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# Workflow Automation

## Support, tips and troubleshooting guide

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## 1 PURPOSE

The purpose of this document is to describe support procedures for the workflow automation platform (How to open a support case, what are the pre-requisites for opening a case and the required information to collect) as well as to offer an extensive set of troubleshooting tips and scenarios for self-help.

## 2 GENERAL

NetApp's Workflow Automation platform (WFA) is currently released to select customers as part of an Early Access Program. The next version will go through the standard NetApp product release cycle with increased availability. This document aims to define the procedure in regards to opening a support case for WFA and supply a comprehensive set of troubleshooting tips and the tools to handle and avoid known pitfalls.

### 2.1 REFERENCES

Additional Workflow Automation documents may be found in NetApp's workflow automation community ([http://communities.netapp.com/community/interfaces\\_and\\_tools/wfa](http://communities.netapp.com/community/interfaces_and_tools/wfa)). Some notable references:

- WFA Installation and setup guide
- WFA Web services primer
- Command coding guidelines

### 2.2 REVISIONS

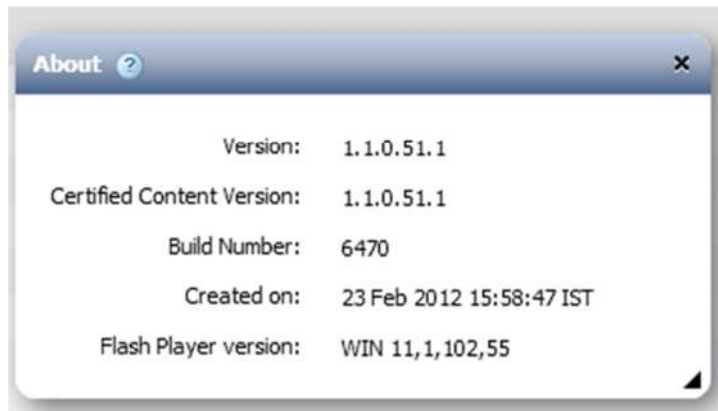
- 1.3:
  - Initial revision (Post review)
- 1.4:
  - Updated for release 1.1

### 3 WFA SUPPORT – LOGGING A SUPPORT CASE

#### 3.1 BEFORE OPENING A CASE

There is no such thing as “Too much information” in regards to handling a problematic situation. When encountering a problem and considering reporting it, it would be best to have the following:

- WFA Version – Can be seen at the bottom of the screen, in the grey status bar (The format is **A.B.C.D.E\_<build number>**, where **A.B.C** would determine the WFA version, while **D.E** denote the base pre-canned definitions info of this version.  
The current pre-canned definition version can be seen with detail under “Help->About”:



- Host VM properties – Which OS version, which co-hosted applications exist
- Backup of WFA DB – Can be created under “Tools -> Backup & Restore”.

If the scenario is workflow execution related – Please download the applicable logs from the workflow preview/execution screen. Additional logs can be acquired from the VM WFA is installed on, under c:\Program Files\Netapp\WFA\JBoss\server\default\log (Providing WFA was installed at C:\Program Files\Netapp\WFA).

If the anomaly is UI related – acquiring a screenshot is highly advisable.

#### 3.2 OPENING A SUPPORT CASE

TBU

## 4 TROUBLESHOOTING WFA

This section contains various tips for scenarios that one may encounter when working with WFA platform and the recommended ways to handle them.

### 4.1 PRE-INSTALLING WFA

- Please refer to WFA POC VM requirement document for the latest in VM requirements.
- It is highly recommended to use a dedicated machine. HW is less of consequence, but having 3GB of RAM as a minimum is required.
- WFA will ascertain that required ports are available – Mainly 80 and 443. Some VMs come with IIS already configured so the WFA installation will alert on port 80 being occupied. Removing IIS role through the Win2k8 roles manager is the fastest way to resolve this and continue with WFA installation.
- Microsoft PoSH 2.0 is required and will be offered if missing during the WFA installation. Please verify that it was installed with any dependency (.Net framework patch) before continuing with the installation.

### 4.2 INSTALLING WFA

- Please refer to WFA installation document for installation procedure details.
- **Upgrade installation** – If you are upgrading from a previous release of WFA, please follow the upgrade procedure as described in the installation document (Backup the database, uninstall the older release, install the latest and restore the database, which will be automatically upgraded).
- WFA should be installed using Administrator rights (By right-clicking the installation kit executable and choosing “Run as Administrator”).
- In case VMware related commands will be used, Please download and install VMware PowerCLI (Release 5.0 and above). It is not part of WFA installation kit and is not installed by default.

