



IBM Software Group

# Monitoring DataPower revisited: ITCAM for SOA 7.2, ITCAM Agent for DataPower 7.1, and WAMC 5.0

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5 June 2013



WebSphere® Support Technical Exchange

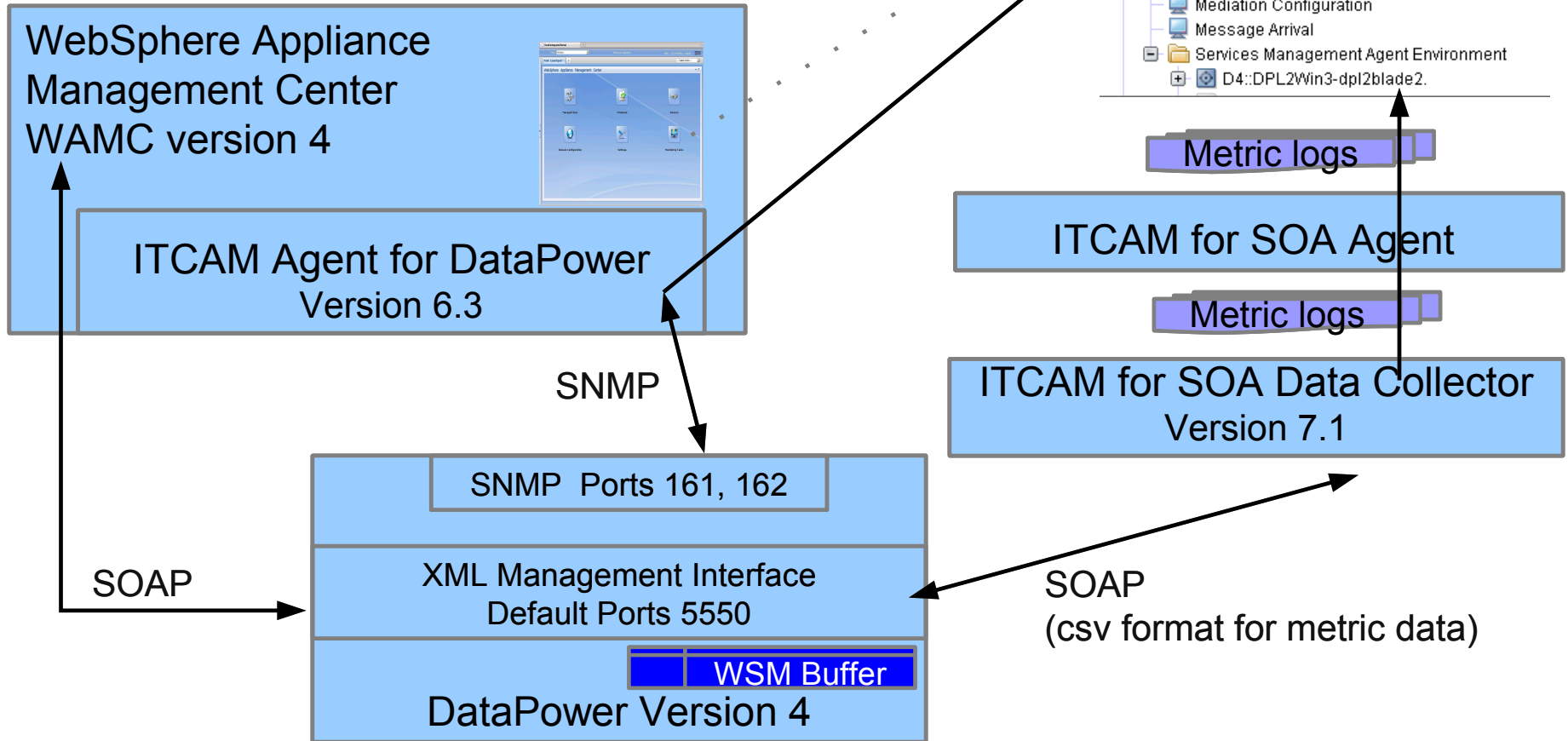


# Agenda

- Monitoring and management changes in 2012
  
- Sample issues
  - ▶ DataPower monitoring - ITCAM Agent
  - ▶ Appliance management - WAMC
  - ▶ Services management - ITCAM SOA



