

# WE761 Exercise 2 Review

CLI

XMI (SOMA / AMP)

RMI

# Exercise 2 - Agenda

<b>Exercise 2. Using the CLI and the XML Management Interface to manage DataPower appliances</b>	<b>2-1</b>
.....	.....
2.1. Create a student administrative user account by using CLI .....	2-5
2.2. Review the XML Management Interface WSDL (optional) .....	2-12
2.3. Create developer resources by using XML Management Interface .....	2-15
2.4. Import a domain configuration from an HTTP server .....	2-19
2.5. Test the DPAdmin multi-protocol gateway service .....	2-24
2.6. Create more developer domains by using XML Management Interface requests .....	2-27
2.7. Modify the developer user group by using an XML Management Interface request .....	2-30
2.8. Use AMP to interrogate the gateway .....	2-37
2.9. REST management .....	2-40

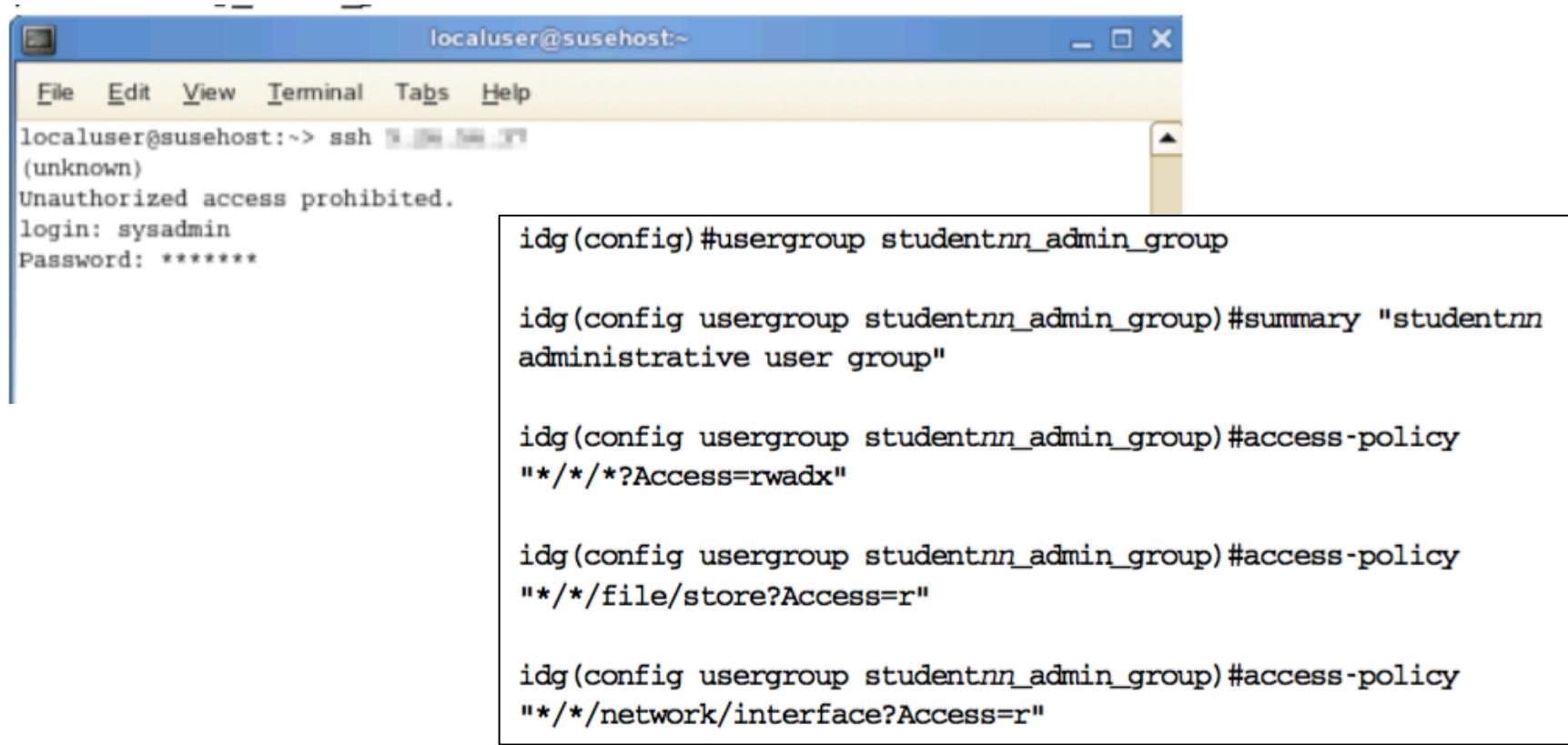
Important sections:

- |               |              |
|---------------|--------------|
| 2.1           | - CLI        |
| 2.3, 2.6, 2.7 | - XMI (SOMA) |
| 2.8           | - XMI (AMP)  |
| 2.9           | - RMI        |

Elaborate:

- 2.4, 2.5 - *DPAdmin* service  
(worth looking at the processing policy and its actions)

