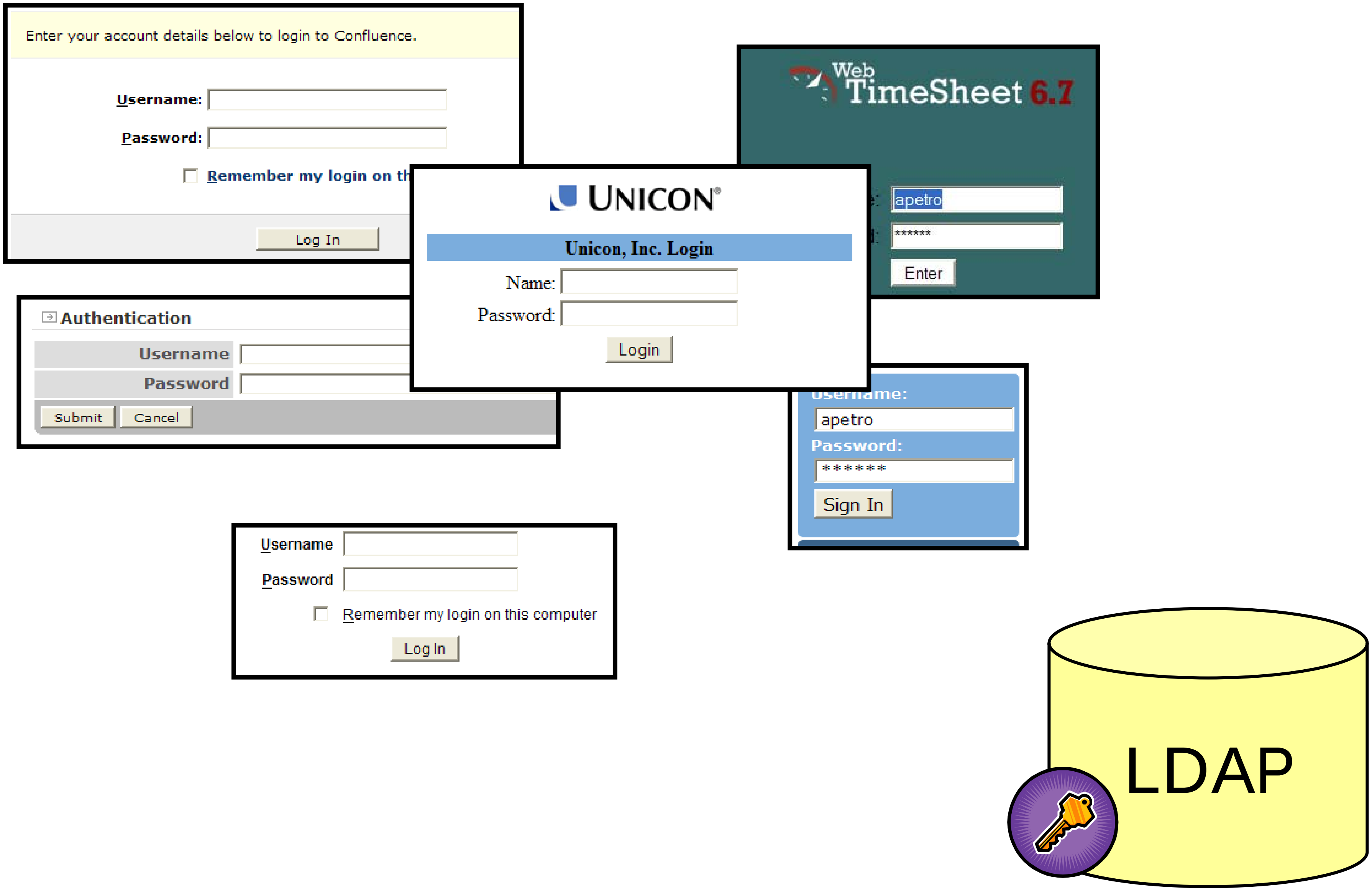
Username

Password

□ Remember my login on this computer

Log In

At least with one username/password?



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Password:

☐ Remember my login on th

Log In

Authentication

Username

Password

Submit Cancel

Username

Password

☐ Remember my login on this computer

Log In

UNICON

Unicon, Inc. Login

Name:

Password:

Login

Web TimeSheet 6.7

e: apetro

d: ******

Enter

Username:

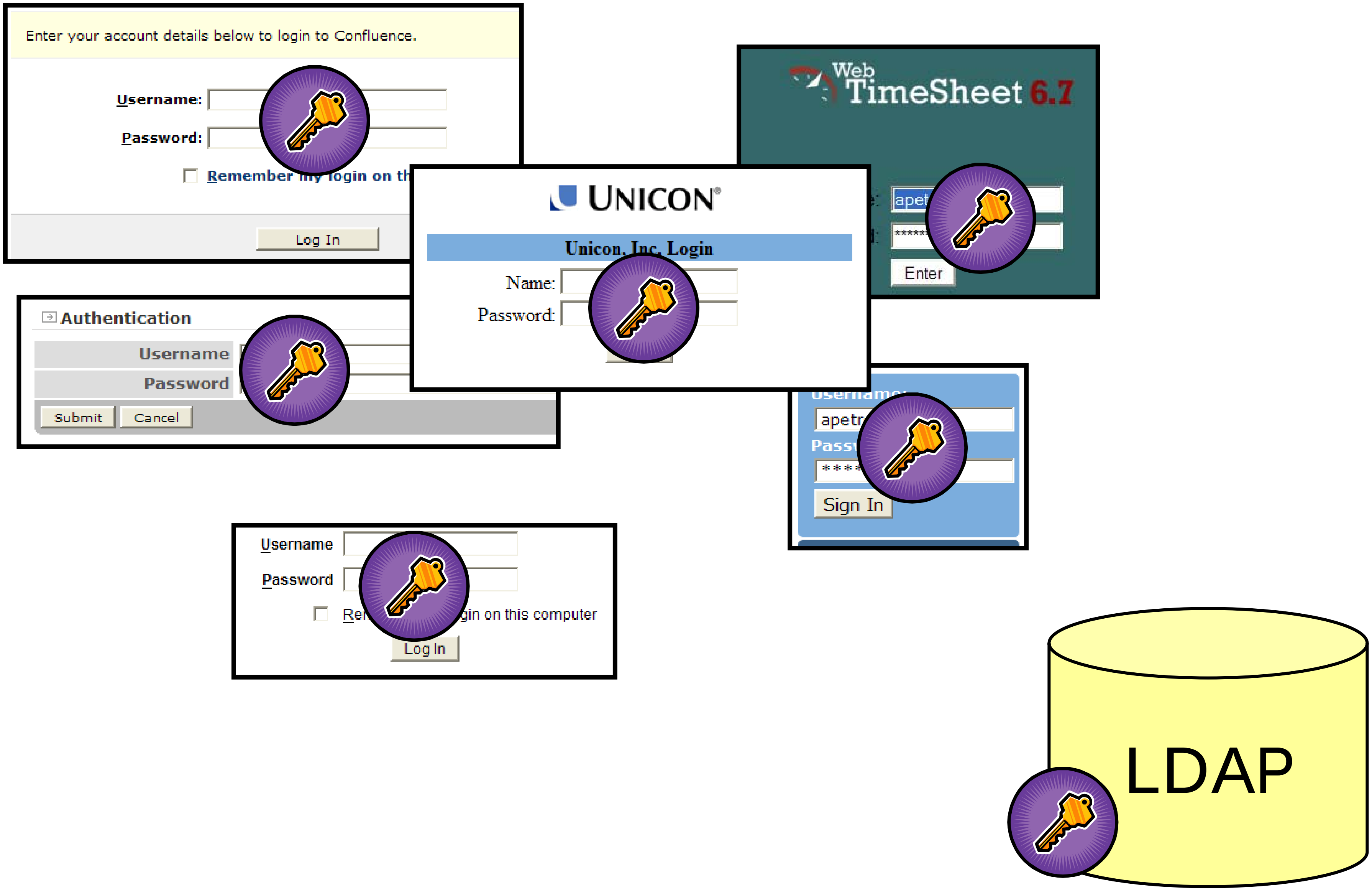
apetro

Password:

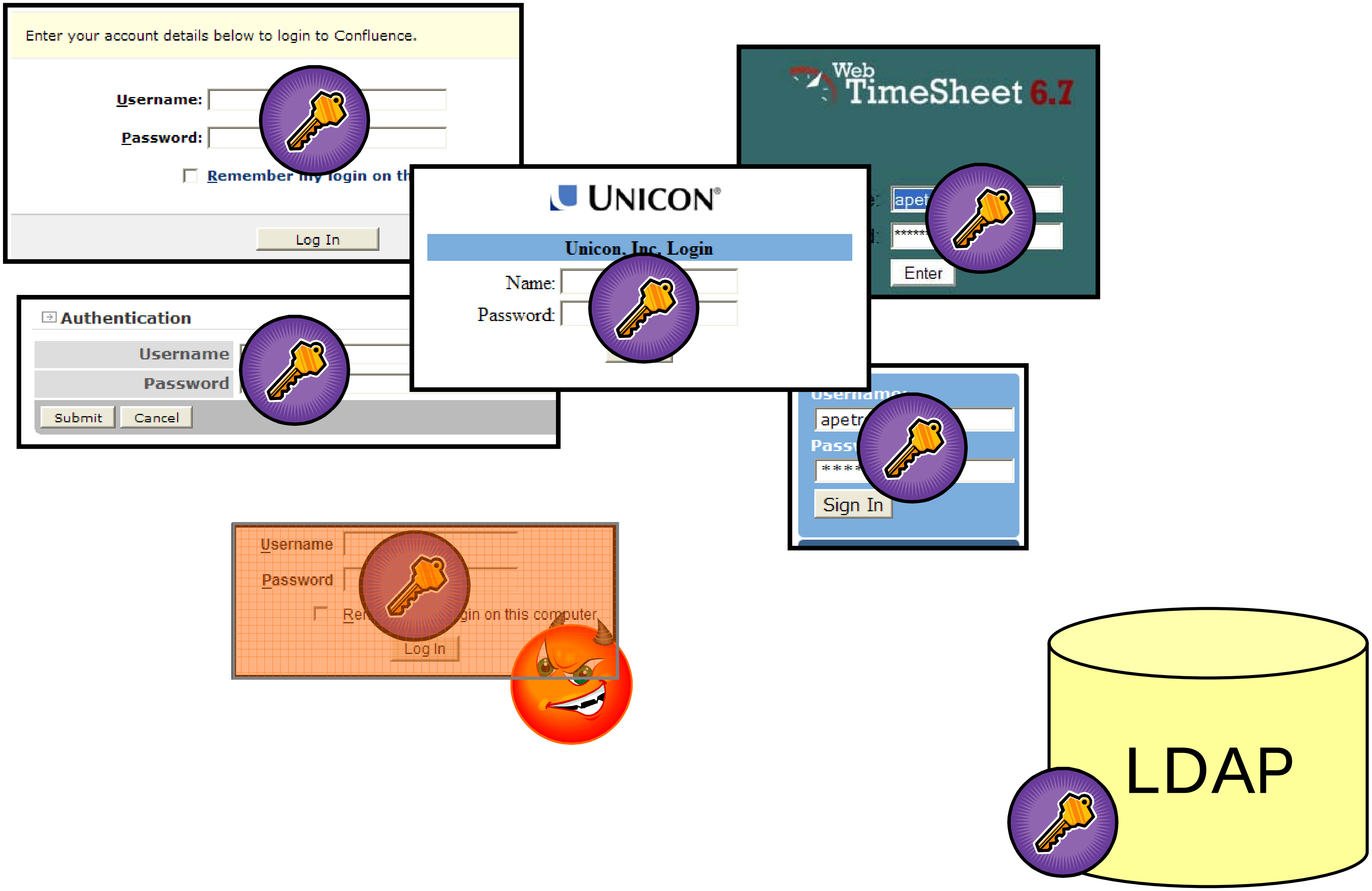
******

Sign In

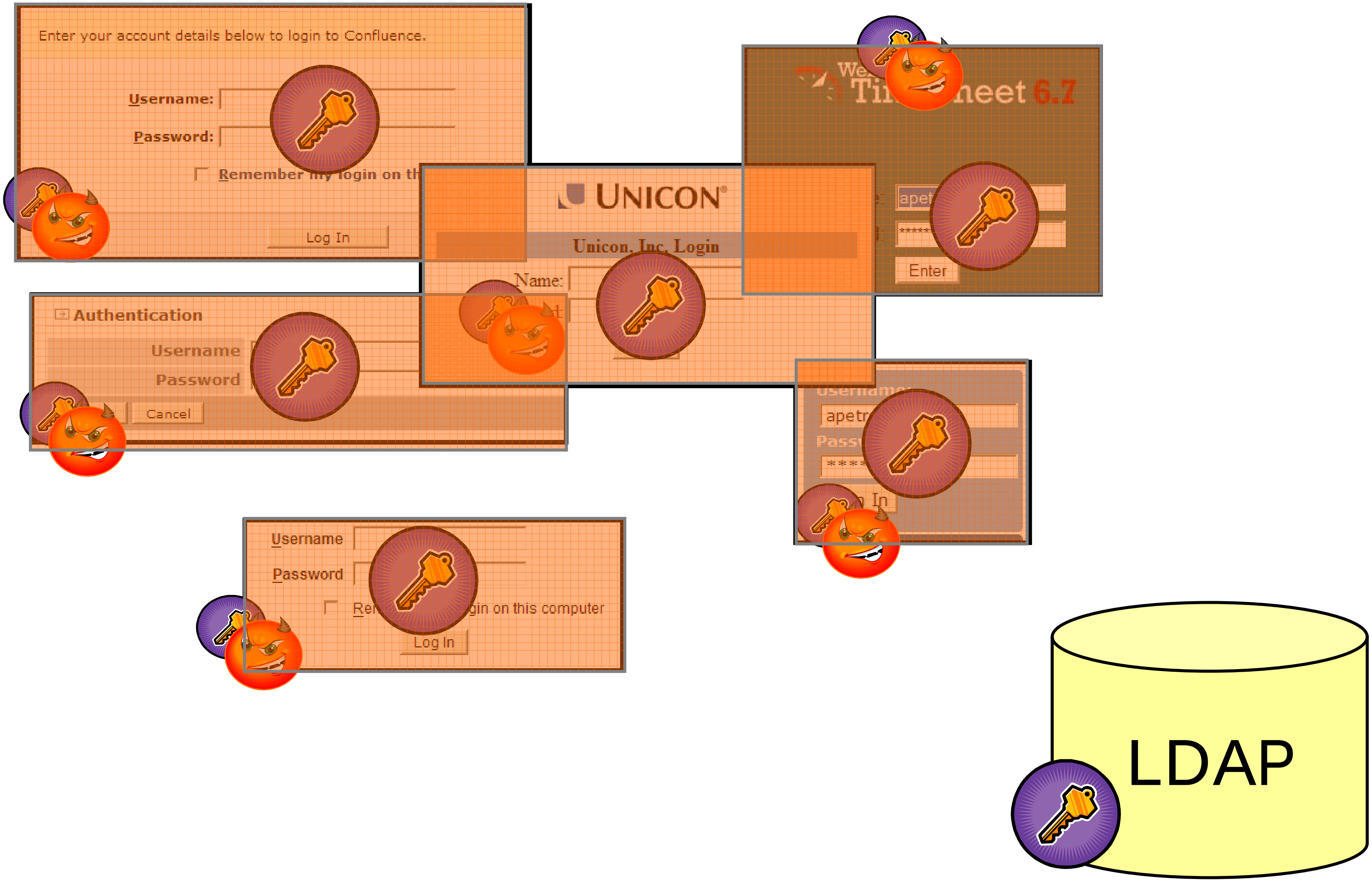
All applications touch passwords



Any compromise leaks primary credentials



Adversary then can run wild



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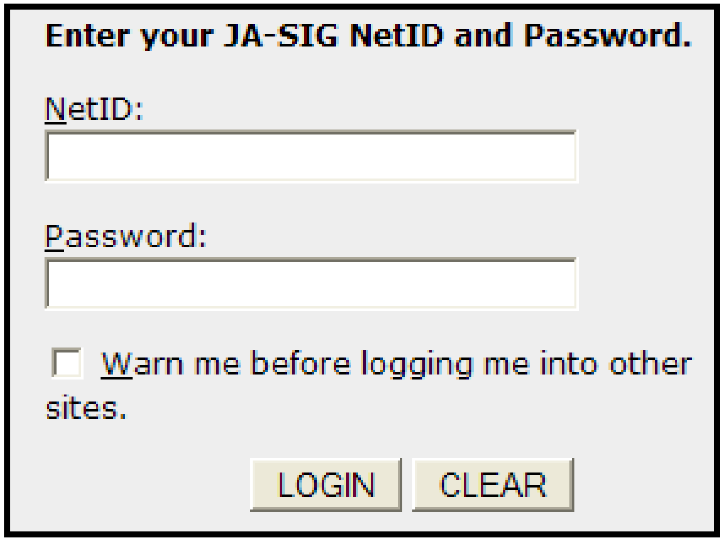
What to do about this?

- What if there were only one login form, only one application trusted to touch primary credentials?



Enter your JA-SIG NetID and Password.

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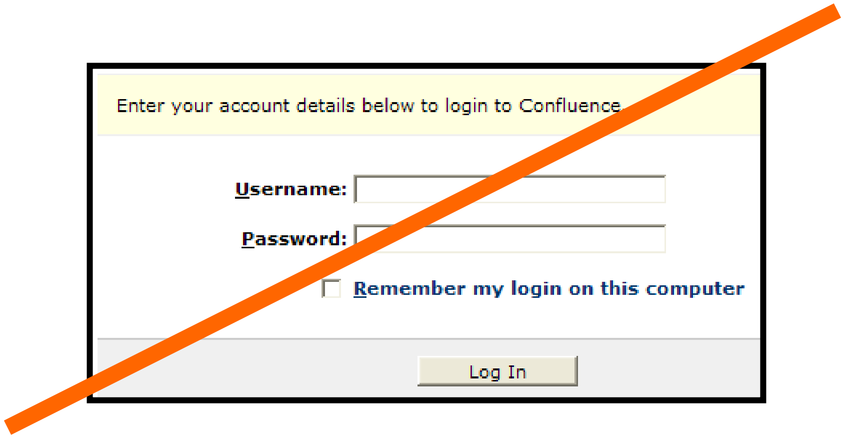
Delete your login forms.



