



SmartServer XMPP Client Developer's Guide



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# Preface

You can use the Extensible Messaging and Presence Protocol (XMPP) to enable communication between SmartServers and client applications that reside behind restrictive firewalls.

## Purpose

This document describes how to use XMPP to enable the SmartServer and client applications to communicate bi-directionally when they are located behind firewalls.

## Audience

This guide is intended for application developers creating SmartServer applications that run remotely from the SmartServer, and that communicate with the SmartServer using SOAP over XMPP.

## Requirements

Requirements for implementing a full XMPP solution are listed below:

- SmartServer 2.0 SP1 (Release 4.04.088) or newer.
- XMPP server. This document uses an ejabberd XMPP server, which is required if your SmartServer's firmware version is 4.04.088. You can use any XMPP compliant server if your SmartServer's firmware version is 4.04.119 or newer.
- XMPP client application. This document is for software developers creating the XMPP client application. The examples in this document use the Pidgin messaging client to demonstrate an XMPP client application.

## For More Information and Technical Support

If you have technical questions that are not answered by this document, you can contact technical support. Free e-mail support is available or you can purchase phone support from Echelon or an Echelon support partner. See *www.echelon.com/support* for more information on Echelon support and training services.

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Other Regions	English Japanese	Phone: +1.408-938-5200 Fax: +1.408-328-3801 lonsupport@echelon.com

# Using SmartServer XMPP

This chapter summarizes how the SmartServer and client applications can exchange data using XMPP.

## Introduction

You can use the Extensible Messaging and Presence Protocol (XMPP) to enable SmartServers and client applications to exchange data when firewalls prevent bi-directional communication. XMPP is an open technology for real-time communication that provides a decentralized client-server architecture. XMPP facilitates simple client-to-client communication where clients may reside behind different firewalls, which are typically configured to allow outgoing connections, but block incoming connections. With XMPP, SmartServers and client applications function as clients to a shared XMPP server. In this case, the client-XMPP connections are outgoing and therefore allowed by firewalls—without opening any ports or creating any special firewall configurations.

The SmartServer includes a built-in XMPP client that enables it communicate bi-directionally with a client application. Client applications for the SmartServer are typically enterprise applications such as energy management, demand response, or supervisory control applications. Both the SmartServer and the client application may be behind different firewalls, and the firewalls only need to support outbound access to the XMPP server. The XMPP server may be on the same server as the client site, or it may be running on a separate server either at the same location or at a remote site. The following figure illustrates a typical system using a SmartServer with XMPP to communicate with an XMPP-enabled client application at a network operations center (NOC).



## Supported XMPP Protocol and Extensions

XMPP is defined by base protocol and a number of optional protocol extensions for supporting different types of clients and applications. The base protocol and the extensions supported by the SmartServer are defined at the following locations:

- *xmpp.org/xmpp-protocols/xmpp-core/*
- xmpp.org/protocols/
- xmpp.org/extensions/xep-0124.html
- xmpp.org/extensions/xep-0206.html
- xmpp.org/extensions/xep-0072.html
- xmpp.org/extensions/xep-0060.html

Additional XMPP extensions are listed at the following location:

• xmpp.org/xmpp-protocols/xmpp-extensions/

The SmartServer supports the following XMPP extensions:

Bidirectional-streams Over Synchronous HTTP (BOSH, XEP-0124)	Specifies how a binary stream of data can be carried on the HTTP protocol. XMPP uses a connection method that does not require a client to maintain a long-lived TCP connection.		
	BOSH emulates a bidirectional streams that are similar to TCP binding, but implemented efficiently using multiple, synchronous HTTP or HTTPS request/response pairs.		
XMPP over BOSH (XEP- 0206)	Specifies how XMPP can be implemented over a BOSH connection.		
SOAP over XMPP (XEP- 0072)	Specifies how SOAP messaging can be performed over XMPP. The SmartServer uses SOAP for communicating with client applications.		

#### BOSH

BOSH is used by both the SmartServer and client applications to exchange data. BOSH-based systems are usually deployed with a special *connection manager* that acts as a proxy between a client and the XMPP Server. If a client resides behind a restrictive firewall, it has to be configured to use a BOSH connection manager. The BOSH connection manager may be implemented on the same server with the XMPP server, and many XMPP server implementations include an embedded BOSH connection manager.

