An Instant Messaging Framework for the Virtual University

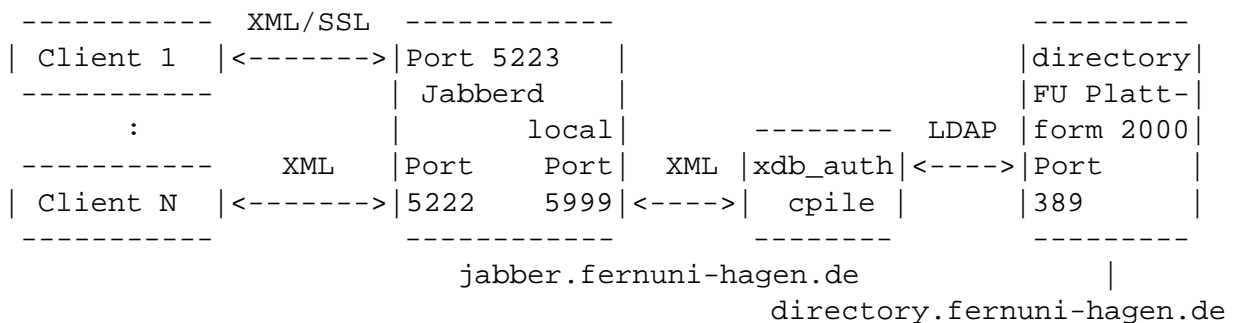Andreas Bischoff, http://prt.fernuni-hagen.de/ bischoff/

A modern virtual university Environment requires communication tools for synchronous events like online workshops and online practice. Computer Supported Collaborative Learning (CSCL) environments for synchronous events are still difficult to handle. For synchronous communication like audio- or video-conferencing open TCP- or UDP-ports are required. Especially upcoming limitations of Internet access like firewalls and NAT-routers increase the need of backup solutions for synchronous events.

To provide communication facilities to a group of students, and as a backup strategy for synchronous communication we use Jabber [1] based Instant Messaging (IM) Server and Clients. Instant Messaging is a very reliable tool to support the users because if technical difficulties arise, in the case of modem-users the only communication channel is occupied by the Internet connection. Particularly with regard to user awareness the "'presence"'-feature of Instant Messaging Clients is very important and useful. If a user lost the connection to the Internet during a synchronous event the tutor will be informed in real-time. Jabber itself is a XML-based open source protocol for Instant Messaging services. Jabber-based software is used by over a million of users worldwide. The protocol is maintained by the Jabber Software Foundation.

Figure 1: Jabber Client MirandaIM

Advantages of Jabber over conventional commercial Instant Messaging Services are interoperability with existing IM-services, a XML-based open source protocol and an easy way to adapt the server to existing services. Robust and secure clients for mostly all operating system and mobile devices like PDA's and cellular phones are available. We have realised a Jabber based Instant Messaging service which is interoperable with the virtual university environment of the university of Hagen [2]. We use the C++ based open source Jabberd with an additional xdb_auth/check module [3] to provide a connection to the existing LDAP-directory service at the University of Hagen. This modification is very convenient for the users because no extra passwords and administrational effort is necessary[4].

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 -----------   XML/SSL  ------------                          ---------
| Client 1  |<------->|Port 5223   |                        |directory|
 -----------          | Jabberd    |                        |FU Platt-|
      :               |       local|          --------  LDAP |form 2000|
 -----------    XML    |Port    Port|   XML  |xdb_auth|<---->|Port     |
| Client N  |<------->|5222    5999|<---->|  cpile |       |389      |
 -----------           ------------          --------        ---------
                  jabber.fernuni-hagen.de                       |
                                            directory.fernuni-hagen.de
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[1] http://www.jabber.org/

[2] http://vu.fernuni-hagen.de/

[3] http://www.snoogans.co.uk/jabber/index.htm#xdb_auth_cpile

[4] http://prt.fernuni-hagen.de/pro/InstantMessaging/