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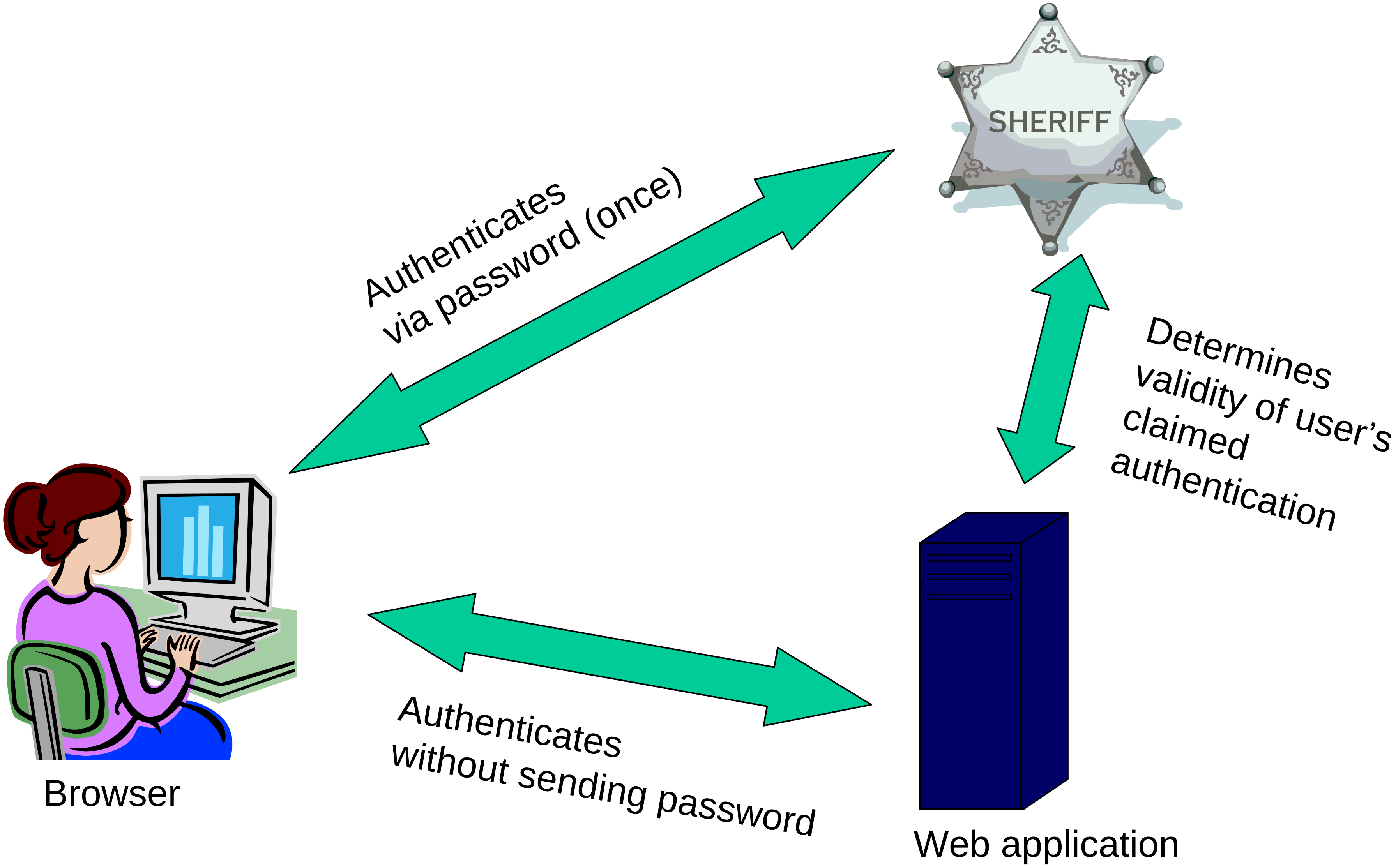
Username:

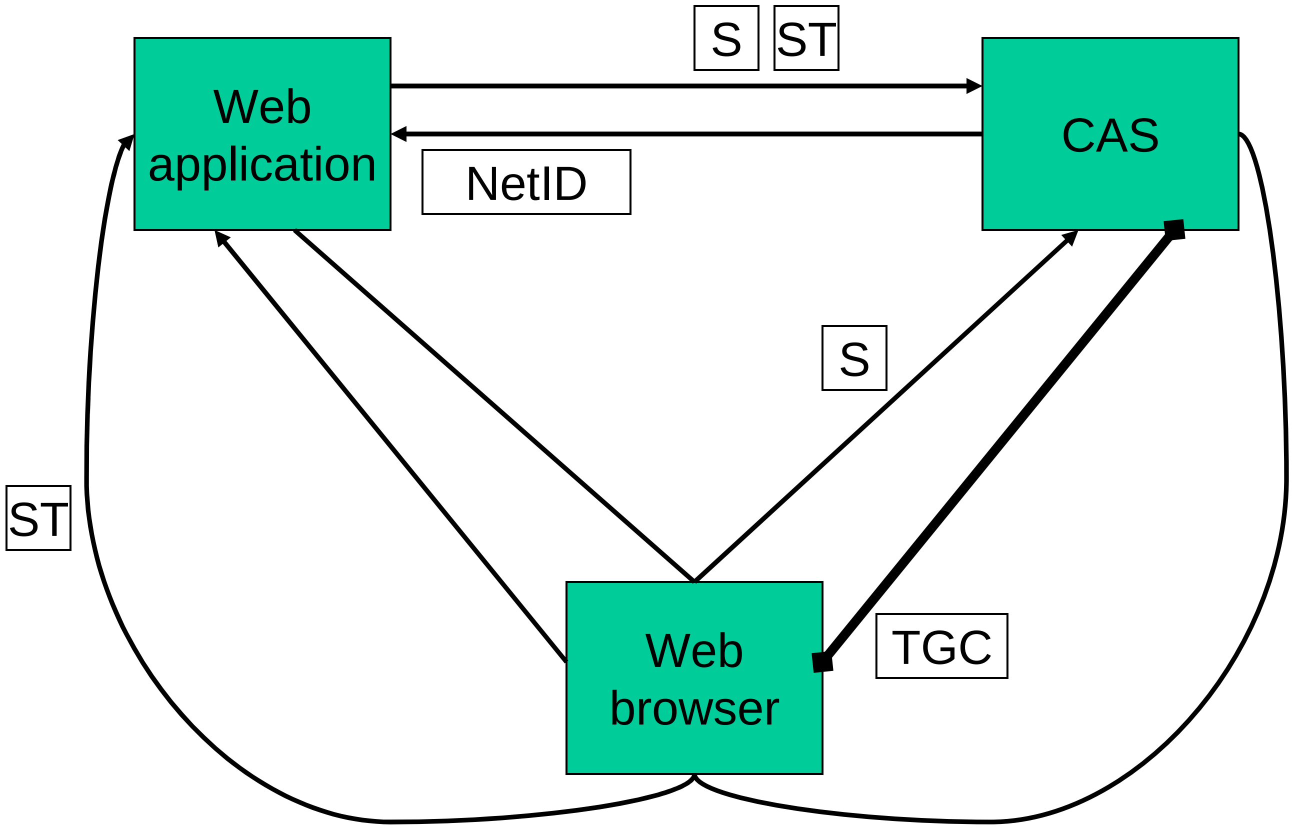
Password:

□ Remember my login on this computer

CAS in a nutshell



How CAS works



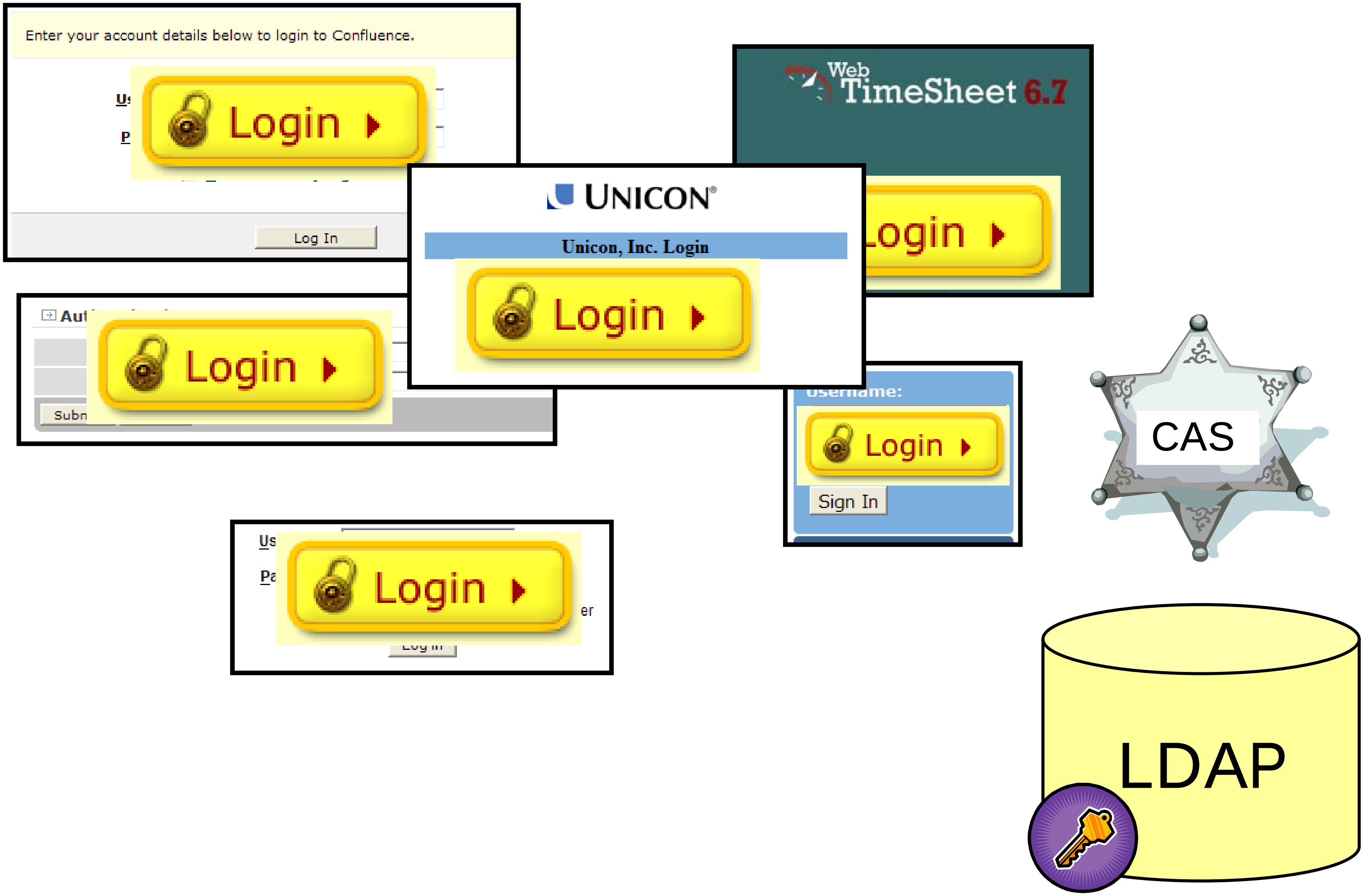
Why must the application present S to CAS on ticket validation?

- Anyone?

Why must the application present S to CAS on ticket validation?

- CAS verifying that you’re validating a ticket for the service you think you’re validating it for prevents illicit proxying of service tickets.