The client starts an XMPP session with the XMPP server by sending an initial HTTP or HTTPS request to the BOSH connection manager. The BOSH connection manager then opens a regular XMPP connection to the XMPP server, forwards the request, and receives an XMPP reply, which it forwards to the client in an HTTP or HTTPS response. The client then authenticates with the XMPP server. After the client has successfully authenticated with the XMPP server, it is ready for communication.

During the client's initial request, BOSH properties are used to drive the communication with the BOSH connection manager, including the number of HTTP connections to use and a request timeout. The value of the timeout property is determined by the client. When the client does not send or receive any XMPP message for longer than the timeout period, the BOSH connection manager sends keep-alive messages to the client if the timeout period is about to expire. If the client does not have anything to send to the XMPP server, then the client also sends a keep-alive message with the defined timeout. The client and the BOSH connection manager keep sending these keep-alive messages every timeout interval until either the BOSH connection manager receives data for the client and returns it in the response's body, or the client sends new data within the request's body.

#### Addressing

Each XMPP client (SmartServer or client application) requires a unique address, called a Jabber ID (JID), which has the following format: [*<userName>*]@*<hostname>/*[*<resource>=*]. The following table describes each components of the JID:

userName	Identifies a user name registered with the XMPP server. XMPP clients can use the user name of any user configured on the XMPP server. For SmartServer clients, you can use the MAC IDs as the <i>userName</i> to distinguish multiple SmartServer clients more easily.
hostname	The hostname of the XMPP server. This may be the same as the domain name of the XMPP server host, or it may be a different name specified in the XMPP server configuration.
resource	Identifies a specific client belonging to the user (for example

home, work, or mobile). This property enables a user to log in from multiple locations. This property may be included in the JID by appending a slash followed by the name of the resource. For example, the full JID of a user's mobile account would be *username@example.com/mobile*.

For a SmartServer client, you can append "/ilon" to identify the XMPP client as a SmartServer more easily.

For example, a JID for a SmartServer with a MAC ID of **08-00-00-1A-7C-62** that uses an XMPP server with a hostname of **myDomain.com** would be **08-00-00-1A-7C-62** (myDomain.com/ilon. Client applications may use any JID, as long as they are unique for each client and share the same hostname.

## **Creating an XMPP Solution**

Enabling the SmartServer and client applications to exchange data using XMPP entails the following steps, which are described in the subsequent chapters:

- 1. Configuring an XMPP server.
- 2. Configuring the SmartServer as an XMPP client.
- 3. Developing a client application.
- 4. Adding user accounts to the XMPP server for the SmartServers and client applications.
- 5. Exchanging data between the SmartServer and client application over XMPP.

#### Step 1: Configuring an XMPP Server

You need to configure an XMPP server to facilitate bi-directional client-to-client communication between SmartServers and client applications. You can use any XMPP server that supports BOSH. For a list of available XMPP servers, go to *xmpp.org/xmpp-software/servers/*. Echelon has tested the SmartServer XMPP support using the ejabberd XMPP server, which includes a BOSH connection manager that is enabled by default.

To download, install, and configure the XMPP Server, follow these steps:

 Download the ejabberd XMPP server from www.ejabberd.im/ (community Web site), www.process-one.net/en/ejabberd/ (commercial Web site), or http://www.processone.net/en/blogs/ (blogs).



- 2. Install the ejabberd Server following these steps:
  - a. Follow the instructions in the Setup wizard to install the ejabberd Server.
  - b. In the ejabberd Server domain window, accept the default, which is the name of your computer.



**Tip**: You will need to enter the information you specify in the installer on multiple occasions; therefore, open a text editor, and then copy and paste the ejabberd server domain and the administrator password that you will enter in step d.

c. The installer creates an administrator user account. Accept the default "admin" user name, or enter a different name (do not enter spaces).

🖍 Setup	
Administrator username	<u></u>
Please enter the administrator username for the current ejabberd insta be created and granted administrative privileges. Don't use blankspace	llation. A Jabber account with this username will s in the username.
Administrator username admin	
BitRock Installer	
(	< Back Next > Cancel

d. Enter a password for the administrator that is at least five characters, and then confirm it.