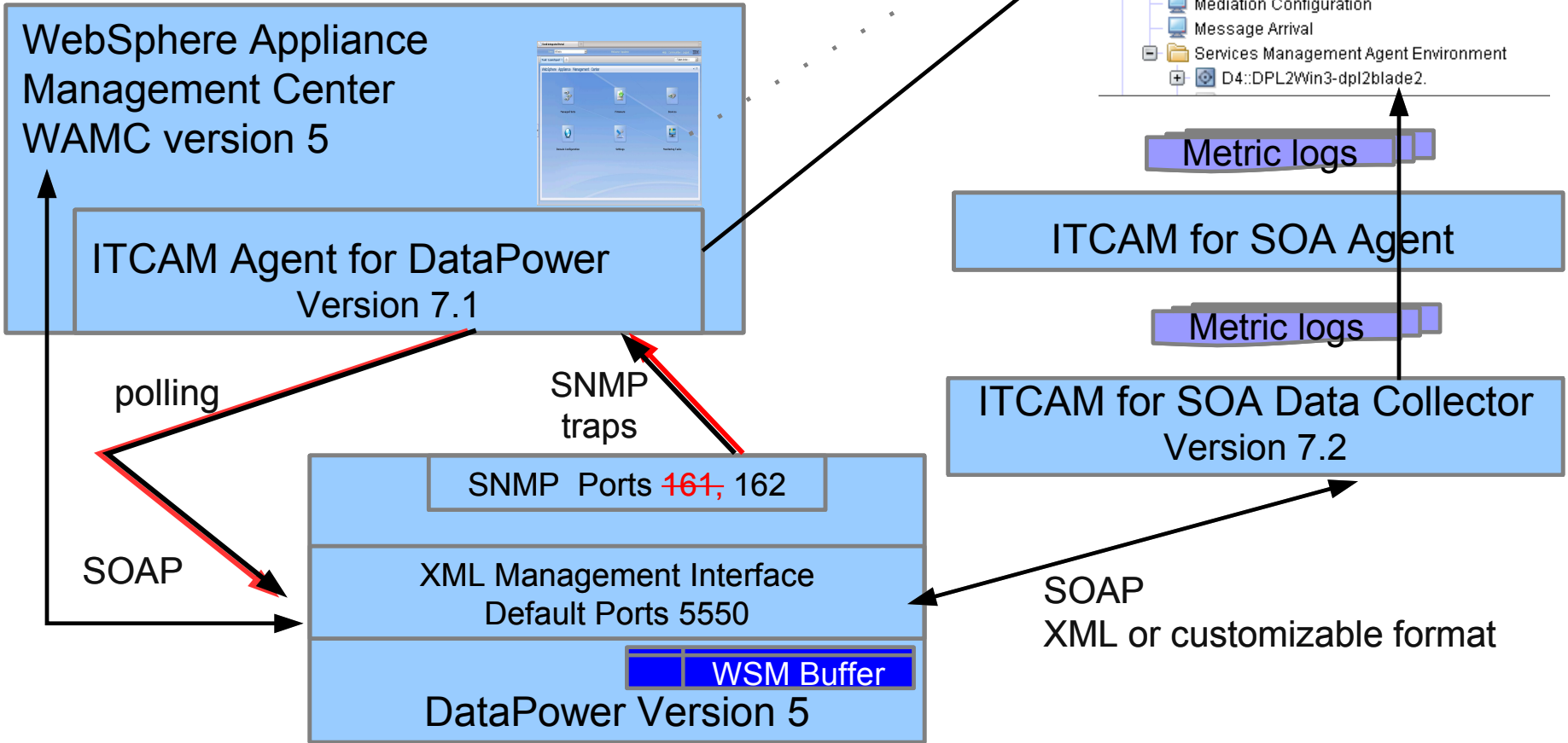
# Monitoring and Management April 2012



# New software versions released 2012

- WAMC version 5
  - ▶ Appliance grouping and group filters
- DataPower version 5
  - ▶ disabling WSM for some Web Service Proxies
- ITCAM for SOA 7.2
- ITCAM Agent for DataPower 7.1
  - ▶ Agent and Domain Status, DataPower XC10