Webapps no longer touch passwords



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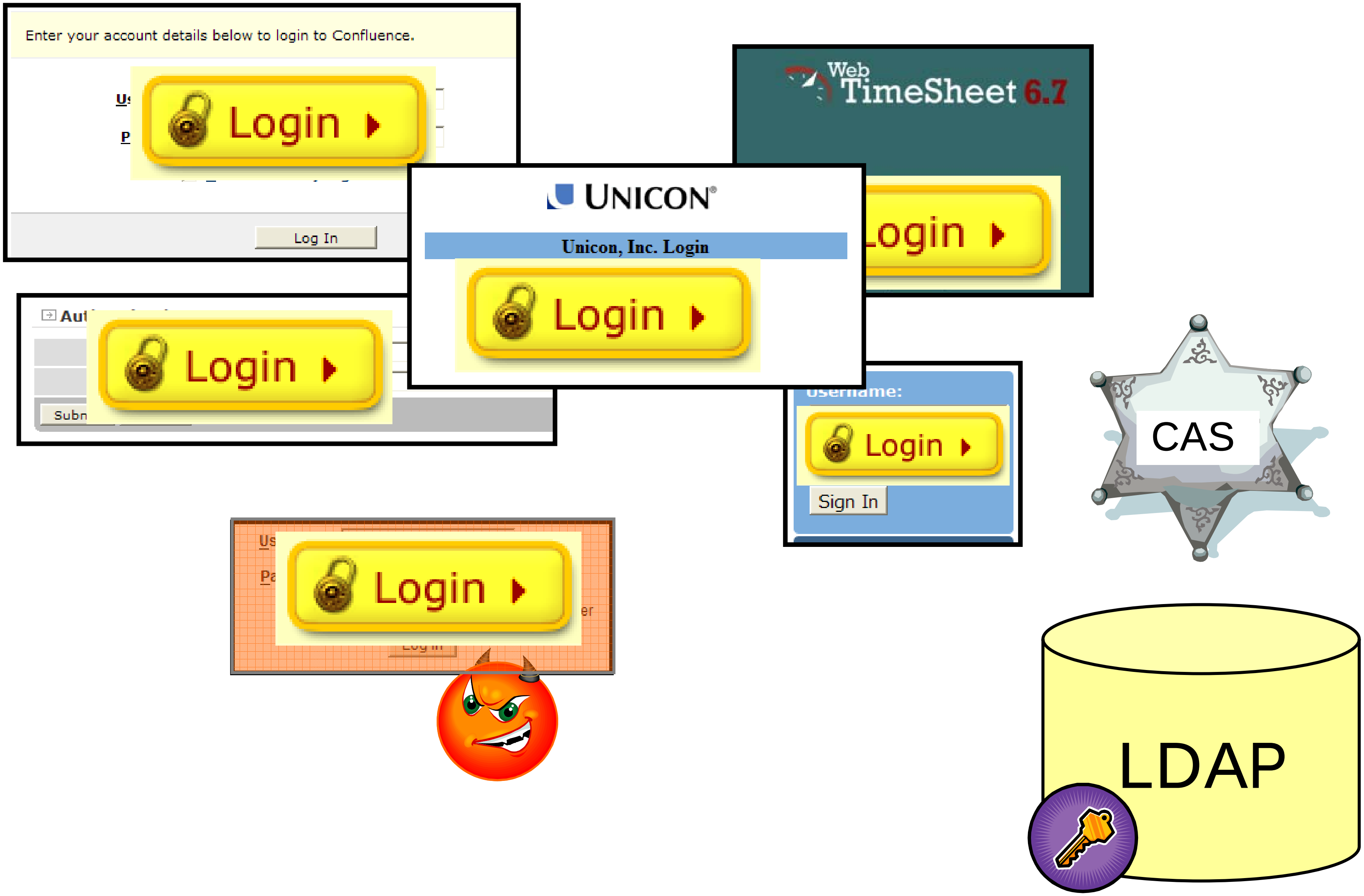
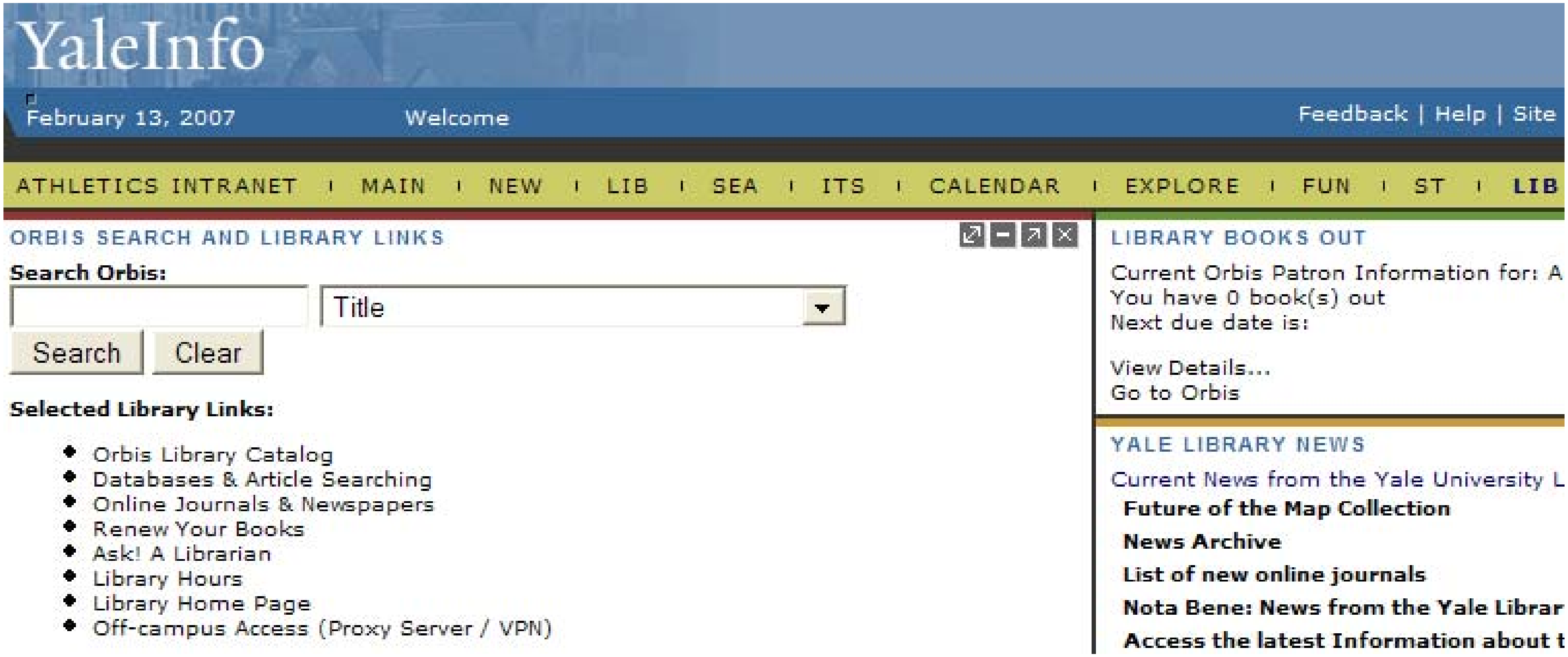
Adversary compromises only single apps



What about portals?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ATHLETICS INTRANET | MAIN | NEW | LIB | SEA | ITS | CALENDAR | EXPLORE | FUN | ST | LIB
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February 13, 2007

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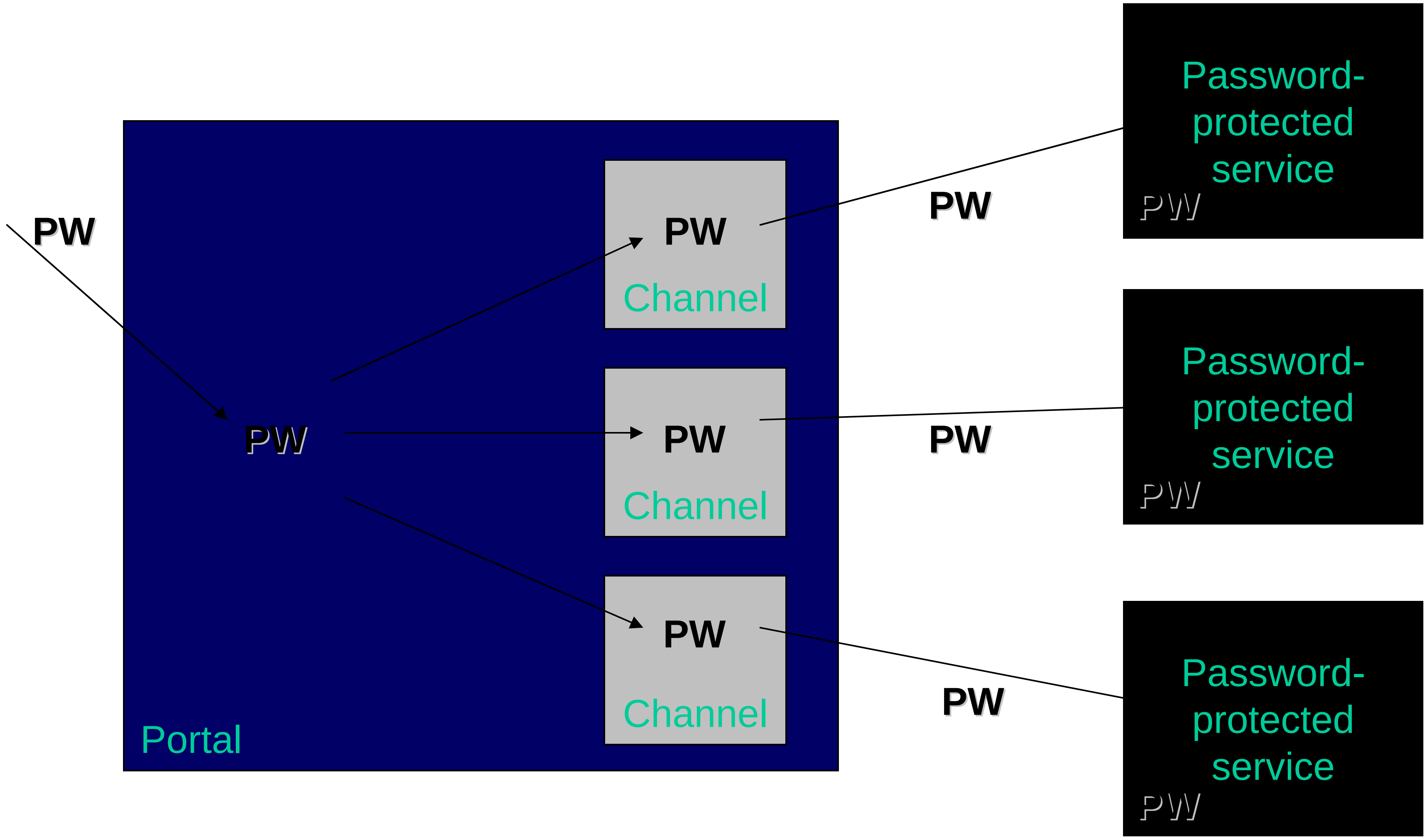
Password replay