🔓 Setup		
Administrator passw	ord	<u></u>
Please provide a passwor	d for the administrator user (at least 5 characters).	
Administrator password	****	
Retype password	*****	
BitRock Installer		
	< Back Next >	Cancel

- e. Complete the ejabberd Setup wizard. The installation may take up to five minutes depending on your system.
- 3. Start the ejabberd Server following these steps:
  - a. Click Start, point to Programs, point to ProcessOne, and then click Start ejabberd.
  - b. A Command prompt opens stating that ejabberd is starting.



c. The Command prompt closes automatically after approximately 40 seconds, the ejabberd Server starts, and then a Web page opens automatically informing you that the ejabberd Server has started. The Start Web page includes the user name for logging in to the ejabberd Server.



d. Click the **admin interface** link.

**Note**: The admin interface uses port 5280 to access the ejabberd server; therefore, verify that this port is open on your computer.

e. Enter the administrator user name and password in the login dialog that opens. The default user name is "admin@<*computerName*>". If you forget the name of your computer, you can copy it from the ejabberd Start Web page.

Connect to loca	alhost 🛛 🛛 🛛 🛛			
	EF			
The server localhi requires a userna Warning: This ser password be sent without a secure	ost at auth error, retry login to ejabberd me and password. ver is requesting that your username and : in an insecure manner (basic authentication connection).			
User name:	😰 admin@jduvalgx620 🛛 👻			
Password:	•••••			
Remember my password				
	OK Cancel			

4. The ejabberd Web Admin Web page opens.



## Step 2: Configuring the SmartServer XMPP Client

You can setup a SmartServer as an XMPP client that can be accessed by one or more remote clients. Remote clients include client applications and other SmartServers. Each remote client can communicate with one or more SmartServers using SOAP over XMPP; therefore, the XMPP solution can be used to facilitate communication between a single SmartServer and client application, or many SmartServers and many client applications.

You can configure the SmartServer XMPP client using either the SmartServer's built-in Web pages or a SOAP application. To setup a SmartServer as an XMPP client using the built-in Web pages, follow these steps:

- 1. Enable XMPP support on the SmartServer following these steps:
  - a. Enter the following URL in a Web browser: http://[SmartServerIpAddress]/user/echelon/index.htm?elon\_enable\_message\_service=true
     where SmartServerIpAddress is the IP address or hostname of your SmartServer
  - b. Enter your log in credentials. The SmartServer Web interface opens with the **Welcome** Web page.

🖉 i.LON SmartServer - Windows	Internet Explorer					- 7 🛛
COO - Attp://10.2.125.12/0	user/echelon/index.htm?eld	on_enable_message_service=tru	e	💽 😏 🗙 🚼 Google		P -
File Edit View Favorites Tool	s Help					
🔶 Favorites 🖉 i.LON SmartServer						
<i>i</i> .LON SmartSe	erver			PO	WERED BY <b>ECHELON</b>	
	SETUP	VIEW	SETTINGS	HELP	LOG OFF	
Submit Back	r nain.com	Welcome	ome			
		This web site pro LONWORKS netwo an i.LON SmartSc For more inform. family of product software update: http://www.eche	vides access to a rk. It is hosted by rver. ation on the i.LON s, including t, please visit aton.com/ilon			
© 2010 Echelon Corporation	7			i.LON SmartS	erver Embedded Software \	/ersion 4.04.119

- 2. Add the XMPP server as a host device to the SmartServer following these steps:
  - a. In the navigation pane on the left side of the SmartServer Web interface, right-click the LAN entry, point to Add Host, and then click Server on the shortcut menu.

	Navi	gate
	General	O Driver
∃ słs	LAN	
в	💭 🛔 Add Host	📕 Server (LNS, Email, Time, IP-852, WebTarget)
	Remote Acc Met	💷 i.LON SmartServer
+	lah my mailserver	.my domain.com

b. The **Setup – Host** Web page opens and a host entry for the XMPP server is added to the navigation pane.

Setup - Host				
Back				
Navigate	IP or Hostname			
	0.0.0			
<ul> <li>■ IAN</li> <li>■ I I I I I I I I I I I I I I I I I I I</li></ul>	O LNS Proxy O Host			
🗉 🎼 Net	Host Property Value			
<u>My mailserver.my domain.com</u> <u>0.0.0.0</u>	Use Connection Timeout Seconds			

c. In the **IP or Hostname** box, enter the IP address or hostname of your XMPP server, and then click **Submit**. The name of the XMPP host device in the navigation pane is updated. The

same XMPP server must be used by the SmartServer and all client applications that will access the SmartServer.