# CLI – SSH from Terminal Window

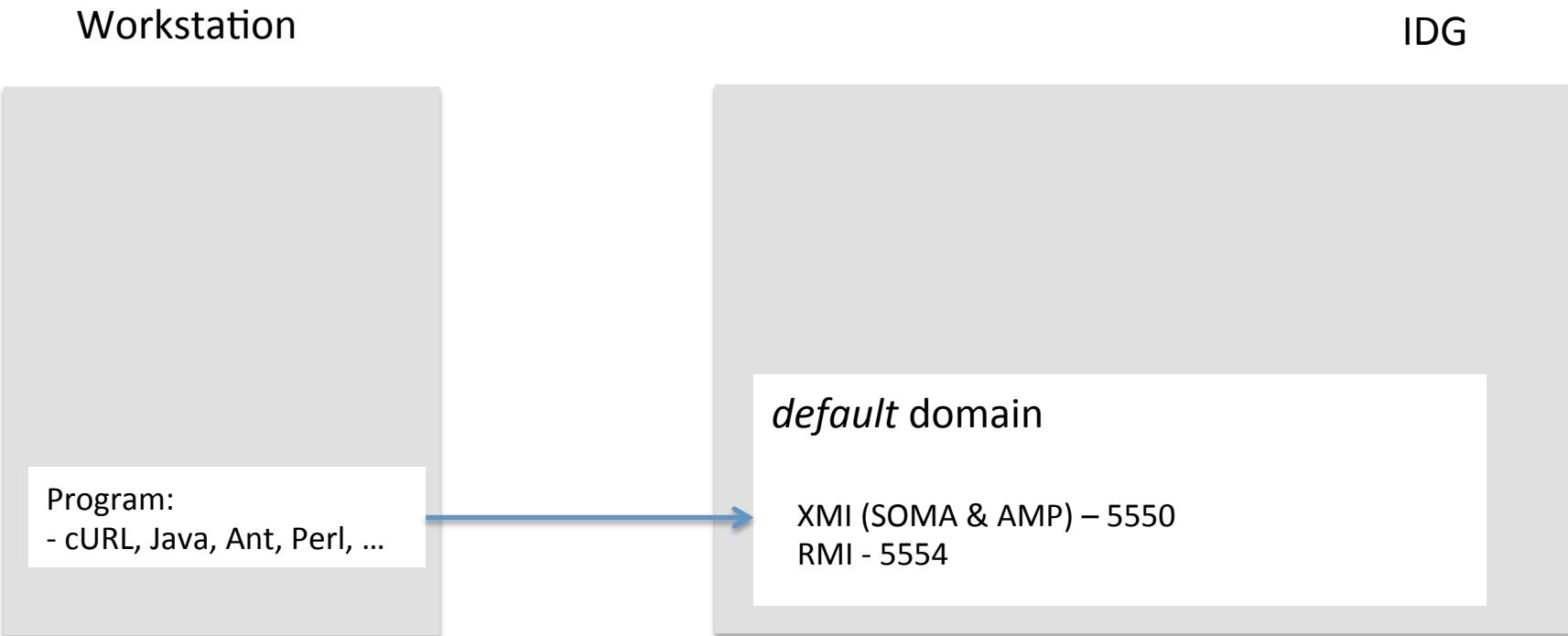


A screenshot of a terminal window titled "localuser@susehost:~". The window shows a command-line interface with the following text:

```
localuser@susehost:~> ssh 192.168.1.1  
(unknown)  
Unauthorized access prohibited.  
login: sysadmin  
Password: *****  
  
idg(config)#usergroup studentnn_admin_group  
  
idg(config usergroup studentnn_admin_group) #summary "studentnn  
administrative user group"  
  
idg(config usergroup studentnn_admin_group) #access-policy  
"*//*?Access=rwadx"  
  
idg(config usergroup studentnn_admin_group) #access-policy  
"*/file/store?Access=r"  
  
idg(config usergroup studentnn_admin_group) #access-policy  
"*/network/interface?Access=r"
```

```
co  
copy http://<image_ip>/dp/DPCert.cer cert:///DPCert.cer  
copy http://<image_ip>/dp/Alice-sscert.pem cert:///Alice-sscert.pem  
copy http://<image_ip>/dp/Alice-privkey.pem cert:///Alice-privkey.pem
```

# XMI Direct – Message Flow



# XMI Direct – SOMA Structure

```
<?xml version="1.0" encoding="UTF-8"?>
<env:Envelope
    xmlns:env="http://schemas.xmlsoap.org/soap/envelope/">
    <env:Body>

        <dp:request
            xmlns:dp="http://www.datapower.com/schemas/management">
            <dp:get-status class="ActiveUsers">
        </dp:request>

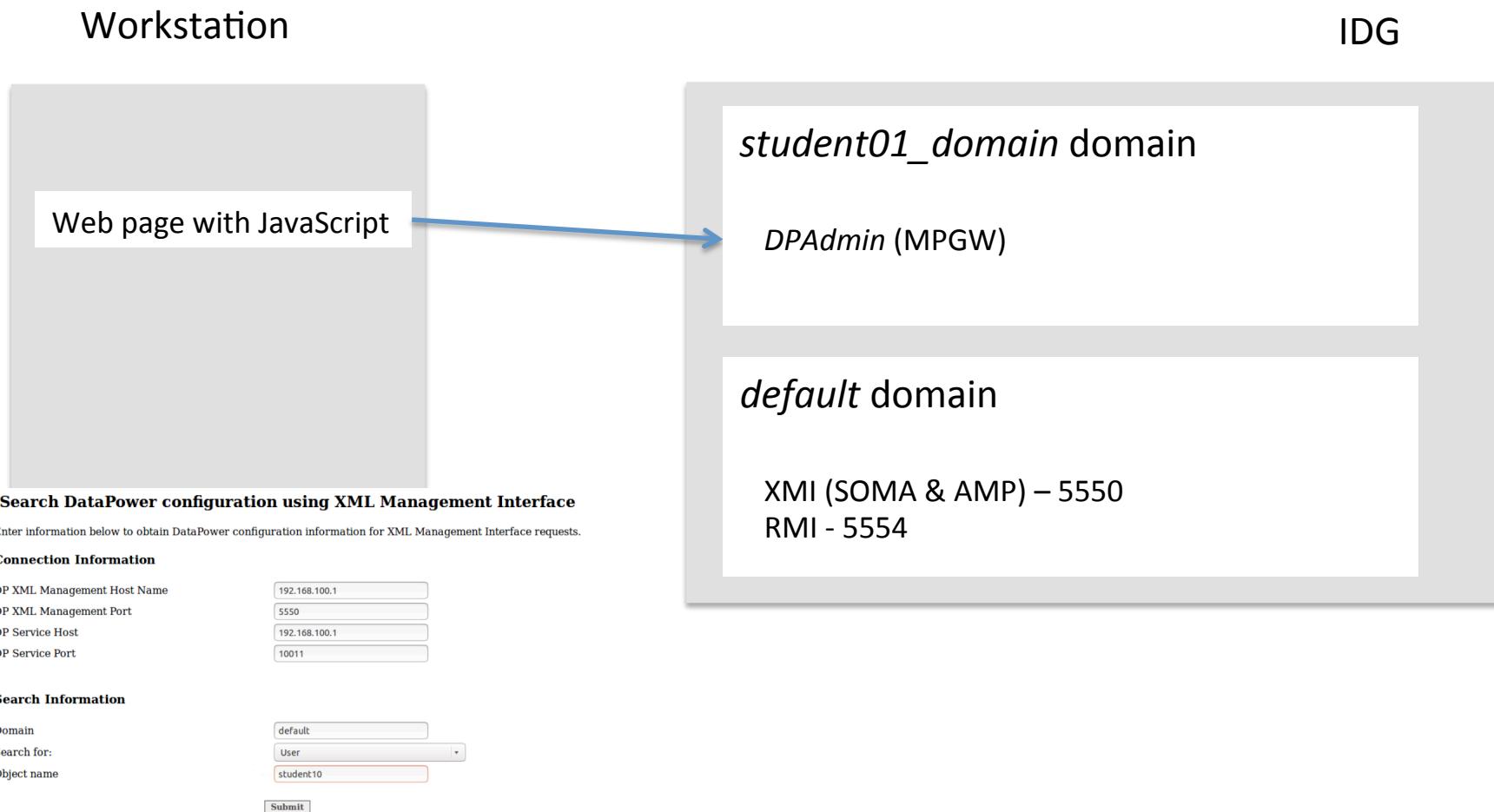
    </env:Body>
</env:Envelope>
```