PW
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Portal
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Channel
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Channel
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Channel
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PW
Password-protected service
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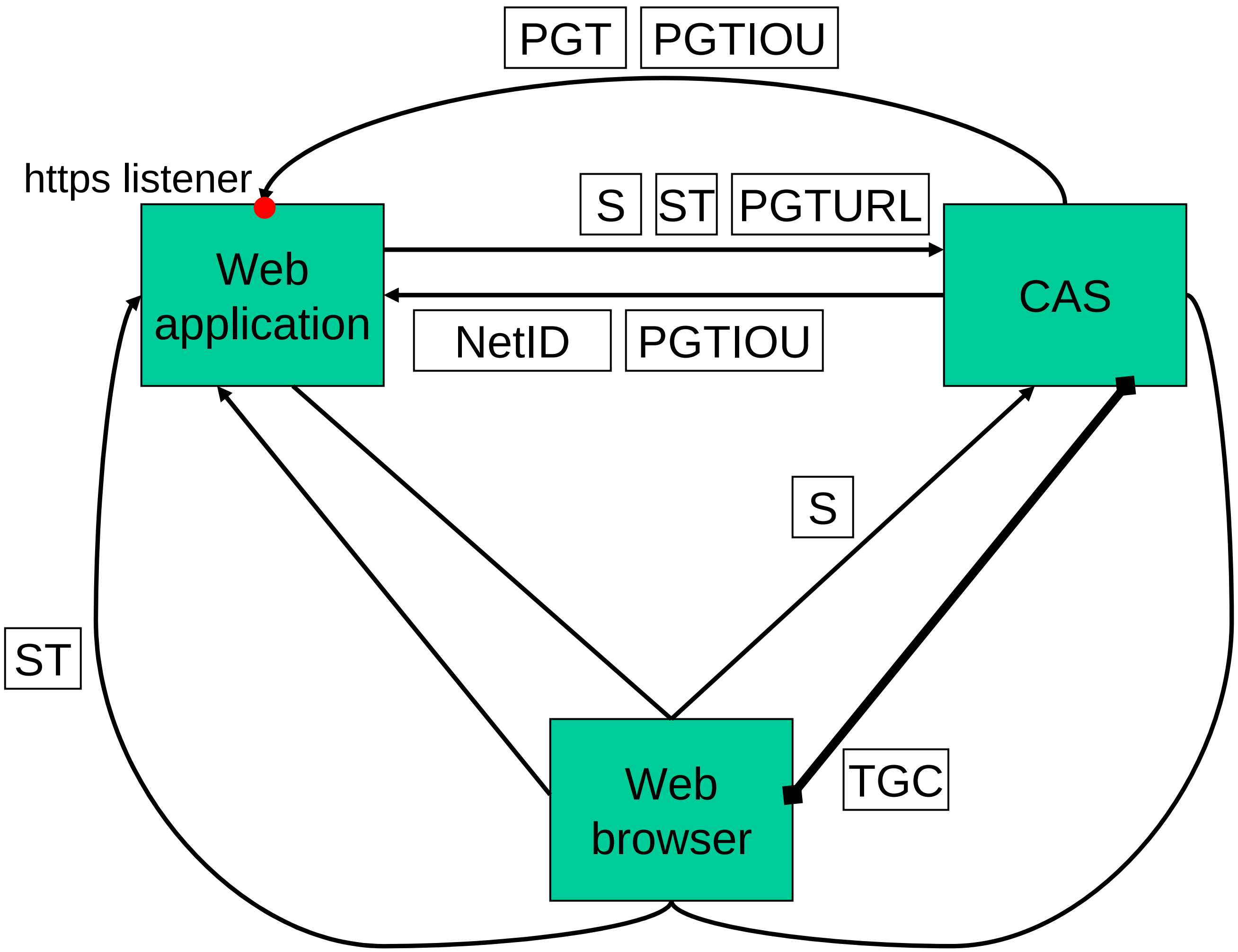
Password-protected service
PW
Password-protected service
PW