C	Submit	Setup - H	lost		
(	Back				
	Navigat	e		ID or Hostr	ame
	💿 General 🔘	Driver		10.2.124.1	
∃ ±± ⊟	LAN <u>EmartServer</u> <u>Emarts Assess</u>			O LNS Pro	xy 🖲 Host
	<ul> <li>Remote Access</li> <li>Net</li> </ul>	1	Host Property		Value
Ŧ	<u>my mailserver.my</u> <u>my mailserver.my</u> <u>10.2.124.1</u>	/ domain.com	Use Connec	tion Timeout	Seconds

- 3. Add a message service to the XMPP server following these steps:
  - a. Right-click the XMPP host entry, point to **Add Service**, and then click **Message** on the shortcut menu.

Navigate	
⊙ General ○ Driver	
∃ 📲 LAN	
■ ImartServer	
🗉 🔆 <u>Net</u>	
🗉 🗐 <u>my mailserver.my domai</u>	n.com
<u> 10.2.124.1</u>	
Add Service	🗾 Email (SMTP)
Delete	😚 Time (SNTP)
	IP-852 Configuration Server
	🕹 WebBinder Target
	🏥 Message

b. The **Setup – Message** Web page opens.

*** submit ***     Setup - A	Aessage	
Back		
Navigate		
E Met	Property	Value
	Message Port	5280
	Message Domain	
	BOSH Path	/http-bind
	User Name	
	Password	Change Password

c. Enter the following properties:

Message Port

The port used for the XMPP connection manager. This is determined by the configuration for the XMPP server.

	The default port is <b>5280</b> for the ejabberd XMPP connection manager.
Message Domain	Enter the ejabberd server domain that you specified in step 2b in the <i>Step 1: Configuring an XMPP Server</i> section. By default, this is the name of your computer.
Message Server BOSH Path	Accept the default XMPP BOSH path, which is <b>/http-bind</b> . Typically, you should not have to change this.
User Name	To ensure a unique user name, enter the MAC ID for your SmartServer. You can locate the program ID from the SmartServer hardware, a SOAP program, or the SmartServer Web pages.
	• Hardware. The MAC ID is printed on a label on the bottom of your SmartServer
	• <b>Programmatically</b> . The MAC ID is included in the header of all SmartServer SOAP messages.
	• SmartServer Web Pages. The MAC ID is displayed in the System Info Web page. To open this Web page, right-click the SmartServer host device in the navigation pane, point to Setup, and then click System Info.
	<b>Tip</b> : To improve the readability of the MAC ID, enter the hyphens between each pair of its hex digits.
Password	Click <b>Change Password</b> . Enter and confirm the password you specified for the administrator account in step 2d in the <i>Step 1: Configuring an XMPP Server</i>

Submit Setup - N	Setup - Message				
Back					
Navigate					
SmartServer      Remote Access					
∎ <u>⊯ Net</u>	Property	Value			
B my mailserver.my domain.com	Message Port	5280			
A Message	Message Domain	jduvalgx620			
	BOSH Path	/http-bind			
	User Name	00-D0-71-03-01-22			
	Password	Change Password			

section. Click OK.

**Tip**: If you copied your ejabberd domain server and administrator password to a text file, also copy and paste the MAC ID to the file. You will need the MAC ID when creating a user for the SmartServer XMPP client on the ejabberd XMPP server.

d. Click **Submit**. The SmartServer notifies the XMPP server that it is online. If you are using an ejabberd server, the SmartServer will appear in the Online Users list after you click **Submit**.

## Step 3: Developing a Client Application

You can develop a client application that communicates with one or more SmartServers using XMPP. You can build, send, and receive XMPP packets from your application, or you can use an XMPP client library to accelerate your development (for a list of client libraries, go to the XMPP Standards Foundation Web site at *xmpp.org/xmpp-software/libraries/*). The SmartServer team uses Smack (*www.igniterealtime.org/projects/smack/*), which is also used in Apache projects. Other XMPP client libraries should also work.

To demonstrate the SmartServer XMPP solution, this section describes how to configure the Pidgin XMPP chat client, that we will later connect to the SmartServer via XMPP. In addition, this section includes an example that shows how a client application can communicate with the SmartServer via SOAP over XMPP.

#### XMPP Chat Client Example

To download, install, and configure Pidgin follow these steps:

- 1. Go to the Pidgin Web site at www.pidgin.im.
- 2. Download and install the latest version of Pidgin.
- 3. Start Pidgin. To do this, click **Start**, point to **Programs**, and then click **Pidgin**. The **Accounts** dialog opens.