# Monitoring and Management 2013



# Troubleshooting – sample issues

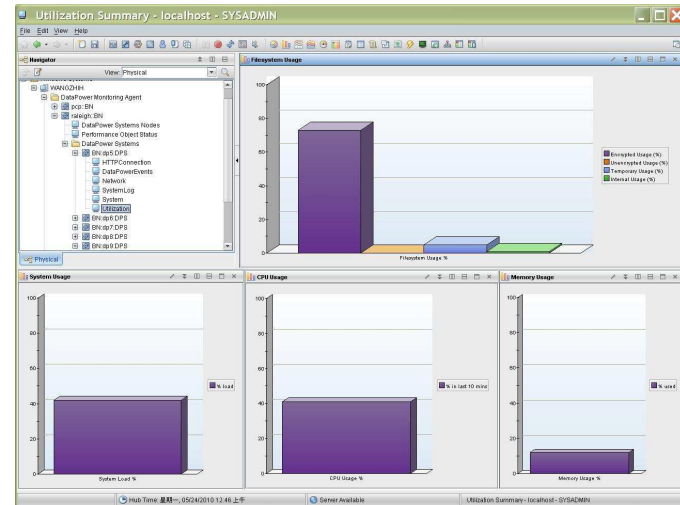
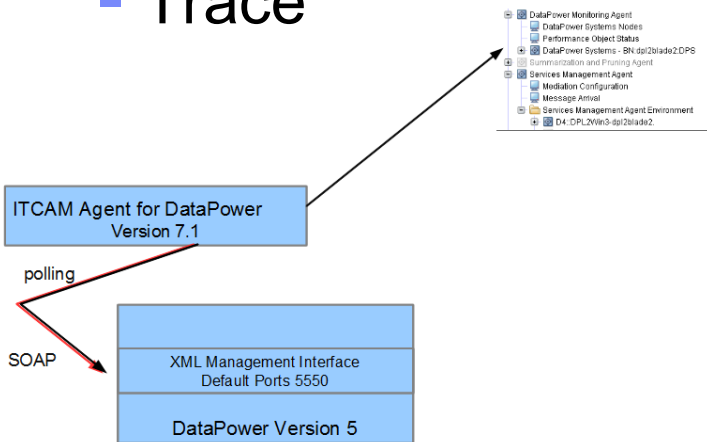
- DataPower monitoring (BN agent)
  - ▶ No DataPower utilization in Tivoli Enterprise Portal (TEP)
  - ▶ SNMPv3 trap fails with 0x80400084 SNMP
- Appliance Management (WAMC)
  - ▶ Common issues
  - ▶ Copying a domain to another appliance
- Services management (KD4 agent)  
Data exchanged in the DataPower / ITCAM SOA interface
  - ▶ Schema store://wsm.xsd dp-wsm-agent-append.xsd
  - ▶ Debug options
  - ▶ DataPower Authentication and Authorization (AAA) client-id

# Monitoring and Management

## DataPower monitoring: No utilization reported in TEP

### Analysis

- Review SSL proxy profile
- Test XML management
- Trace



# Troubleshooting – DataPower monitoring

A Custom SSL Proxy Profile configured for the DataPower XML Management Interface...

## Configure XML Management Interface

[main](#) **Advanced** [SLM](#)

XML Management Interface [up]

Custom SSL Proxy Profile

philProxyProfile

...may cause SSL and certificate exceptions in the ITCAM BN agent:

javax.net.ssl.SSLHandshakeException:  
PKIX path building failed:

java.security.cert.CertPathBuilderException:  
PKIXCertPathBuilderImpl could not build a valid CertPath

java.security.cert.CertPathValidatorException:  
The certificate issued by xxxxx is not trusted

java.security.cert.CertPathValidatorException:  
Certificate chaining error.

Address the exceptions with these steps:

Configuring SSL Connection between ITCAM Agent and WebSphere DataPower SOA Appliance

<http://www-01.ibm.com/support/docview.wss?uid=swg21622433>



# Troubleshooting – DataPower monitoring

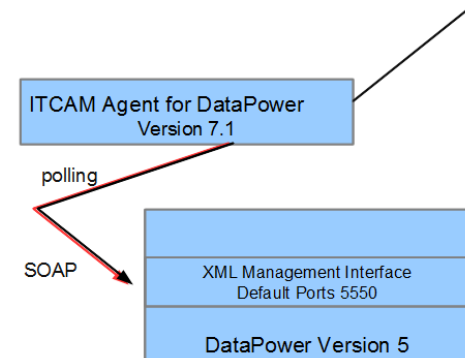
## Test the XML Management Interface

- Create a simple XML management request in an XML file

```
<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/">  
<env:Body>  
<dp:request domain="default"  
    xmlns:dp="http://www.datapower.com/schemas/management">  
<dp:get-status class="WSMAgentStatus"/>  
<dp:get-status class="WSMAgentSpoolers"/>  
</dp:request>  
</env:Body>  
</env:Envelope>
```

- Use curl or another tool to send the file to the DataPower host and port configured in the ITCAM BN agent

```
curl -k --data-binary @xml_mgmt_wsm_status.xml  
https://mydatapower:5550/service/mgmt/current -u myuserid:mypassword
```



# Troubleshooting – DataPower monitoring

## Enable ITCAM BN Agent Trace

For more information about XML Management Interface requests and responses

- Review the standard logs for errors: <ITM INSTALLDIR>/logs/\*kbnagent\*.log
- Edit config file <ITM INSTALLDIR>/config/bn.ini
- Change JAVA\_TRACE\_LEVEL=ERROR to JAVA\_TRACE\_LEVEL=DEBUG\_MAX
- Review trace log, <ITM INSTALL DIR>/logs/kbn\_ \*\_\*\_trace.log

Example log output for wrong hostname configured in agent for the TEMS:

Log file: <ITM\_INSTALL\_DIR>/logs/dpautosrv2\_bn\_dp517\_kbnagent\_519cf07f-01.log

(519CF07F.01D9-9:kraarreg.cpp,1884,"FindProxyUsingLocalLookup") Unable to create socket to host ip.pipe:*wronghostname*, status = 10020003