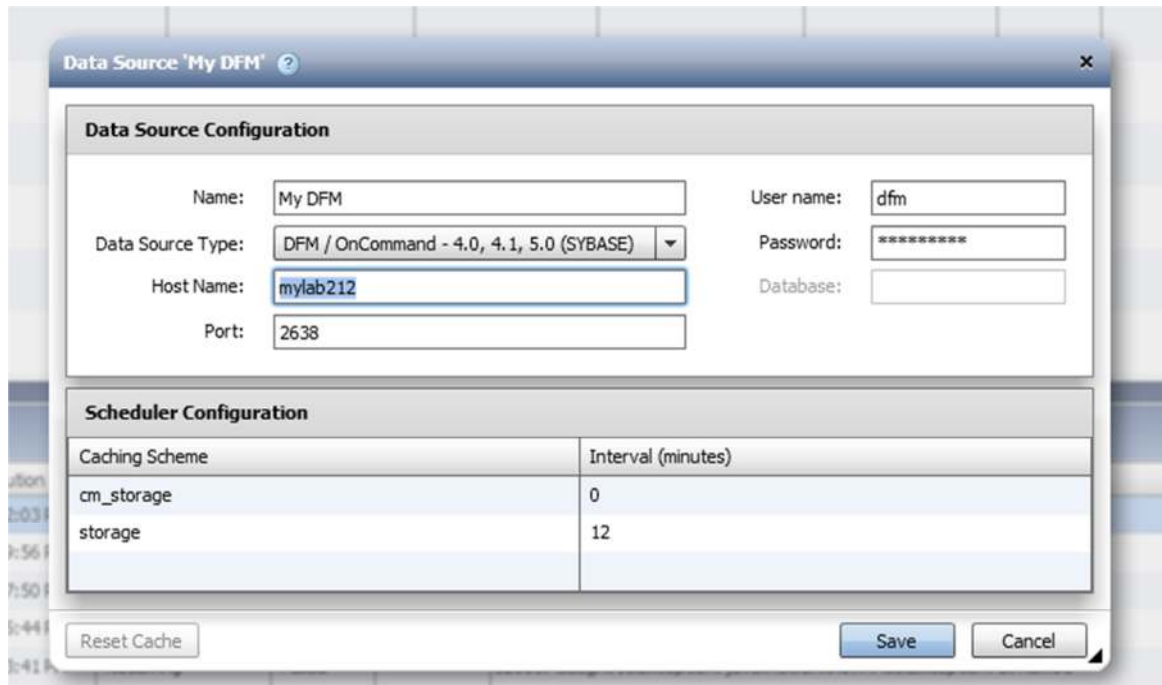
### 4.3 WFA NOT STARTING

- WFA should start automatically after installation and should be available for use in 1-2 minutes. If that’s not the case, verify that log files were created under the log folder (c:\Program Files(x86)\Netapp\WFA\JBoss\server\default\log). If there are no log files (Specifically no server.log) in the directory – Kindly contact support for manual override.
- Verify that the browser is not using any proxy and can reach/resolve its WFA server address.
- WFA requires installation of adobe flash player (Ver 10.4 as a minimum). Kindly install it on your browser of choice (Note the different flash installations for IE and other web browsers).
- Login page has a certain timeout if it was idle for too long. Logging in after the time elapsed may result in a JBoss error page. Please refresh the URL and try again.

- Restarting the WFA server services – WFA has to running services: “NetApp WFA Server” and “NetApp WFA Database”. Please restart the WFA server via the services application (Accessible via: Start-> Run -> Services.msc).
- Failure to login – Verify that the Database service is running. If it was restarted, it will be a good practice to restart the server service as well.

#### 4.4 DATA SOURCES SETUP

- DFM ports 2638 and 2639 should be open and accessible from WFA server
- Setting up DFM 4.0.X as data source – Just type in the IP and leave the default username and password
- Setting up DFM 4.1 and above – There’s a need to create an accessible user for WFA. This can be done by using OC5Setup application, which can be found under the “Bin” sub-folder under WFA installation. Please follow the procedure as per the installation document, appendix D.
- Acquisition interval 0 => No automatic acquisition. Cache would be renewed only when manual acquisition is requested. Manual acquisition is performed by pressing “Acquire Now” in the Data sources screen.
- Failure in acquisition – The first thing to verify is the connectivity to the DFM. Open a telnet from the WFA server to the DFM on port 2638. Wait for either the loopback to appear or for the connection to timeout (Which means the port is blocked on the networking level).
- Warnings in acquisition – The warnings may indicate a data integrity situation in the DFM DB. Note that these rows will not end up in the cache, but in a separate table.
- Reset acquisition cache – Relevant and should be used when changes to the schema were applied (Recommended when WFA was upgraded and the restoration was completed with Warnings).
- How to reset the cache? One way is to go to “Data Sources” screen, double-click on the data source whose scheme you’d like to reset, and select the caching scheme to reset. Once it is highlighted you can press the “Reset Cache” button.  
Another way to reset the cache is from the “Cache tables” screen in the “Cache” left pane menu. Just right click the applicable caching scheme in any row and select “Reset Caching scheme”. The cache will be reset in the next acquisition.