🗟 Accounts 🛛 🔀
Welcome to Pidgin! You have no IM accounts configured. To start connecting with Pidgin press the Add button below and configure your first account. If you want Pidgin to connect to multiple IM accounts, press Add again to configure them all. You can come back to this window to add, edit, or remove accounts from Accounts→Manage Accounts in the Buddy List window
Add Modify, Delete Close

- 4. Click Add. The Add Account dialog opens.
- 5. Add an account to Pidgin following these steps:
  - a. In the **Protocol** box, select XMPP.
  - b. In the Username box, enter "pidgin" or some other descriptive name.
  - c. In the **Domain** box, enter the ejabberd server domain that you specified in step 2b in the *Step 1: Configuring an XMPP Server* section. By default, this is the name of your computer.
  - d. In the **Resource** box, enter "pidgin" or some other descriptive value that will be appended to the IM messages.
  - e. In the **Password** box, enter a password for the user name specified in step b.

**Tip**: If you copied your ejabberd domain server, administrator password, MAC ID to a text file, also copy and paste the pidgin user name, resource, and password to the file. You will need this information when creating a user for the Pidgin XMPP client on the ejabberd XMPP server.

👰 Add Account				
Basic Advanced Proxy				
Login Options				
Pro <u>t</u> ocol:	V XMPP			
<u>U</u> sername:	pidgin			
Domain:	jduvalgx620			
<u>R</u> esource:	pidgin			
Password:	••••••			
🔲 Remember passy	word			
User Options				
Local alias:				
New mail notifications				
🔲 Use this buddy io	con for this account:			
Remove				
Create this new account on the server				
<u>C</u> ancel <u>A</u> dd				

- f. Click Add.
- g. An SSL Certificate Verification dialog opens. Click Accept.

🗟 SSL Certificate Verification				
632	Accept certificate for jduvalgx620?			
<b>U</b>	The certificate for jduvalgx620 could not be validated. The certificate claims to be from "Mickael Remond" instead. This could mean that you are not connecting to the service you believe you are. The certificate is self-signed and cannot be automatically checked.			
View Co	ertificate Reject Accept			

#### SOAP/XMPP Example

The following example demonstrates how a client application can communicate with the SmartServer via SOAP/XML over XMPP.

#### **SOAP over XMPP Request**

```
<iq to='08-00-00-1A-7C-62@nitrogen/ilon' type='set' id='dpRead1'>
```

```
<Envelope xmlns="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
encodingStyle="http://schemas.xmlsoap.org/soap/encoding/">
  <Header>
    <messageProperties
xmlns="http://wsdl.echelon.com/web_services_ns/ilon100/v4.0/message/" />
  </Header>
  <Body>
    <SystemService_Read_Info
xmlns="http://wsdl.echelon.com/web_services_ns/ilon100/v4.0/message/" >
<Data>&lt;iLONSystemService&gt;&lt;UCPTsystemInfoType&gt;SI_RTR&lt;/UCPTsystemInfoType
></iLONSystemService&gt;</Data>
    </SystemService_Read_Info>
  </Body>
</Envelope>
</iq>
```

#### SOAP over XMPP Response

```
<iq to='08-00-00-1A-7C-62@nitrogen/ilon'
    type='set'
    id='dpRead1'>
<Envelope xmlns="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
encodingStyle="http://schemas.xmlsoap.org/soap/encoding/">
  <Header>
    <messageProperties
xmlns="http://wsdl.echelon.com/web_services_ns/ilon100/v4.0/message/" />
  </Header>
  <Body>
    <Read xmlns="http://wsdl.echelon.com/web_services_ns/ilon100/v4.0/message/">
      <iLonItem>
        <Item xsi:type="Dp_Data">
          <UCPTname>Net/LON/iLON App/Real Time Clock/nvoRtTimeDate</UCPTname>
        </Item>
      </iLonItem>
    </Read>
  </Body>
</Envelope>
</iq>
<iq to='08-00-00-1A-7C-62@nitrogen/ilon'
    type='set'
    id='dpRead1'>
<Envelope xmlns="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
encodingStyle="http://schemas.xmlsoap.org/soap/encoding/">
  <Header>
    <messageProperties
xmlns="http://wsdl.echelon.com/web_services_ns/ilon100/v4.0/message/" />
  </Header>
  <Body>
    <SystemService_Read_Info
xmlns="http://wsdl.echelon.com/web_services_ns/ilon100/v4.0/message/" >
<Data>&lt;iLONSystemService&gt;&lt;UCPTsystemInfoType&gt;SI_NETWORK&lt;/UCPTsystemInfo
Type></iLONSystemService&gt;</Data>
    </SystemService_Read_Info>
  </Body>
</Envelope>
</iq>
```

#### Getting More Information on XMPP Programming

For more information on the XMPP protocol and development of applications that support XMPP, you can do the following:

• Go to the XMPP Standards Foundation Web site at *xmpp.org*.