A simple example taken from the notes

# XMI – Exercise Sections 2.4, 2.5

- An elaborate architecture!!!
- Web page from some server:
  - takes form data
  - form data sent to by JavaScript to a server, address determined by some of the form data
- Server is *DPAadmin* MPGW on IDG
- *DPAadmin*:
  - extracts form data, converting to XML
  - sets route to back end (XMI on some IDG)
  - converts the XML into SOMA
  - sends to back end (XMI on some IDG)

# XMI – Exercise Sections 2.4, 2.5



# Web Page

**Search DataPower configuration using XML Management Interface**

Enter information below to obtain DataPower configuration information for XML Management Interface requests.

**Connection Information**

DP XML Management Host Name	<input type="text" value="192.168.100.1"/>
DP XML Management Port	<input type="text" value="5550"/>
DP Service Host	<input type="text" value="192.168.100.1"/>
DP Service Port	<input type="text" value="10011"/>

**Search Information**

Domain	<input type="text" value="default"/>
Search for:	<input style="width: 100px;" type="text" value="User"/> ▼
Object name	<input style="border: 2px solid #f08080; width: 100px;" type="text" value="student10"/>

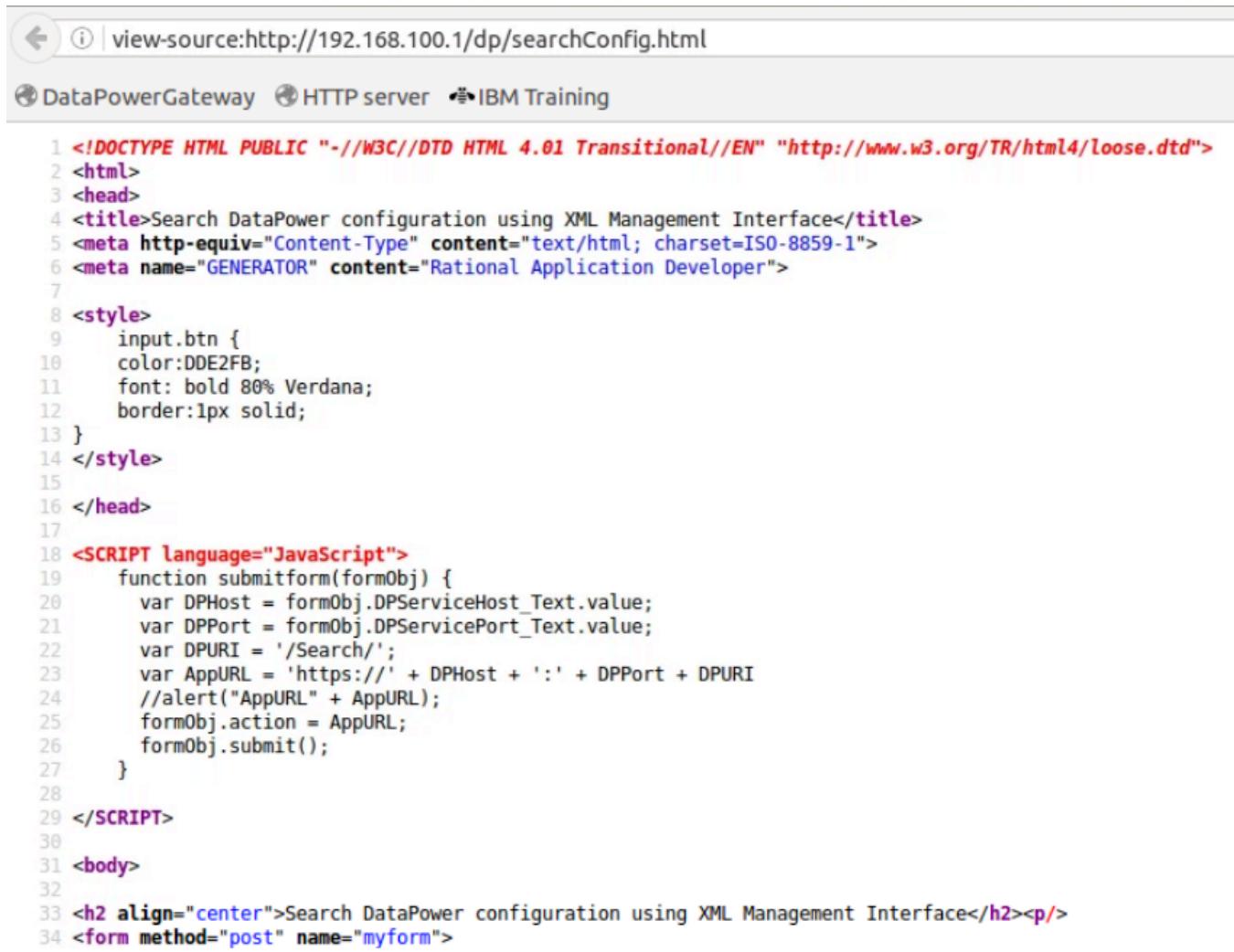
DP Service Host, Port

- used by JavaScript to target *DPAdmin*

DP XML Management Host, Port, Domain, Search for, Object name

- sent as form data to *DPAdmin*

# JavaScript in Web Page - 1



The screenshot shows a browser window displaying the source code of a web page. The address bar shows 'view-source:http://192.168.100.1/dp/searchConfig.html'. The title bar includes icons for back, forward, and search, and text indicating the page is from 'DataPowerGateway' via 'HTTP server' at 'IBM Training'.

```
1 <!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN" "http://www.w3.org/TR/html4/loose.dtd">
2 <html>
3 <head>
4 <title>Search DataPower configuration using XML Management Interface</title>
5 <meta http-equiv="Content-Type" content="text/html; charset=ISO-8859-1">
6 <meta name="GENERATOR" content="Rational Application Developer">
7
8 <style>
9   input.btn {
10     color:DDE2FB;
11     font: bold 80% Verdana;
12     border:1px solid;
13   }
14 </style>
15
16 </head>