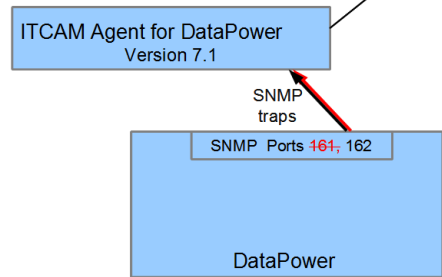
(519CF07F.01DA-9:kraarreg.cpp,1897,"FindProxyUsingLocalLookup") Unable to find running CMS on CT\_CMSLIST <ip.pipe:*wronghostname*>

# Troubleshooting – DataPower monitoring

SNMP version 3 traps fail with Message 0x80400084 SNMP



11:58:09	mgmt	error	223	0x80400084	SNMP
11:58:09	mgmt	error	223	0x80400084	SNMP
11:58:09	mgmt	error	223	0x80400084	SNMP
11:58:09	mgmt	error	223	0x80400084	SNMP



## Analysis: SNMPv3 user configuration review

- ▶ DataPower SNMPv3 user name specified
- ▶ DataPower SNMPv3 user name matches the trap targets security name
- ▶ DataPower SNMPv3 user credentials authentication secret and privacy secret match ITCAM BN Agent
- ▶ SNMP mustgather



# Troubleshooting – DataPower monitoring

The name of the SNMPv3 user should be specified in the SNMP Settings

SNMPv3 user name on the Main tab should match the Security Name on Trap and Notification Targets tab

Configure SNMP Settings

This configuration has been modified, but not yet saved.

Apply Cancel Undo

Administrative State:  enabled  disabled

Comments:

Local IP Address: 0.0.0.0

Local Port: 161

SNMPv3 Users: phil

Community	Version	Security Name	Security Level	
public	3	phil	Authentication, Privacy	

Add



# Troubleshooting – DataPower monitoring

DataPower SNMPv3 User Credentials Authentication Secret and Privacy Secret must match ITCAM BN Agent configuration

**Edit SNMP V3 User Credentials**  
 (Objects > Access Settings > User Account > Configure User Account > SNMP V3 User Credentials)

EngineID	<input type="text" value="0"/> *
Authentication Protocol	SHA ▾ *
Authentication Secret Type	Password ▾ *
Authentication Secret	<input type="password" value="....."/> *
Privacy Protocol	DES ▾ *
Privacy Secret Type	Password ▾ *
Privacy Secret	<input type="password" value="....."/> *

Apply Cancel

```

##### KBN CONFIGURATION #####
# ----- SNMP Events configuration items for the KBN Agent ---
# Port Number
# This parameter is required. (default is 162) old 164
KQZ_SNMPEVENT_PORT=164
# Security Level
# This parameter is required. (default is authPriv)

# SNMP Authentication Protocol
# This parameter is required. (default is SHA)
# Valid values are: SHA or MD5
KQZ_SNMPEVENT_AUTH_PROTOCOL=SHA

# SNMP Authentication Secret
# This parameter is NOT required.
KQZ_SNMPEVENT_AUTH_PASSWORD=password

# SNMP Privacy Protocol
# This parameter is required. (default is DES)
KQZ_SNMPEVENT_PRIV_PROTOCOL=DES

# SNMP Privacy Secret
# This parameter is NOT required.
KQZ_SNMPEVENT_PRIV_PASSWORD=password
    
```

# Troubleshooting – DataPower monitoring

If configuration review fails, walk through the steps in two technotes:

MustGather - Testing SNMP alerts from DataPower

<http://www-01.ibm.com/support/docview.wss?uid=swg21418608>

- Set up DataPower SNMP log target
- Create test traps
- Review the SNMP log target status
- Utilize DataPower packet capture