- Read *Professional XMPP Programming with JavaScript and jQuery* (Moffit, Jack. Indianapolis: Wiley Publishing, 2010).
- Read *XMPP: The Definitive Guide*. (Saint-Andre, Peter, Kevin Smith, and Remko Troncon. Sebastopol: O'Reilly Media, 2009).

#### Step 4: Adding User Accounts to the XMPP Server

After you activate the XMPP client on the SmartServer and create a client application, you need to create user accounts on the XMPP server for the SmartServer and client application. The procedure for creating users depends on the XMPP server. The following section describes how to create users for on the ejabberd XMPP server that was set up in *Step 1: Configuring an XMPP Server*.

To add users to the ejabberd XMPP server, follow these steps:

- 1. Verify that you have started the ejabberd XMPP server and logged in to the **ejabberd Web** Admin Web page as described in *Step 1: Configuring an XMPP Server*.
- 2. Click Virtual Hosts.



3. Click the virtual host that you created in *Step 1: Configuring an XMPP Server*. The name of the virtual host corresponds to the ejabberd server domain that you specified in step 2b in the *Step 1: Configuring an XMPP Server* section, which is the name of your computer by default.

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🖗 ejabberd 2	
ejabberd	Virtual Hosts
Access Control Lists Access Pules Host Registered Us	ers Online Users
Virtual Hosts jduvalgx620 2	0
Nodes	
Statistics	

4. Click Users.

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	🕘 💽 🗢 📔 http://localhost:5	280/admin/server/jduv	alg×620/		💌 🛃 🗙 🚼 knbr 1050	P •
	File Edit View Favorites T	ools Help				
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	Users	• <u>s</u>	ared Roster Groups			
	Online Users					
	Last Activity					
	Nodes					
	Statistics					
	Shared Roster Groups					
	Nodes					
	Statistics					

- 5. Enter the user name and password for the SmartServer following these steps:
  - a. In the **User** box, enter the MAC ID of your SmartServer that you entered in the SmartServer Web interface in step 4 *of the Step 2: Configuring the SmartServer* section.
  - b. In the **Password** box, enter the password you entered and confirmed in the SmartServer Web interface. This is also the password you specified for the administrator account in step 2d of the *Step 1: Configuring an XMPP Server* section.

🤌 ejabberd Web Admin - Windows Internet Explorer	
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🚖 Favorites 🛛 👻 🌾 VMware vCenter Lab Manag 🎯 i.LON SmartServer 🖉 i.LON Sma	rtServer 🧧 ejabberd Web Admin 🗙
🖗 ejabberd 2	
ejabberd	Users
Access Control Lists User: 00-d0-71-03-01-22 @ jduvalgx62	0
Access Rules Password	
Virtual Hosts	
jduvalgx620	
Access Control Lists User Offline Messages Last A	Activity
Access Rules admin@jduvalqx620 0 Never	
Users	
Online Users	
Last Activity	
Nodes	
Statistics	
Shared Roster Groups	
Nodes	
Statistics	

- c. Click Add User.
- d. Your SmartServer XMPP client user name (MAC ID) should be listed under the **User** property, and the "Online" status should appear under the **Last Activity** property. This indicates that the XMPP server is communicating with the SmartServer.

🖉 ejabberd Web Admin - Wind	ows Internet Explorer			- 7 🛛
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🤤 ejabb	ierd 2			
eiabberd		Us	ers	
Access Control Lists	User:	@ jduvalgx620		
Access Rules	Password:			
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jduvalgx620	Add Os	ser .		
Access Control Lists	User	Offline Messages La	ast Activity	
Access Rules	00-d0-71-03-01-22@jduvalg	x620 0 0	nline	
Users	admin@jduvalgx620	<u>0</u> N	ever	
Online Users				
Last Activity				
Nodes				
Statistics				
Shared Roster Groups				
Nodes				
Statistics				

e. You can click the SmartServer XMPP client user name to view the connection status of your SmartServer.