17
18 <SCRIPT language="JavaScript">
19   function submitform(formObj) {
20     var DPHost = formObj.DPServiceHost_Text.value;
21     var DPPort = formObj.DPServicePort_Text.value;
22     var DPURI = '/Search/';
23     var AppURL = 'https://' + DPHost + ':' + DPPort + DPURI
24     //alert("AppURL" + AppURL);
25     formObj.action = AppURL;
26     formObj.submit();
27   }
28
29 </SCRIPT>
30
31 <body>
32
33 <h2 align="center">Search DataPower configuration using XML Management Interface</h2><p/>
34 <form method="post" name="myform">
```

# JavaScript in Web Page - 2

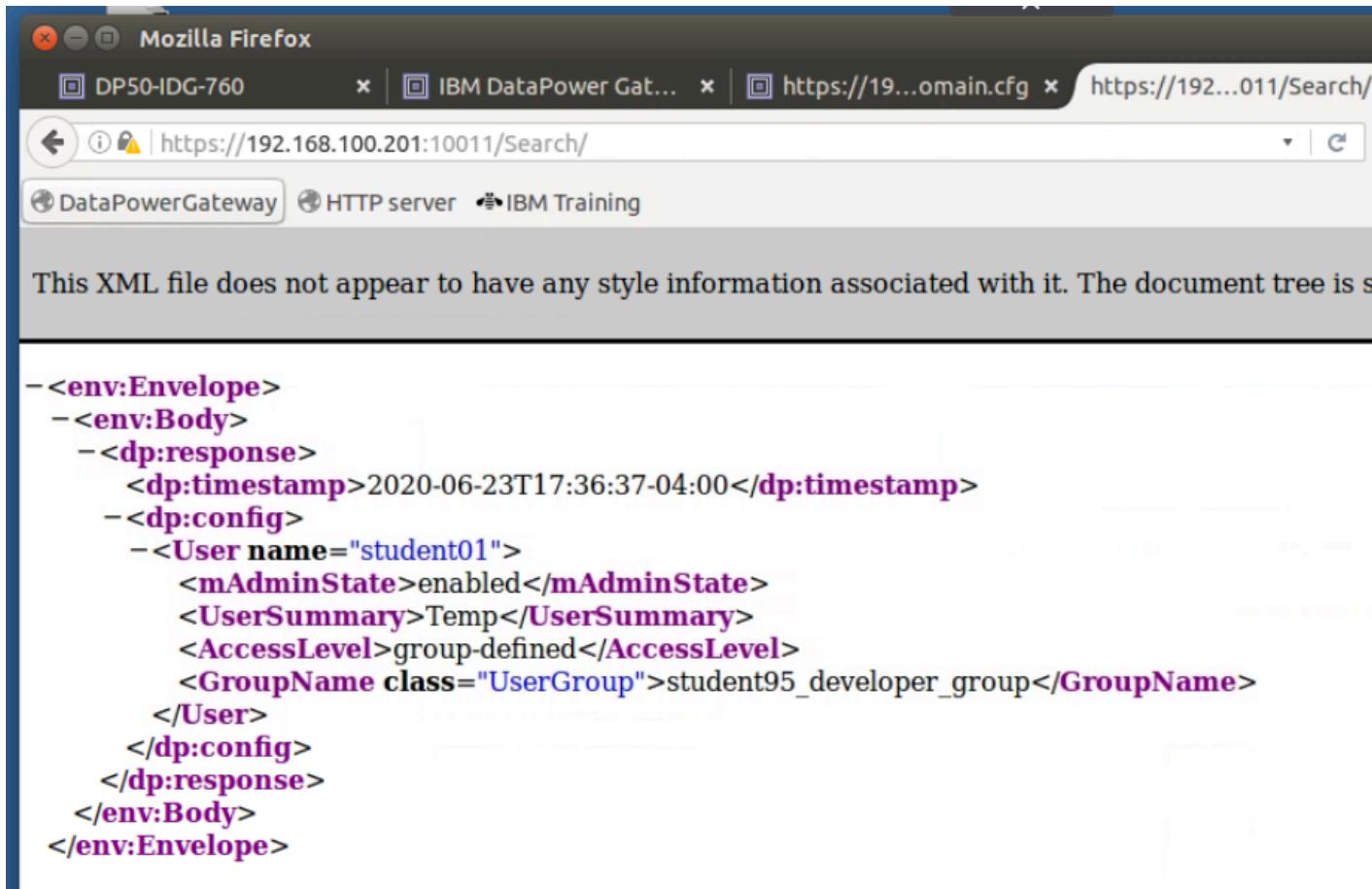
```
<SCRIPT language="JavaScript">
    function submitform(formObj) {
        var DPHost = formObj.DPServiceHost_Text.value;
        var DPPort = formObj.DPServicePort_Text.value;
        var DPURI = '/Search/';
        var AppURL = 'https://' + DPHost + ':' + DPPort + DPURI
        //alert("AppURL" + AppURL);
        formObj.action = AppURL;
        formObj.submit();
    }

</SCRIPT>
```

On clicking *Submit* button  
sends form data to *DPAdmin*

The web page could have been served up from anywhere, just happens to be Apache http server on Linux workstation

# SOMA Response via DPAdmin



The screenshot shows a Mozilla Firefox browser window with the title bar "Mozilla Firefox". The address bar contains several tabs: "DP50-IDG-760", "IBM DataPower Gat...", "https://19...omain.cfg", and "https://19...011/Search/". The active tab is "https://19...011/Search/". Below the address bar, there are status icons for "DataPowerGateway", "HTTP server", and "IBM Training". The main content area displays an XML document. At the top, a message states: "This XML file does not appear to have any style information associated with it. The document tree is as follows:". The XML document itself is as follows:

```
-<env:Envelope>
-<env:Body>
-<dp:response>
<dp:timestamp>2020-06-23T17:36:37-04:00</dp:timestamp>
-<dp:config>
-<User name="student01">
<mAdminState>enabled</mAdminState>
<UserSummary>Temp</UserSummary>
<AccessLevel>group-defined</AccessLevel>
<GroupName class="UserGroup">student95_developer_group</GroupName>
</User>
</dp:config>
</dp:response>
</env:Body>
</env:Envelope>
```