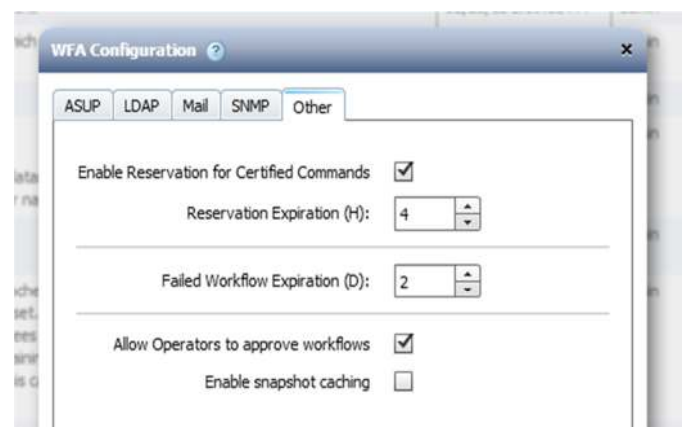
#### 4.5 MAIL SERVER SETUP

- It is possible to get notification on start and conclusion of workflows as well as getting a notification for a failed workflow.
- Configure the sender of workflow emails to allow setting applicable rules in the organizational email client.
- It is highly recommended to test the setup of mail server following its definition.

#### 4.6 ADDITIONAL SERVER SETUP OPTIONS

Some additional setup options can be handled under the “Other” tab of “WFA configuration”:

- Enable Reservation – System-wide enablement of reservation. If unchecked, reservations are not registered not taken into consideration.
- Allow operators to approve workflows – Allowing all operator role users to approve workflows. Else, only architect and admins can approve them.
- Enable snapshot caching – Snapshot is a high-volume object. Given their nature caching them can have an impact in performance. The default behavior is not caching snapshots. It means that they cannot be found with a finder, while commands for creating and removing snapshots will work.



#### **4.7 AUTO-SUPPORT (ASUP) SETUP**

- Please complete the auto-support setup before you start working with WFA. ASUP is set up under “Tools->WFA Configuration” from the top-left menu bar.
- Please fill the “Site” field to allow easy identification of the reporting WFA installation.
- ASUP over HTTP/HTTPS is the preferred medium for sending ASUP.

#### **4.8 ARRAYS SETUP**

- When setting up the arrays for use under “Setup -> Credentials” please make sure you test the connection.
- When setting up credentials based on pattern, ascertain that a device address does not match more than one pattern.

#### **4.9 WORKFLOW PORTAL**

- Internal portal will show a list of all the workflows currently deployed.
- A workflow will be shown in the portal ONLY if the checkbox “Show in Portal” (Accessible through the “Workflow Preferences” dialog) is indeed checked. If it is not – The workflow will not be accessible via the portal, just via the workflow list menu.
- A workflow can be executed via web services API regardless of its production status (Regardless of whether “Show in Portal” is toggled or not).

#### **4.10 WORKFLOW DESIGNER**

- It is highly recommended to follow a certain naming convention for variables and user inputs, so they may be easily distinguishable
  - Example: Separate variable name parts with “\_”(db\_data\_volume),
  - Example: Use Capital letters for them in user inputs (\$VolumeName).
- More information about naming conventions can be found in the Command Coding guidelines document.
- Name your Find-charts – It makes them easier to locate. A “working” naming system is to use the name of the first defined variable.
- Always put meaningful error messages in Find-chart’s error nodes.
- When using multiple commands of the same type in a flow, remember to edit the display name of each instance accordingly.
- Removing a variable/command will not remove a Find-chart associated with the variable (or variables inside the command).
- User inputs are added and removed automatically. If you customized a user input and would like to retain it but relocate it, it would be best to put it somewhere in the workflow table, to prevent inadvertent deletion.
- In case Java commands are still in use – Be aware that SSH access from the WFA server to the array may need to be enabled.



- In case VMware related commands will be used, kindly install VMware PowerCLI that comes with the installation kit. It is not installed by default.

#### 4.11 FINDERS AND FILTERS

- When previewing a workflow and getting an unexpected resource chosen, you can use the “Download logs” button in order to view the how the finder transpired and the resource was selected.
- Use the “Test” button in the Filter definition dialog in order to run that filter on the cache and see the filtration it enforces.
- “Test” button is now also available for finders as well. It will show the results of all the filters combined (Those that show up in all the filters), sorted based on the sorting order employed in the finder definition. The yellow colored row is the one that will be the finder result.