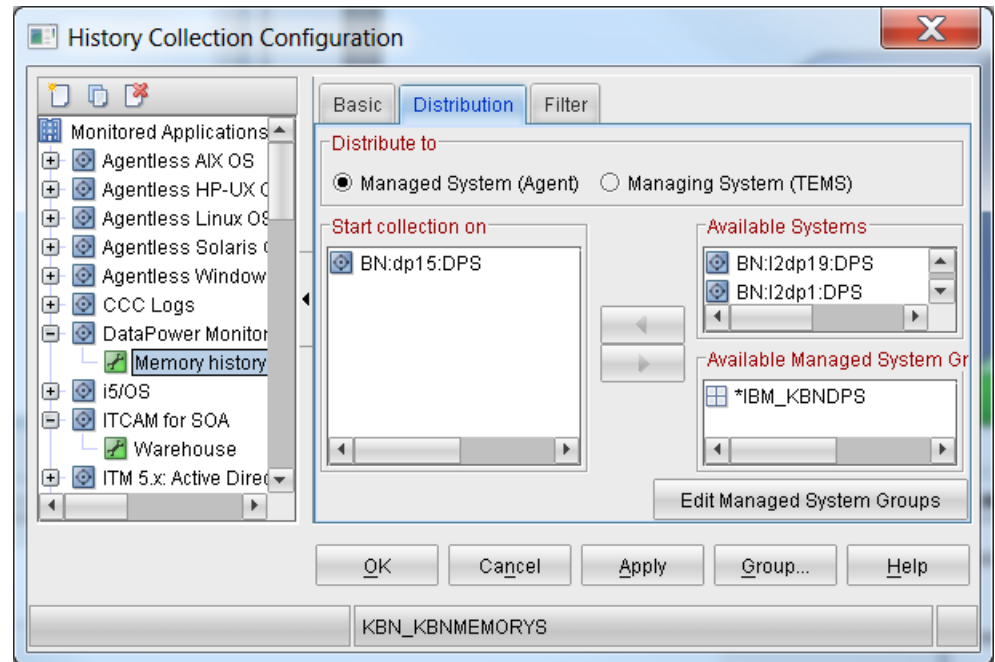
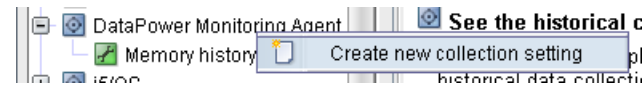
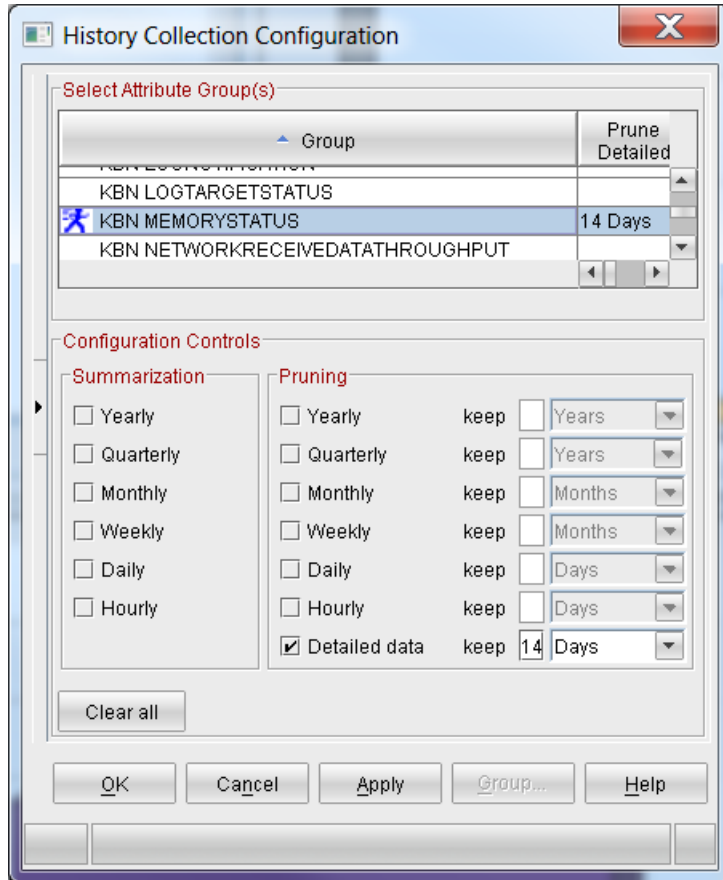
The difference between "default" and static routes on the DataPower appliance

<http://www-01.ibm.com/support/docview.wss?uid=swg21249208>



# Using DataPower utilization monitoring

Configuring historical collection in the TEP helps with understanding memory usage



# Using DataPower utilization monitoring

To access the historical data

- Select the Utilization Navigator item
- Right click and select Memory Usage workspace
- Click on the calendar/clock icon upper right
- Select the time span for historical navigation.

The screenshot displays the IBM DataPower monitoring interface. The top window shows the 'Navigator' pane with a tree view of system components, including 'DataPower Appliances Nodes', 'DataPower Appliances', and 'Utilization'. The 'Utilization' item is selected. Below the navigator is a 'Memory Usage Detail' chart showing memory usage in Megabytes over time. A dialog box titled 'Select the Time Span for Historical Navigation' is open, allowing users to choose between 'Real time', 'Real time plus Last' (with a field for hours), or 'Last' (with a field for 48 hours). The dialog also includes options for 'Last parameters' (Use detailed data, Use summarized data) and 'Custom parameters' (Use detailed data, Use summarized data, Interval, Shift, Days, Start Time, End Time).