# *DPAdmin in student01-domain*

The screenshot shows the IBM DataPower Gateway configuration interface in Mozilla Firefox. The URL in the address bar is `http://192.168.100.1/dp/searchConfig.htm`. The page title is "IBM DataPower Gateway | Configure: Multi-Protocol Gateway - Mozilla Firefox". The main content area displays the "Configure Multi-Protocol Gateway" screen. On the left, there is a sidebar with "Control Panel" and "Blueprint Console" sections, and a search bar. The main form has tabs for General, Advanced, Subscriptions, Policy, SLA Policy Details, Stylesheet Params, Headers, Monitors, and WS-Addressing. Below the tabs are buttons for Apply, Cancel, and Delete, and links for Export, View Log, View Status, Show Probe, Validate Conformance, and Help. The "General Configuration" section includes fields for "Multi-Protocol Gateway Name" (set to DPAdmin), "XML Manager" (set to default), "Multi-Protocol Gateway Policy" (set to DPAdminAppPolicy), and "URL Rewrite Policy" (set to (none)). A summary note states: "Service that illustrates SOAP requests to". The "Type" section shows a selected radio button for "dynamic-backends". A message at the top right indicates: "Debug Probe and Intensive Level of Logging (in default domain) are enabled, which impacts performance. [Change Troubleshooting settings.](#)". The bottom left of the sidebar shows firmware information: IDG.7.6.0.3, Build: 292006, IBM DataPower Gateway, Copyright IBM Corporation 1999-2017, and a link to View License Agreement.

Built by a competent DataPower developer to provide advanced DP admin capabilities?

# DPAdmin probe

Transaction List for DPAdmin - Mozilla Firefox  
https://192.168.100.201:9090/support.xml?action=multistepDebugPopup&random=19&class=mpgw&ob

DataPower Gateway IBM.

Refresh Flush Disable Probe Export Capture View Log Send Message Close

view	trans#	type	inbound-url	outbound-url	rule	client-ip
[+]	27248	request	https://192.168.100.201:10011/Search/	https://192.168.100.201:5550/service/mgmt/current	DPAdminAppPolicy_Rule_0	192.168.100.1
[+]	27456	request	https://192.168.100.201:10011/Search/	https://192.168.100.201:5550/service/mgmt/current	DPAdminAppPolicy_Rule_0	192.168.100.1
[+]	31968	request	https://192.168.100.201:10011/Search/	https://192.168.100.201:5550/service/mgmt/current	DPAdminAppPolicy_Rule_0	192.168.100.1
[+]	72352	request	https://192.168.100.201:10011/Search/	https://192.168.100.201:5550/service/mgmt/current	DPAdminAppPolicy_Rule_0	192.168.100.1

# DPAAdmin - INPUT context

Transaction 27248 Context 0 - Mozilla Firefox  
https://192.168.100.201:9090/support.xml?action=multistepDebugStepPopup&class=mpgw&object=DP

Input Context '1' of Step 0

Previous Next

Step 1: Convert Query Params to XML Action:Input=INPUT, ParseSettingsReference= , ParseMetricsResultType=none, TransformLanguage=none, ActionDebug=off, Output=dpvar\_1, NamedInOutLocationType=default, InputConversion=HTTPInputMap, SSLClientConfigType=proxy, Transactional=off, SOAPValidation=body, SQLSourceType=static, JWSVerifyStripSignature=on, Asynchronous=off, ResultsMode=first-available, RetryCount=0, RetryInterval=1000, MultipleOutputs=off, IteratorType=XPATH, Timeout=0, MethodRewriteType=GET, MethodType=POST, MethodType2=POST

Content Headers Attachments Local Variables Context Variables Global Variables Service Variables

Binary content of context 'INPUT':

offset	data	ascii
0x0000000	44 50 48 6f 73 74 5f 54 65 78 74 3d 31 39 32 2e	DPHost_Text=192.
0x0000010	31 36 38 2e 31 30 30 2e 32 30 31 26 44 50 50 6f	168.100.201.DPPo
0x0000020	72 74 5f 54 65 78 74 3d 35 35 35 30 26 44 50 53	rt_Text=5550.DPS
0x0000030	65 72 76 69 63 65 48 6f 73 74 5f 54 65 78 74 3d	erviceHost_Text=
0x0000040	31 39 32 2e 31 36 38 2e 31 30 30 2e 32 30 31 26	192.168.100.201.
0x0000050	44 50 53 65 72 76 69 63 65 50 6f 72 74 5f 54 65	DPServicePort_Te
0x0000060	78 74 3d 31 30 30 31 31 26 44 6f 6d 61 69 6e 5f	xt=10011.Domain_
0x0000070	54 65 78 74 3d 64 65 66 61 75 6c 74 26 53 65 61	Text=default.Sea
0x0000080	72 63 68 49 74 65 6d 5f 53 65 6c 65 63 74 3d 55	rchItem_Select=U
0x0000090	73 65 72 26 4f 62 6a 65 63 74 4e 61 6d 65 5f 54	ser.ObjectName_T
0x00000a0	65 78 74 3d 73 74 75 64 65 6e 74 39 39 26 53 75	ext=student99.Su
0x00000b0	62 6d 69 74 5f 42 74 74 6e 3d 53 75 62 6d 69 74	bmit_Btn=Submit
0x00000c0		.....