#### 4.12 WORKFLOW EXECUTION PLANNING

- When planning fails, it will mention in which line and command the failure happened. In most cases the Find-chart will be mentioned as well.
- The Find-chart that triggered the issue is the one where the variable (which was not resolved) is defined.
- Strings need to be encased with single quotes (') or double quotes ("). The typical error for missing those quotes is :  
[Error: could not access property: Test\_aggregate]
- Every object has several mandatory attributes that must be given values. If one of them is missed an error along the lines of the following is shown:  
Failed to resolve a mandatory parameter: 'Size' for command: 'Create Volume1' using value: 'vol1.size\_mb' in row: 1
- The information in the “Overview” tab of the Workflow Execution dialog can be fully customized. The information that will appear is defined in the “ToString” field of the command in question and may be fully customized.

#### 4.13 WORKFLOW EXECUTION ISSUES

- A common error in workflow execution is failure to communicate with the array in question. The planning phase may acknowledge the array as a viable option, but the communication may not be possible (Network issues, or a stale cache). It is advised to acquire from the various caches prior to execution (All the more so if manual acquisition was set up). Keeping the cache current will certainly contribute towards achieving successful execution.
- Currently, there is minimal validation of execution with the array. As a result, if a volume of the same name already exists it may result in execution failure.
- In the Workflow execution dialog (The one with the overview and preview tabs) there's a tab called “Runtime designer”. It will show resolution of various variables during the execution of the workflow. It may provide more information of why the execution went down one path and not the other.

- The log of every command can be found when double-clicking the applicable cell in the “Overview” tab of the Workflow Execution dialog.

#### **4.14 WORKFLOW EXECUTION MONITORING**

- Under “Execution -> Monitoring” you may see the current status of the execution and previous executions of workflows.
- For every previous execution it should be possible to open the logs of that execution and see (In the “Overview” tab) the specific log of that command as it happened.
- Seeing the user inputs used in a past execution is possible – See “User inputs” tab of the Workflow Execution monitor.

#### **4.15 BACKUP & RESTORE**

- Please refer to WFA installation document for details about WFA upgrade procedure.
- When backing up the WFA database there are cases where taking cached data is not required (When upgrading a version to one with updated cache information) or even problematic (Moving a backup from a test environment to production environment).
- Restoration of a backup may include update of the pre-canned definitions. If that is required, make sure the applicable checkbox is checked under the restore screen. Moreover, note that this will overwrite the pre-canned definitions and may remove changes made to the pre-canned commands and objects. If that happens by mistake, please restore again, but uncheck the pre-canned checkbox.
- Failure to restore a backup may happen when restoring backup from a version not supported by the auto up-grader. Please contact support in such a case.

#### **4.16 IMPORT & EXPORT**

- Export of an object will also export all that object dependencies. It is possible to select singular objects for export (At the menu button) or to export all the definitions.
- Export will not extract any cache data from WFA, just the specified objects.
- Export no longer exports certified content.
- Import will overwrite objects with same name, regardless of context (And as result may break other workflows). Please use carefully.

#### **4.17 WORKING VIA WEB SERVICES**

- Please refer to the updated (most recent) WFA Web services primer document for comprehensive definitions of available web services, and to the installation document for details about WFA upgrade procedure.
- Please note the security requirements for running workflows via web services – A WFA user with Operator level credentials is required at a minimum.

- HP Operations Orchestration (HPOO) integration: GetAllWorkflows web service requires input value of 1 to work – That’s a requirement/quirk of HPOO (Even that the service does not expect any input)
- A workflow can be executed via web services API regardless of its production status (Regardless of whether “Show in Portal” is toggled or not).

#### **4.18 LDAP**

TBC

#### **4.19 PERL**

- From release 1.1, WFA supports command creation in Perl based on the Perl toolkit. Please refer to the sample certified command.
- Currently commands written in Perl require credentials. As a result, Perl commands may not rely on LDAP based authentication. It is a known limitation and will be addressed in the next release.

#### **4.20 RESERVATION**

- Reservation may trigger unexpected results for finders, as it may take into account reserved elements unseen in the cache. While testing a finder that is returning unexpected results it may help to uncheck “Use reservation data“, in order to disregard reserved elements and work based on the cache itself.
- Failed workflows that were not resumed to completion may leave clutter in the reservation table, until the retention process will clear them. It is possible to review the table content under “Reservation” at the “Execution” left pane tab, and manually erase select items from the reservation cache.