

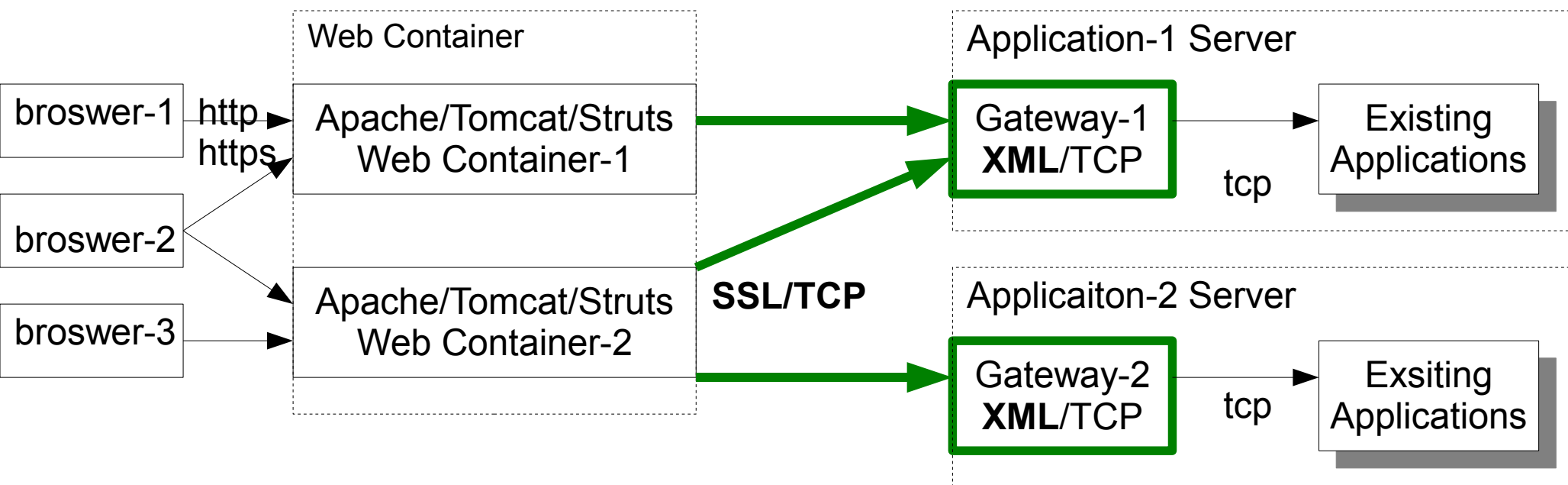
Adding J2EE Web Container GUI for a Legacy Application system

- Architect & design Struts/JSP GUI interface for a legacy application system
- New GUI must be transparent to the existing application system
- User authentication should remain the same – using application server UNIX PAM
- All data over network must be secured using SSL

Web Container Software

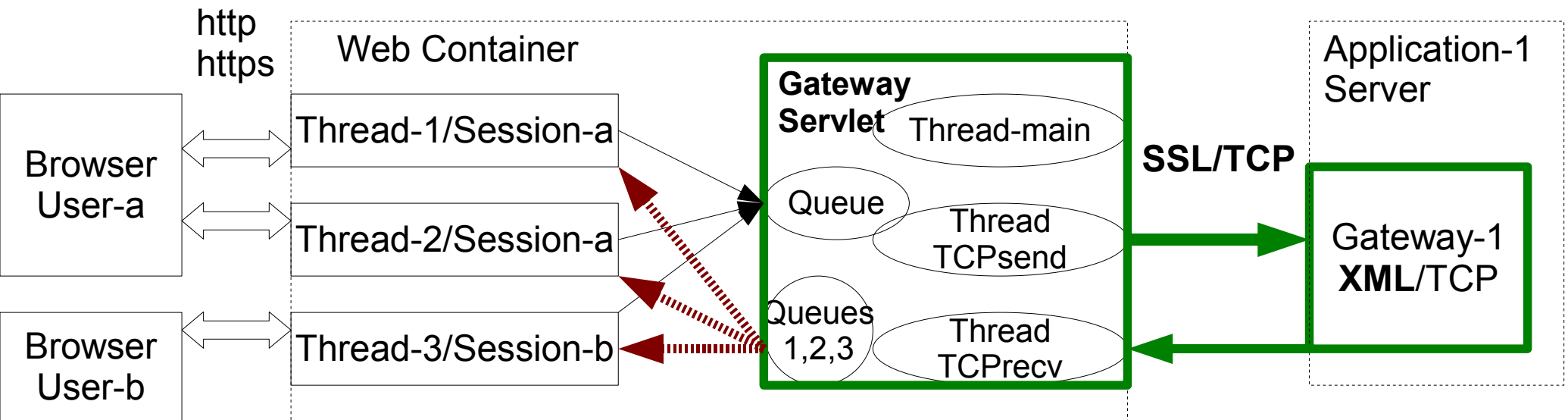
- Apache Tomcat 5.5.9 (J2EE web container)
- Apache Struts 1.2 with SSL extension (MVC)
- Apache Common Logging
- Apache Log4J 1.2.9 (for log and trace)
- Java JDK/JRE 1.5 (for platform portability)