# Action Convert Query Params to XML

Transaction 27248 Context 1 - Mozilla Firefox  
https://192.168.100.201:9090/support.xml?action=multistepDebugStepPopup&class=mpgw&object=DP

Previous      Input Context '2' of Step 0      Next +

Step 2: Route (Using Stylesheet or XPath Expression) Action:Input=dpvar\_1, Transform=local:///dpadmin-route.xsl, ParseSettingsReference=, ParseMetricsResultType=none, TransformLanguage=none, ActionDebug=off, NamedInOutLocationType=default, SSLClientConfigType=proxy, Transactional=off, SOAPValidation=body, SQLSourceType=static, JWSVerifyStripSignature=on, Asynchronous=off, ResultsMode=first-available, RetryCount=0, RetryInterval=1000, MultipleOutputs=off, IteratorType=XPATH, Timeout=0, MethodRewriteType=GET, MethodType=POST, MethodType2=POST

Content    Headers    Attachments    Local Variables    Context Variables    Global Variables    Service Variables

Content of context 'dpvar\_1':

```
<request>
<url>/Search</url>
<base-url>/Search</base-url>
<args src="url" />
<args src="body">
<arg name="DPHost_Text">192.168.100.201</arg>
<arg name="DPPort_Text">5550</arg>
<arg name="DPServiceHost_Text">192.168.100.201</arg>
<arg name="DPServicePort_Text">10011</arg>
<arg name="Domain_Text">default</arg>
<arg name="SearchItem_Select">User</arg>
<arg name="ObjectName_Text">student99</arg>
<arg name="Submit_Btn">Submit</arg>
</args>
</request>
```

Show unformatted Send as message

# Action: Route

Step 3: Transform with XSLT style sheet Action:Input=dpvar\_1, Transform=local:///searchConfig.xsl, ParseSettingsReference= , ParseMetricsResultType=none, TransformLanguage=none, ActionDebug=off, Output=PIPE, NamedInOutLocationType=default, SSLClientConfigType=proxy, OutputType=default, Transactional=off, SOAPValidation=body, SQLSourceType=static, JWSVerifyStripSignature=on, Asynchronous=off, ResultsMode=first-available, RetryCount=0, RetryInterval=1000, MultipleOutputs=off, IteratorType=XPATH, Timeout=0, MethodRewriteType=GET, MethodType=POST, MethodType2=POST

name	type	value
var://service/aaa-error-logs	node-set	(show nodeset)
var://service/b2b-proxy/b2b-message-id	string	(empty string)
var://service/b2b-proxy/b2b-partner-from	string	(empty string)

Sets a *Service Variable*

# Action: *Route*

Transaction 27248 Context 2 - Mozilla Firefox  
https://192.168.100.201:9090/support.xml?action=multistepDebugStepPopup&class=mpgw&object=DPAdmin&context=27248%230&tra

var://service/processor-type	string	'Multiprotocol Gateway'
var://service/protocol	string	'https'
var://service/protocol-method	string	'POST '
var://service/qos/priority	string	'normal'
var://service/rewrite-errors	string	'-1'
var://service/routing-url	string	'https://192.168.100.201:5550/service/mgmt/current'
var://service/routing-url-delay-content-type-determination	string	'https://192.168.100.201:5550/service/mgmt/current'
var://service/routing-url-sslprofile	string	(empty string)
var://service/soap-fault-response	string	'0'
var://service/strict-error-mode	string	'false'
var://service/system/ident	node-set	(show nodeset)
var://service/timeelapsed	string	'34'
var://service/time-forwarded	string	'0'
var://service/time-response-complete	string	'0'
var://service/time-started	string	'7'
var://service/tls-info	node-set	(show nodeset)
var://service/transaction-audit-trail	node-set	(show nodeset)
var://service/transaction-client	string	'192.168.100.1'

*var://service/routing-url*

# Transform creates XMI

Transaction 27248 Context 3 - Mozilla Firefox  
https://192.168.100.201:9090/support.xml?action=multistepDebugStepPopup&class=mpgw&object=DPAdmin&context=27248%:

Previous      Input Context '4' of Step 0      Next

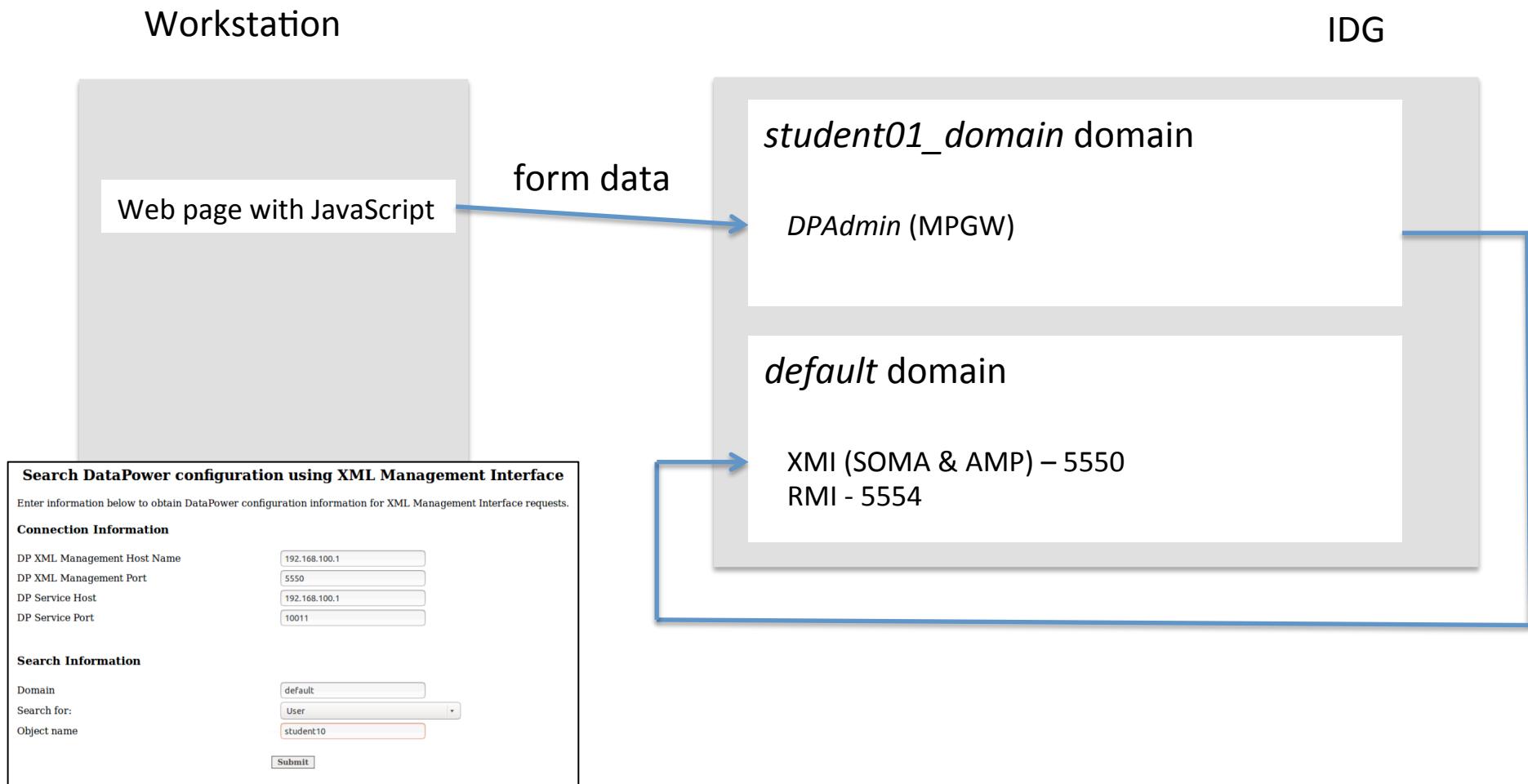
Step 4: Results Action:Input=PIPE, ParseSettingsReference= , ParseMetricsResultType=none, TransformLanguage=none, ActionDebug=off, NamedInOutLocationType=default, SSLClientConfigType=proxy, OutputType=default, Transactional=off, SOAPValidation=body, SQLSourceType=static, JWSVerifyStripSignature=on, Asynchronous=off, ResultsMode=first-available, RetryCount=0, RetryInterval=1000, MultipleOutputs=off, IteratorType=XPATH, Timeout=0, MethodRewriteType=GET, MethodType=POST, MethodType2=POST