🖉 ejabberd Web Admin - Wind	lows Internet Explorer				- 7
🚱 🕞 💌 📙 http://locahost.5280/admin/server/jduvalgx620/user/00-d0-71-03-01-22/					
File Edit View Favorites To	ols Help				
🔶 Favorites 🛛 💀 👻 🌈 VMware	vCenter Lab Manag 🏉	i.LON SmartServer	i.LON SmartServer	📴 ejabberd Web Admin	x
i 🤤 ejabb	ierd 2				
ejabberd		Usei	00-d0-71-03-0	01-22@jduvalgx6	20
Access Control Lists					
Access Rules	Connected R	esources:			
Virtual Hosts	• ilon (h	ttp-bind://10.2.124	53:2224#eiabberd@loca	lbost)	
jduvalgx620	- 1011 (11	cop 0////////////////////////////////////	SST2221 "Cjubberd@ioed	inosc)	
Access Control Lists					
Access Rules	Password:				
Users	******	Change P	assword		
Online Users					
Last Activity	Last Activity				
Nodes	Online				
Statistics	Offling Mossa	005			
Shared Roster Groups	0 Remove All	Offline Messages			
Nodes		onnine messages			
Statistics	Roster				
	Remove User				

6. Repeat step 5 for the Pidgin client you created in the *XMPP Chat Client Example* section in *Step* 3: *Developing a Client Application*.



7. Repeat step 5 for any other SmartServer or client application.

## Step 5: Exchanging Data over XMPP

After you have added user accounts to the XMPP server for the SmartServer XMPP client and your client application, you can initiate communication between the SmartServer and client application. This example connects the SmartServer via instant message to the Pidgin XMPP chat client created in the *XMPP Chat Client Example* section in *Step 3: Developing a Client Application*. In addition, it shows how to create a Web connection that uses XMPP to enable communication between SmartServers that reside behind firewalls.

#### Running SmartServer-Pidgin XMPP Chat

To have the SmartServer communicate with the Pidgin XMPP chat client via instant message, follow these steps:

- 1. Verify that **Pidgin** is running.
- 2. Click Buddies and then click New Instant Message.
- 3. Enter the user name for the SmartServer XMPP client, which should be *<SmartServer MAC ID>@ <ejabberd server domain>*. You can copy this from the **ejabberd Users** Web page.

👰 Pidgin			×	
Please enter the username or alias of the person you would like to IM.				
	<u>N</u> ame:	00-d0-71-03-01-22@jduvalgx62		
		<u>Cancel</u>	]	

- 4. Click **OK**.
- 5. The SmartServer and Pidgin XMPP instant message dialog opens.

👽 00-d0-71-03-01-22@jduvalgx620	
Conversation Options Send To	
00-d0-71-03-01-22@jduvalgx620	
	<u>~</u>
	≡
	~
🔺 Eont 🕂 Insert 😳 Smile! 🕕 Attention!	

6. Enter any message and then press ENTER. The SmartServer will respond with the following message: "I like that statement."



**Note**: You can also view this message in the SmartServer console. See *Appendix B* of the *SmartServer 2.0 User's Guide* for more information on using the SmartServer console application.

- 7. You can send a SOAP/XML message via chat following these steps:
  - a. In the Buddy List dialog, click Tools and then click Plugins. The Plugins dialog opens.

🗟 Plugir	IS	×	
Enabled 🖣	Name A	^	
	New Line 2.10.0 Prepends a newline to displayed message.		
	Offline Message Emulation 2.10.0 Save messages sent to an offline user as pounce.		
	Pidgin GTK+ Theme Control 2.10.0 Provides access to commonly used gtkrc settings.		
	<b>Pidgin Theme Editor</b> 2.10.0 Pidgin Theme Editor.		
	Psychic Mode 2.10.0 Psychic mode for incoming conversation		
	Release Notification 2.10.0 Checks periodically for new releases.		
	Send Button 2.10.0 Conversation Window Send Button.		
	Text replacement 2.10.0 Replaces text in outgoing messages according to user-defined rules.		
	Timestamp 2.10.0 Display iChat-style timestamps		
	Transparency 2.10.0 Variable Transparency for the buddy list and conversations.		
	Windows Pidgin Options 2.10.0 Options specific to Pidgin for Windows.		
	XMPP Console 2.10.0 Send and receive raw XMPP stanzas.		
Allows browsing and registering services.			
🗄 Plugin I	Details Configure Plugin		

- b. Select the XMPP Console check box and then click Close.
- c. Right-click the Pidgin tray icon, point to XMPP Console, and then click XMPP Console.