Web Container for Legacy Application Architecture



- **Builds new browser GUI interface for existing application systems**
- **Uses J2EE Web Container (Apache/Jarkarta/Tomcat)**
- **Bases on Model-View-Controller (MVC) – Apache/Struts**
- **Develops a servlet in Struts to do SSL/TCP connection pooling**
- **Develops Java Gateway processes to accept SSL/TCP connections & translate XML requests into existing application requests.**
- **Gateway makes new web GUI transparent to exiting Applications**
- **Flexible architecture allows multiple Containers/Applications combinations.**

Struts Gateway Servlet Functionalities



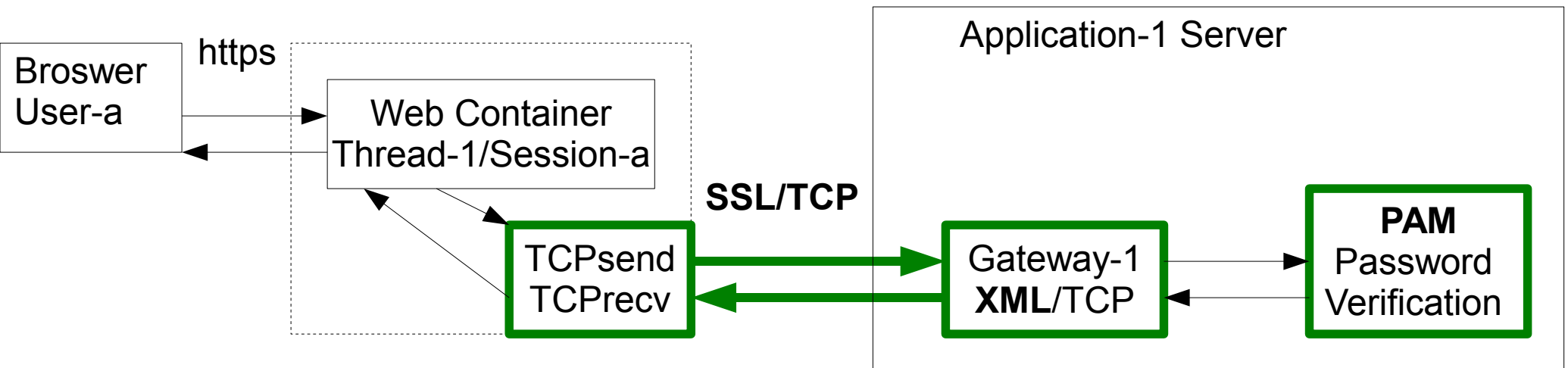
Gateway Servlet:

- Java main thread started by Struts web.xml file
- Makes a SSL/TCP connection to Gateway
- Instantiates two threads – TCPsend & TCPrecv and two Msg Queues
- Provides TCPsend TCPrecv static interface classes for Web Container

User-a http/https request/response flow:

- Thru Thread-1, queues request for TCPsend to Application Gateway-1
- Thread-1 waits on TCPrecv Queue for response with timeout
- Application Gateway-1 sends response to TCPrecv Thread
- User-a waits on TCPrecv Queue for response.