Content    Headers    Attachments    Local Variables    Context Variables    Global Variables    Service Variables

Content of context 'PIPE':

```
<env:Envelope
  xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:dpconfig="http://www.datapower.com/param/config"
  xmlns:dpquery="http://www.datapower.com/param/query"
  xmlns:xalan="http://xml.apache.org/xslt"
>
  <env:Body>
    <dp:request domain="default"
      xmlns:dp="http://www.datapower.com/schemas/management"
    >
      <dp:get-config class="User" name="student99" />
    </dp:request>
  </env:Body>
</env:Envelope>
```

# XMI – Exercise Sections 2.4, 2.5



# End

- Further slides WIP ...

# DPAAdmin –Front Side Protocol

 Configure Multi-Protocol Gateway

General Advanced Subscriptions Policy SLA Policy Details Stylesheet Params Headers Monitors WS-Addressing

Apply Cancel Delete Export | View Log | View Status | Show Probe | Validate Configuration

Multi-Protocol Gateway status: [up]

### General Configuration

**Multi-Protocol Gateway Name**  
DPAdmin \*

**Summary**  
Service that illustrates SOAP requests to

**Type**  
 dynamic-backends \*  
 static-backend \*

**XML Manager**  
default + ... \*

**Multi-Protocol Gateway Policy**  
DPAdminAppPolicy + ... \*

**URL Rewrite Policy**  
(none) + ...

---

**Back side settings**  
With a dynamic proxy back end type, the back end server address and port are determined by a stylesheet in a policy action.

**Front side settings**  
**Front Side Protocol**  
https\_fsh\_dpadmin (HTTPS Handler) 

Add

# *DPAadmin MPGW*

## **Back side settings**

With a dynamic proxy back end type, the back end server address and port are determined by a stylesheet in a policy action.

## **Front side settings**

### **Front Side Protocol**

https_fsh_dpadmin (HTTPS Handler)	X		
<input type="button" value="▼"/>	<input type="button" value="+"/>	<input type="button" value="..."/>	<input type="button" value="Add"/>
*			

## **User Agent settings**

Match	Property
-------	----------

Note: To edit the User Agent, please access via the XML Manager above.

### **SSL client type**

Proxy Profile ▾

### **SSL proxy profile (deprecated)**

ssl\_proxy\_profile\_dpadmin ▾ + ...

# https\_fsh\_dpadmin

IBM DataPower Gateway | Configure: HTTPS Handler - Mozilla Firefox

https://192.168.100.201:9090/configure/HTTPSSourceProtocolHandler/https\_fsh\_dpadmin?skipNav=true&editObjPopup:

Main Advanced

HTTPS Handler: https\_fsh\_dpadmin [up]

Apply Cancel Undo Export | View Log | View Status | Help  
Quiesce | Unquiesce

Administrative state  enabled  disabled

Comments

Local IP address 0.0.0.0 Select Alias \*

Port 10011 \*

Allowed methods and versions

- HTTP 1.0
- HTTP 1.1
- HTTP/2
- POST method
- GET method
- PUT method
- HEAD method

# ssl\_proxy\_profile\_dpadmin

Allow WebSocket upgrade  on  off

SSL server type

SSL proxy profile (deprecated)    \*

# *StudentIdCred*

## Configure SSL Proxy Profile (deprecated)

This configuration is defined externally - Apply to save locally.

Main

SSL Proxy Profile (deprecated): ssl\_proxy\_profile\_dpadmin [up]

Administrative state:  enabled  disabled

SSL Direction: Reverse \*

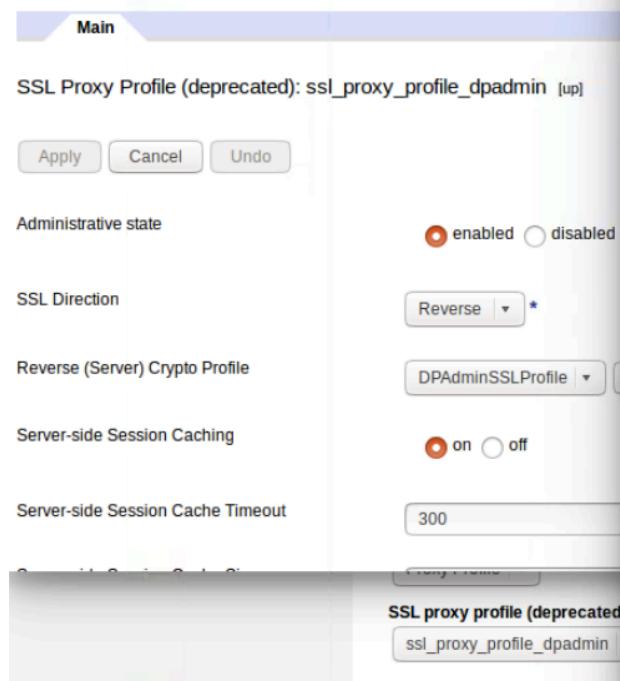
Reverse (Server) Crypto Profile: DPAdminSSLProfile

Server-side Session Caching:  on  off

Server-side Session Cache Timeout: 300

SSL proxy profile (deprecated): ssl\_proxy\_profile\_dpadmin

Options



IBM DataPower Gateway | Configure: Crypto Profile - Mozilla Firefox  
https://192.168.100.201:9090/configure/CryptoProfile/DPAdminSSLProfile?skipNav=true&editObjPopup=true&edit

## Configure Crypto Profile

This configuration has been modified, but not yet saved.