# Troubleshooting – Appliance Management

## Common issues

- Secure backup must be enabled at initialization  
<http://www-01.ibm.com/support/docview.wss?uid=swg21618697>
- Troubleshooting chapter in April 2013 WAMC Redbook sg248026
  - ▶ 8.1 Issues with the installer
  - ▶ 8.2 Issues with the graphical user interface
  - ▶ 8.3 Issues with WebSphere DataPower Appliances
  - ▶ 8.4 Issues with firmware
  - ▶ 8.5 Logging and trace
  - ▶ 8.6 Technotes

# Troubleshooting – Appliance Management

Copy a domain to another appliance in four steps with WAMC

**1**

Other Actions

3 items shown Clear filter

Name	Appliance
default	dpl2virt3a
philsdomain	dpl2virt3a
treysdomain	dpl2virt3a

**2**

Appliances Domains Services Repository

Other Actions

No filter applied

**3**

## Create Domain

### Summary of appliances selected:

Name	Appliance Type
dpl2virt2a	XI52

New domains are created by using existing configuration. You can either use a backup the domain of the same name, or a configuration export that contains objects to use in the ne

\* Specify the name for this new domain:

**Note:** After a domain is created, you cannot change its name.

Next

# Troubleshooting – Appliance Management

Copy a domain to another appliance in four steps with WAMC

4

## Create Domain

### Specify the configuration source for this domain:

The configuration source can be:

- A backup that contains a domain of the same name, or a configuration export that contains objects to include in this domain, loaded from one of the following locations:
  - A local file
  - A remote location accessed through HTTP or HTTPS
- An existing domain of the same name on another appliance

Local file

Select file:

Browse

Remote location (URL)

Specify URL: [?](#)

An existing domain of the same name:

Select domain:

Appliance dpl2virt3a, Domain philsdomain

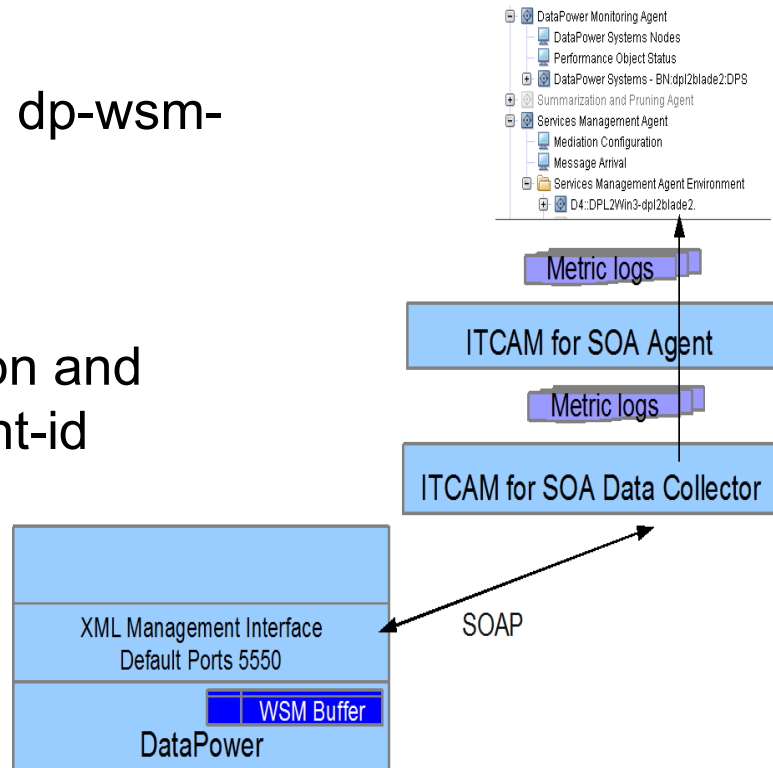


Deploy domain configuration to 'philsdomain' on appliance 'dpl2virt2a' | Completed successfully

# Troubleshooting – Services Management

Data exchanged in the DataPower / ITCAM SOA interface

- ▶ Schema store://wsm.xsd dp-wsm-agent-append.xsd
- ▶ Debug options
- ▶ DataPower Authentication and Authorization (AAA) client-id



# Troubleshooting – Services Management

Schema store://schemas/dp-wsm-agent-append.xsd

Provides documentation on the Web Services Management (WSM) data elements collected by ITCAM SOA

```
<xsd:element name="wsa-record">
  ...
  <xsd:element name="service-port" type="tns:defaulted-string" minOccurs='0' maxOccurs='1'>
  ...
  <xsd:element name="ws-operation" type="tns:defaulted-string" minOccurs='0' maxOccurs='1'>
  ...
  <xsd:element name="ws-client-id" type="tns:defaulted-string" minOccurs='0' maxOccurs='1'>
    <xsd:annotation>
      <xsd:documentation>
        Record the ITCAM client id value.
        This value is populated by AAA Policy which must be executed
        first. Otherwise, a value may be provided manually.
      </xsd:documentation>
    </xsd:annotation>
  </xsd:element>
```

# Troubleshooting – Services Management

- Enabling debug on DataPower is an option to see WSM data element details

Enable: `set-system-var var://system/ws-mgmt/debug 3`

Disable: `set-system-var var://system/ws-mgmt/debug ""`

- Files created in temporary: in the default domain when debug enabled
  - ▶ `event-<Domain Name>.xml` Transaction data in XML format
  - ▶ `<Formatter Name>-<Domain Name>.out` Formatted Record - temporary://
  - ▶ `request-<Domain Name>.xml` ITCAM SOA pull request
- Effective in low volume development environments
  - ▶ Shows only data pulled in most recent ITCAM SOA data collection
  - ▶ Consider increasing poll interval to collect more data
  - ▶ Not recommended for production