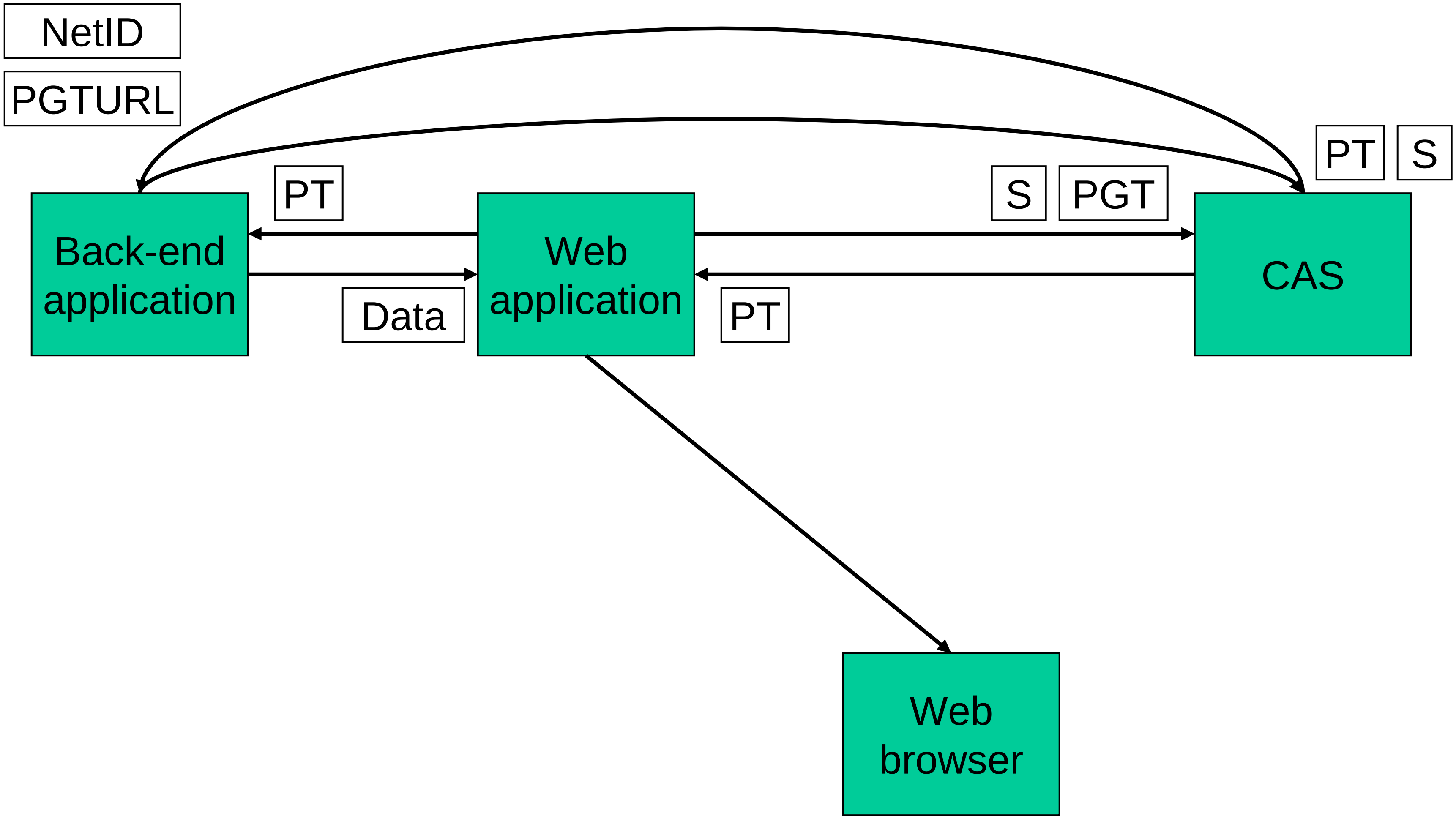
Look ma, no password!

- Without a password to replay, how am I going to authenticate my portal to other applications?

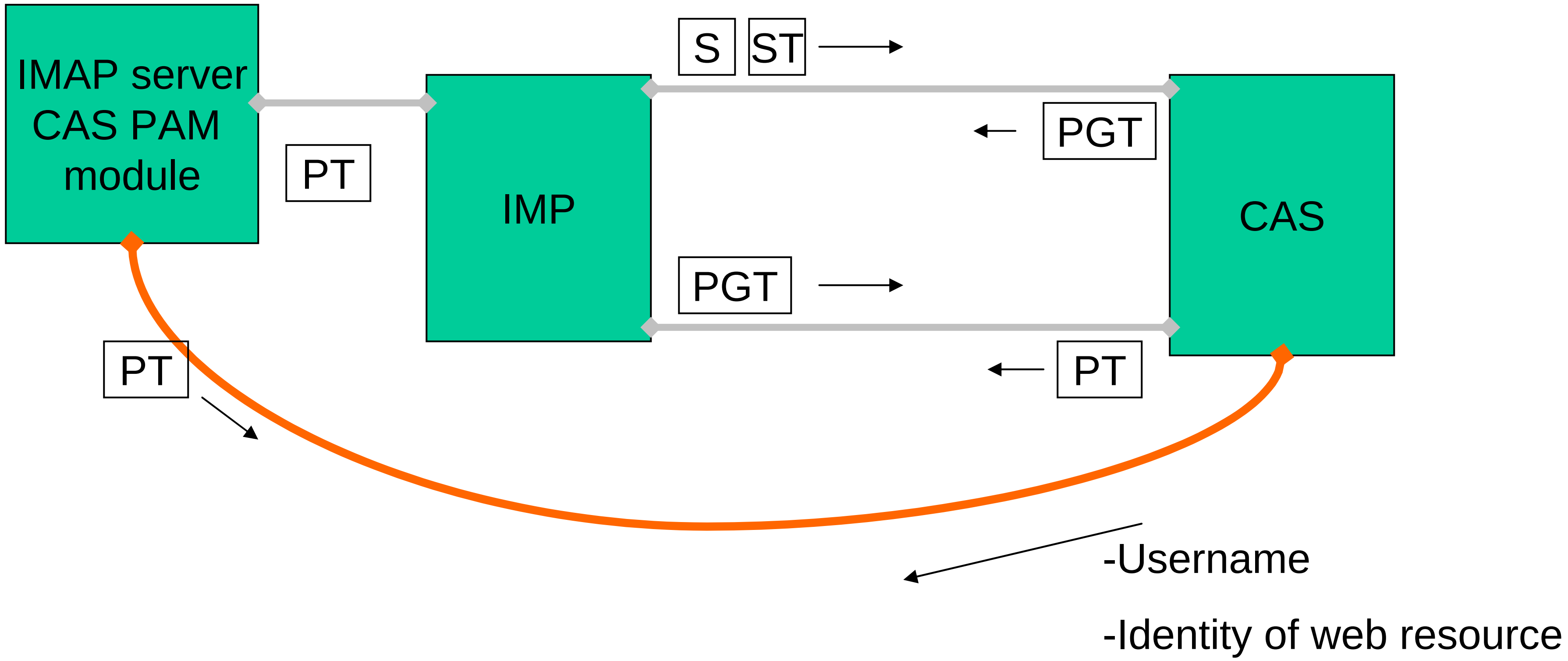
CAS 2.0: Proxy CAS



CAS 2.0: Proxy CAS



Proxiable credentials illustrated



Provided authentication handlers

- LDAP
  - Fast bind
  - Search and bind
- Active Directory
  - LDAP
  - Kerberos (JAAS)
- JAAS
- JDBC
- RADIUS
- SPNEGO
- Trusted
- X.509 certificates
- Writing a custom authentication handler is easy

Today CAS is not only for authentication

- Return attributes of logged on users
- Adding support for standards
  - OpenID
  - SAML
- Single Sing-Out
- Support for clustering
  - Implements distributed ticket registry
  - Requires session replication
  - Must guarantee cross-server ticket uniqueness
- Services management (white listing)
- Remember me

Features under consideration

- Multi-factor authentication
- Expired password integration
- Passing user agent attributes back as user attributes (browser IP, authentication type, CAS language setting)
- Which AuthenticationHandler(s) to use for specific registered service?
- Second-level authentication

Questions?

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