Main

Crypto Profile: DPAdminSSLProfile [up]

Export | View Log | View Status | Help

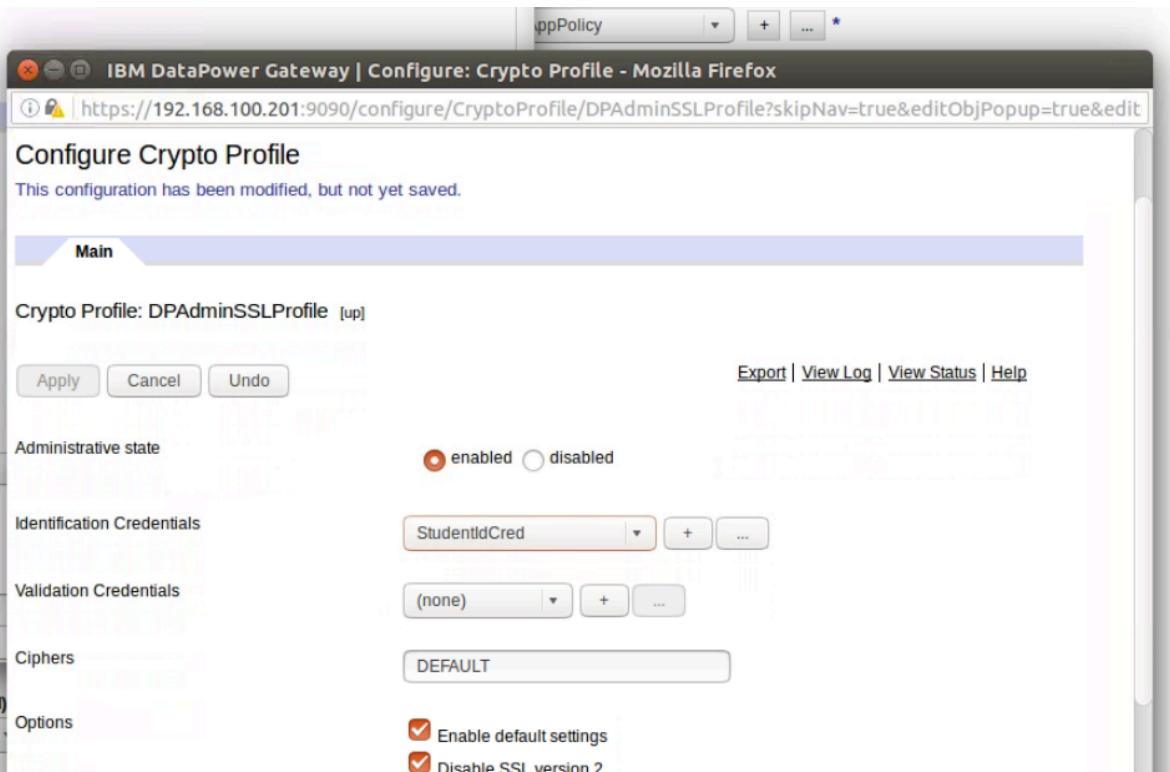
Administrative state:  enabled  disabled

Identification Credentials: StudentIdCred

Validation Credentials: (none)

Ciphers: DEFAULT

Enable default settings  
 Disable SSL version 2



We are actually using this in the Front Handler!

# External definitions

The screenshot shows a Mozilla Firefox browser window displaying the 'Object Status' page of the IBM DataPower Gateway. The URL in the address bar is <https://192.168.100.201:9090/status/ObjectStatus?skipNav=true&action=refresh&oper>. A yellow warning bar at the top states: 'Debug Probe and Intensive Level of Logging (in default domain) are enabled, which impacts performance. [Change Troubleshooting Settings](#)'. The main title is 'Object Status'. Below it are 'Refresh Status' and 'Help' buttons. Under 'Unused properties:' are 'Show' and 'Hide' buttons. The main content is a table with columns: Name, Status, Op-state, Admin-state, Detail, and logs. The table lists various objects under the 'Multi-Protocol Gateway' category, including 'DPAdmin [Multi-Protocol Gateway]', 'https\_fsh\_dpadmin [HTTPS Handler]', 'ssl\_proxy\_profile\_dpadmin [SSL Proxy Profile (deprecated)]', 'DPAdminSSLProfile [Crypto Profile]', 'StudentIdCred [Crypto Identification Credentials]', 'StudentKeyObj [Crypto Key]', 'StudentKeyObj [Crypto Certificate]', and 'default [XML Manager]'. Most objects are in 'up' status, except for 'ssl\_proxy\_profile\_dpadmin' which is 'Modified'. All objects have their 'Admin-state' set to 'enabled'. There are also 'Detail' and 'logs' links for each row.

Name	Status	Op-state	Admin-state	Detail	logs
<b>Multi-Protocol Gateway</b>					
DPAdmin [Multi-Protocol Gateway]	External	up	enabled		
https_fsh_dpadmin [HTTPS Handler]	Modified	up	enabled		
ssl_proxy_profile_dpadmin [SSL Proxy Profile (deprecated)]	External	up	enabled		
DPAdminSSLProfile [Crypto Profile]	Modified	up	enabled		
StudentIdCred [Crypto Identification Credentials]	Saved	up	enabled		
StudentKeyObj [Crypto Key]	Saved	up	enabled		
StudentKeyObj [Crypto Certificate]	Saved	up	enabled		
default [XML Manager]	Saved	up	enabled		

# XMI -

IDG

*default domain*

XMI (SOMA & AMP) – 5550  
RMI - 5554

*default domain*

XMI (SOMA & AMP) – 5550  
RMI - 5554

# Log target Archival Upload

Identical Event Detection  on  off

---

**Destination Configuration**

File Name  \*

Remote Host   \*

Remote Port

Remote Login  \*

Remote Password   \*

Remote Directory

---

**Archival**

Log Size  kilobytes\*

Archive Mode  \*

Upload Protocol  \*

---

**Other Properties**

Backup Log