# Troubleshooting – Services Management

## Our Test

- Web Service Proxy based on HelloWorld.wsdl (see resources page)
- Request file

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:sam="http://samples">
  <soapenv:Header/>
  <soapenv:Body>
    <sam:sayHello>
      <name>user1</name>
    </sam:sayHello>
  </soapenv:Body>
</soapenv:Envelope>
```

- Sent using curl  
curl --data-binary @sayHello.xml http://mydatapower:5050/HelloSvc/HelloService

# Troubleshooting – Services Management

File temporary:///events-domain.xml shows the data sent for the last transactions collected by ITCAM for SOA:

```
<transaction tid="689770823" xmlns="http://www.datapower...  
...  
<service-port>{http://samples}Hello</service-port>  
<ws-operation>{http://samples}sayHello</ws-operation>  
<ws-client-id>user1</ws-client-id>  
...  
<duration-ms>124</duration-ms>  
<request-size>261</request-size>  
...  
<response-size>547</response-size>  
...  
</transaction>
```

The events file has elements found in store://schemas/dp-wsm-agent-append.xsd

```
<xsd:element name="service-port" ...
```

```
<xsd:element name="ws-operation" ...
```

```
<xsd:element name="ws-client-id"
```



# Troubleshooting – Services Management

- File <Formatter Name>-<Domain Name>.out shows actual data collected
- File name in our test: itcamsoa-domain.out
- Shows the formatting used, in this example comma separated
- Expect 1 record per request, 1 per response

```
<env:Envelope xmlns:env="http://www.w3.org/2003/05/soap-envelope" ...>
<env:Header><wsa:To></wsa:To><wsa:Action>...</wsa:Action></env:Header>
<env:Body>
<wsen:PullResponse>
<wsen:EnumerationContext>uuid:283f1107-...59be</wsen:EnumerationContext>
<wsen:Items><dpt:transaction-log records="2" format="text" version="0.9" ...>
1,1369161597000,124,689770823,HTTP,"""http://9.42.125.231:5050/HelloSvc/HelloService"
2,1369161597000,30,689770823,HTTP,"""http://127.0.0.1:2060/HelloSvc/HelloService""",
</dpt:transaction-log>
</wsen:Items>
</wsen:PullResponse>
</env:Body>
</env:Envelope>
```

# Troubleshooting – Services Management

Request-domain.xml shows the request for data

The subscriber, ITCAM SOA, sent this Pull request to DataPower

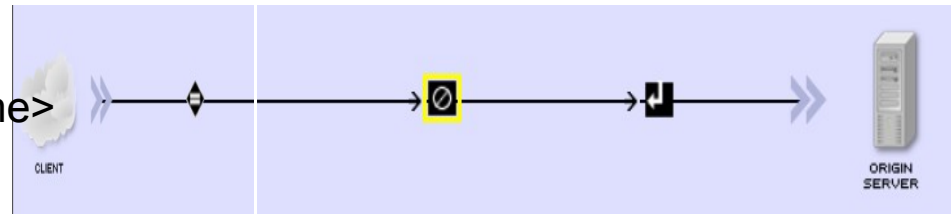
```
<env:Envelope ...>
<env:Header>
<wsa:ReferenceProperties>
<dpt:Domain> mydomain </dpt:Domain>
<dpt:Format > ITCAMSOA </dpt:Format>
<dpt:Content> none </dpt:Content>
<wse:Identifier> uuid:283f1107-...59be </wse:Identifier>
</wsa:ReferenceProperties>
<wsa:To> ... </wsa:To>
<wsa:Action>...</wsa:Action>
<wsman:System>...</wsman:System>
</env:Header>
<env:Body>
<wsen:Pull>
<wsen:EnumerationContext> uuid:283f1107-...59be </wsen:EnumerationContext>
<wsen:MaxElements> 30000 </wsen:MaxElements>
</wsen:Pull>
</env:Body>
</env:Envelope>
```

# Troubleshooting – Services Management

## Client ID not populated in TEP

- A DataPower AAA action sets client ID for ITCAM SOA data collection

```
<soapenv:Body>
  <sam:sayHello>
    <name>user1</name>
  </sam:sayHello>
</soapenv:Body>
```



- Confirm client ID is set by using the events debug file