- d. The XMPP Console dialog opens.
- e. Copy and paste the following SOAP/XML request in the text box at the bottom:

```
<iq to='00-D0-71-03-01-22@jduvalgx620/ilon' type='set' id='req1'>
<Envelope xmlns="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
encodingStyle="http://schemas.xmlsoap.org/soap/encoding/">
  <Header>
   <messageProperties
xmlns="http://wsdl.echelon.com/web_services_ns/ilon100/v4.0/message/"/>
  </Header>
  <Body>
<SystemService_Read_Info
xmlns="http://wsdl.echelon.com/web_services_ns/ilon100/v4.0/message/">
<iLONSystemService>
<UCPTsystemInfoType>SI_TIME</UCPTsystemInfoType>
</iLONSystemService>
</SystemService_Read_Info>
</Body>
</Envelope>
</iq>
```

**Note:** Remember to replace the SmartServer user name in the **iq** element with your SmartServer's user name. The user name should be *<SmartServer MAC ID>@ <ejabberd server domain>/ilon*. You can copy this from the SmartServer-Pidgin instant message response displayed at the end of step 6.

- f. Press ENTER.
- g. The SmartServer returns the following system information related to time.



#### Creating a Web Connection Over XMPP

You can create Web connections that use XMPP to communicate between SmartServers that are located behind different firewalls. To set up a Web connection that uses XMPP, follow these steps for each remote SmartServer:

1. In the SmartServer Web interface, right-click the LAN entry in the navigation pane, point to Add Host, and then click i.LON SmartServer.



2. In the **Setup – Remote i.LON SmartServer** Web page, enter the IP address or hostname of the remote SmartServer in the **IP or Hostname** box, and then click **Submit**.

Setup - Remote i.LON SmartServer			
Back			
Navigate			
General O Driver     LAN     SmartServer     SmartServer     SmartServes	IP or Hostname 10.2.125.12		
<ul> <li>Ret</li> <li>■ my mailserver.my domain.com</li> <li>■ 10.2.124.1</li> <li>▲ Message</li> <li>Ø.0.0.0</li> </ul>	Host Property	Value	
	SOAP Path	/WSDL/iLON100.WSDL	
	HTTP Port (Web Server / SOAP) **	80 SSL	
	Retry Time (defaults to 120 s)	120 Seconds	
	Use Connection Timeout	Seconds	
	SOAP User Name *		
	SOAP Password *	Change Password	
	Format values in WebBinder SOAP messages using	Data Point Format	

3. Right-click the new remote SmartServer entry in the navigation pane, point to **Add Service**, and then click **Message**.

Navigate					
	💿 General 🔘 Driver				
- 2 <sup>8</sup> 3	∃ ∰a LAN				
Ξ	E I SmartServer				
+	🗉 😹 <u>my_mailserver.my_domain.com</u>				
+	10.2.124.1				
	🗊 <u>SmartServe</u>	<u>er</u>			
		Setup	•		
		Add Service	•	sîs	Message
		Delete Templ	ates		
		Delete			

4. Set the following properties and then click **Submit**:

Message Domain	Enter the ejabberd server domain that you specified in step 2b in the <i>Step 1: Configuring an XMPP Server</i> section. By default, this is the name of your computer.	
User Name	Enter the MAC ID of the remote SmartServer. You can get the MAC ID from the label on the remote SmartServer hardware, programmatically, or you can right-click the remote <b>SmartServer</b> host device in the navigation pane of the local SmartServer Web interface, point to <b>Setup</b> , and then click <b>System Info</b> .	

*** submit *** Setup - N	Setup - Message		
Back			
Navigate			
<u>Net</u>	Property	Value	
<u>my mailserver.my domain.com</u> <u>10 2 124 1</u>	Message Domain	jduvalgx620	
B SmartServer	User Name	00-D0-71-02-1B-1C	

- 5. Right-click the new host entry in the navigation pane, point to Add Service, and then click WebBinder Target on the shortcut menu. The Setup Web Service page opens.
- 6. Click **Submit**. You can now use the new host as a target for Web connections as described in *Creating Web Connections* in Chapter 4 of the *SmartServer 2.0 User's Guide*.