Browser Users Authentication with Unix PAM



UNIX PAM: Pluggable Authentication Modules

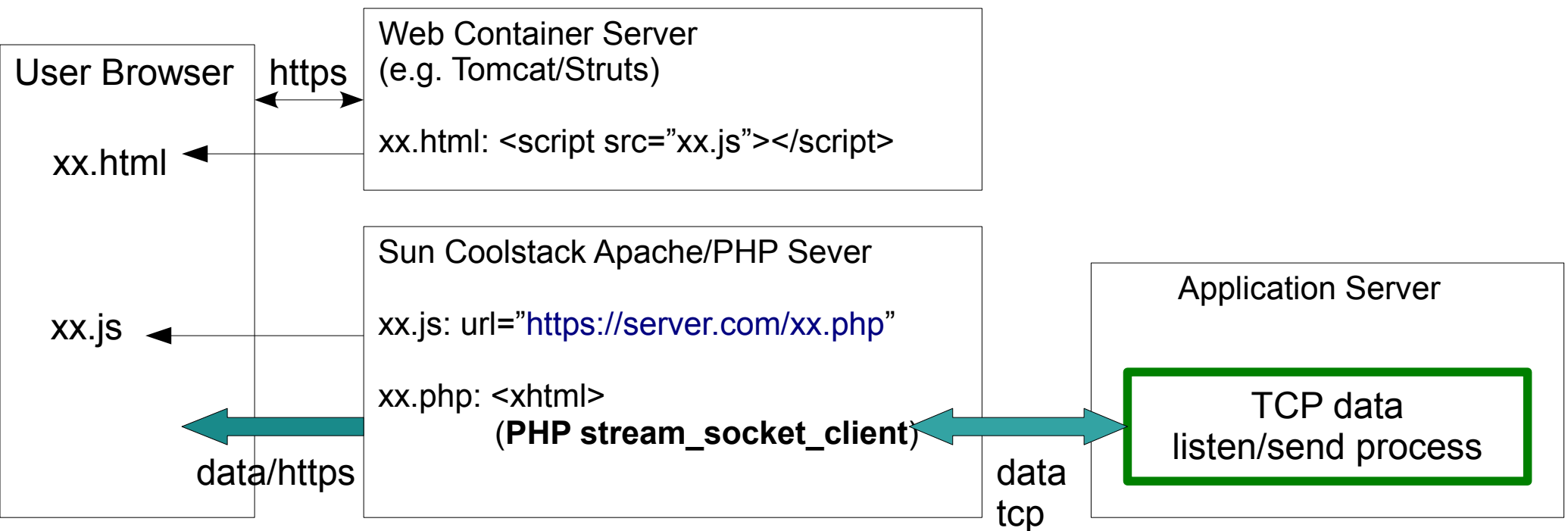
Struts/JSP GUI sends user/password thru Thread-1 for TCPsend

- Gateway-1 forward user/password to the PAM Verification process
- The C process verifies user/password with Appl Server thru PAM
- The Authentication result is sent back thru TCPrecv to Browser

Each backend application may use its original Authentication for new Struts/JSP based GUI users.

Web Container Authorization/Authentication, if used, is independent and transparent to the application.

Enhance Web Container GUI with AJAX



Build AJAX script to prevent Browser from doing Direct TCP connection

- Both `xx.html` & `xx.js` are server side programming
- Browser loads `xx.html` which request **JavaScript** `xx.js` to be loaded from PHP server
- `xx.js` runs in Browser issue **https** to invoke **PHP script** `xx.php` at server side
- Server side `xx.php` does TCP connect/request to Application Server
- Application Server sends data back to `xx.php` which responds XHTML back to browser

General Web Java Application Supports

- Write JSP script to pre-compile all JSP scripts for application WAR files
- Design & code Log4j control script files for applications to facilitate application programmer with event logging and communication data tracing
- Design & develop Struts/servlet to provide Struts applications with SSL/TCP connections pooling and fail/re-try