```
<service-port>{http://samples}Hello</service-port>
<ws-operation>{http://samples}sayHello</ws-operation>
<ws-client-id>user1</ws-client-id>
```

- ITCAM for SOA data collector not configured
- Errors parsing WSM data cause metric log failures

# Troubleshooting – Services Management

Client ID not populated in TEP

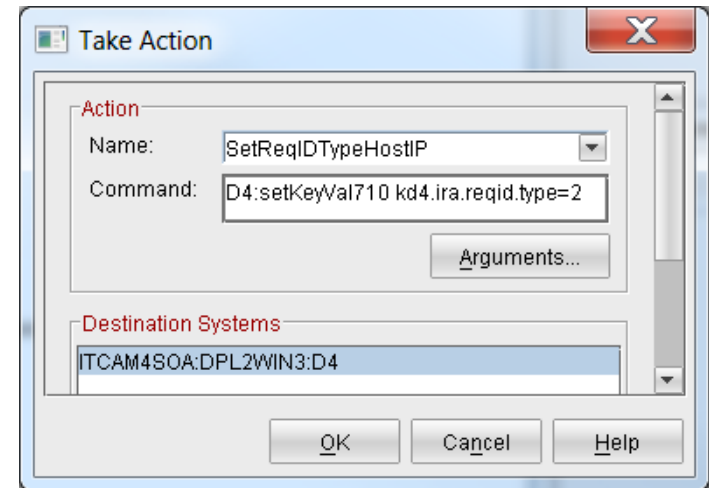
- Review file KD4.dc.properties shows requester ID collection is enabled

```
kd4.ira.reqIdControlsEnabled=1
kd4.ira.reqIdControl.count=1
kd4.ira.reqIdControl.1=*
kd4.ira.reqId.type=2
```

- Check for parsing errors
  - ITCAM SOA operations log

```
java.lang.IllegalArgumentException: Invalid integer value in version field
```

- Confirm that DataPower AAA is generating a multi-line Extract Identity



# Summary

- DataPower monitoring
  - ▶ New 7.1 agent uses both XML Management and SNMP
- Appliance Management
  - ▶ Try features for copying configurations and check technotes for known issues
- Service management
  - ▶ Schema, DataPower debug setting, and ITCAM trace show details of data exchanged



# Resources

## ITCAM Agent for DataPower

- User's Guide:  
[http://publib.boulder.ibm.com/infocenter/tivihelp/v24r1/index.jsp?topic=%2Fcom.ibm.itcama.doc\\_7.1%2Fdatapower%2Ffac\\_landing\\_user.html](http://publib.boulder.ibm.com/infocenter/tivihelp/v24r1/index.jsp?topic=%2Fcom.ibm.itcama.doc_7.1%2Fdatapower%2Ffac_landing_user.html)
  - ▶ Best practices for summarization and pruning  
[http://pic.dhe.ibm.com/infocenter/tivihelp/v61r1/index.jsp?topic=%2Fcom.ibm.itm.doc\\_6.3%2Fadminuse%2Fhistory\\_sumprune\\_bestpractice.htm](http://pic.dhe.ibm.com/infocenter/tivihelp/v61r1/index.jsp?topic=%2Fcom.ibm.itm.doc_6.3%2Fadminuse%2Fhistory_sumprune_bestpractice.htm)
- DeveloperWorks Wiki:  
<https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/Tivoli%20Composite%20Application%20Manager>
- DataPower SOA Appliance Service Planning, Implementation, and Best Practices  
<http://www.redbooks.ibm.com/abstracts/sg247943.html>

## WAMC

- Information Center <http://pic.dhe.ibm.com/infocenter/wamcinfo/v5r0m0/index.jsp>
- WebSphere User Group presentation:  
[http://www.websphereusergroup.org.uk/wug/files/presentations/34/WAMC\\_-\\_Sept2012.pdf](http://www.websphereusergroup.org.uk/wug/files/presentations/34/WAMC_-_Sept2012.pdf)
- Redbook <http://www.redbooks.ibm.com/redpieces/abstracts/sg248026.html>
- RFE community: [http://www.ibm.com/developerworks/rfe/?PROD\\_ID=612](http://www.ibm.com/developerworks/rfe/?PROD_ID=612)

## ITCAM for SOA

- Webcast replay: Monitoring DataPower with ITCAM for SOA, ITCAM Agent for DataPower, and WAMC  
<http://www-01.ibm.com/support/docview.wss?uid=swg27024421>
- HelloWorld.wsdl <http://www.ibm.com/developerworks/webservices/library/ws-noide2/>

# Additional WebSphere Product Resources

- Learn about upcoming WebSphere Support Technical Exchange webcasts, and access previously recorded presentations at:  
[http://www.ibm.com/software/websphere/support/supp\\_tech.html](http://www.ibm.com/software/websphere/support/supp_tech.html)
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<http://www.websphereusergroup.org>
- Access key product show-me demos and tutorials by visiting IBM® Education Assistant:  
<http://www.ibm.com/software/info/education/assistant>
- View a webcast replay with step-by-step instructions for using the Service Request (SR) tool for submitting problems electronically:  
<http://www.ibm.com/software/websphere/support/d2w.html>
- Sign up to receive weekly technical My Notifications emails:  
<http://www.ibm.com/software/support/einfo.html>

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# Questions and Answers