Tech Note 828
Accessing RSS Feeds Using Wonderware Application Server

Topic#: 002620
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Introduction

RSS stands for Really Simple Syndication. RSS is an XML dialect that allows publishers to publish information to be consumed by RSS subscribers. RSS allows publishers to share data such as news headlines, and website links.

For this *Tech Note*, the Wonderware Developer Network (WDN) is used as an example to access RSS feeds using an Application Server Object. The Wonderware Developer Network provides several RSS feeds containing information on topics such as Wonderware Articles, News, Tech Notes, and Downloads. This *Tech Note* explains configuring a Wonderware Application Server object to access an RSS feed from the Wonderware Developer Network using the .NET **XmlDocument**, **XmlNode**, and **XmlNodeList** Classes. The Wonderware Application Server object will contain the data from the RSS Feed.

A sample UserDefined template is provided with all necessary scripts and ArchestrA graphics to display several RSS feeds from the Wonderware Developer Network.

Note: This *Tech Note* assumes you have a good understanding of Application Server and Scripting.

Application Versions

- Wonderware Application Server 2012

Creating the Object

This example uses a Wonderware Application Server **$UserDefined** derived template named **$RSS_WDN**. Create a derived template by selecting **$UserDefined** from the template toolbox then pressing **Ctrl+Shift+N**. Rename the derived template to **$RSS_WDN**.

Creating the UDAs

Create the following UDAs in the $RSS_WDN template:

UDA Name	Data Type	Array	Elements	Description
rssLink	String	No	N/A	The URL of the current RSS feed **Set by user**
maxArticles	Integer	No	N/A	The maximum number of items to be read from the RSS feed **Set by user**
getFeedNow	Boolean	No	N/A	To read the RSS feed, set this UDA to true

				Set by user
FeedTitle	String	No	N/A	Contains the name of the RSS channel **Read from RSS feed**
Title	String	Yes	20	Contains the title of the RSS item **Read from RSS feed**
Description	String	Yes	20	Contains the description of the RSS item **Read from RSS feed**
Link	String	Yes	20	Contains the URL of the RSS item **Read from RSS feed**
PubDate	String	Yes	20	Contains the published date of the RSS item **Read from RSS feed**

Enter the required UDA Values:

- UDA: **rssLink** = **http://wdnrss.wonderware.com/wdnrss/wdnfeed.ashx?list=AllArticles**. This value is set to the URL of the RSS Feed.
- UDA: **maxArticles** = **20**. This value indicates the number of items to be read from the RSS feed. This value should match the number of elements defined for UDAs: Title, Description, Link, PubDate.

Creating a Script to Read the RSS Feed

The following script reads a Wonderware Developer Network RSS feed and populates UDAs with the results. A brief overview of the script follows:

- Declare objects and variables used in the script.
- Reset the script trigger to False and clear out all UDAs that hold the RSS data
- Instantiate an XmlDocument object
- Load the RSS feed
- Get the feed title
- Create a list of items from the RSS feed
- Populate UDAs with the item data from the list

Add a script named: **GetFeed**

Configure the following:

- **Execution type:** `Execute`.
- **Expression:** `me.getFeedNow`
- **Trigger type:** `OnTrue`

  Also, to avoid script timeouts caused by loading the RSS file from the internet, click/check **Runs asynchronously** and provide a timeout limit of **10000**.

Script Body:

```
'Declaration
Dim doc As System.Xml.XmlDocument;
Dim node As System.Xml.XmlNode;
Dim nodetitle as System.Xml.XmlNode;
Dim list As System.Xml.XmlNodeList;
Dim index as integer;

'Reset variables
me.getFeedNow = False;
For index = 1 to me.maxArticles
    me.Title[index] = "";
    me.Link[index] = "";
    me.Description[index] = "";
    me.Pubdate[index] = "";
Next;
me.FeedTitle = "";

'Create instance
doc = New System.Xml.XmlDocument;

'Load the RSS file
doc.Load(me.rssLink);

'Get the Feed title
nodetitle = doc.Item("rss").Item("channel").Item("title");
me.FeedTitle = nodetitle.InnerText;

'Create a list of items from the RSS file
list = doc.SelectNodes("rss/channel/item");
index = 1;

'Populate RSS item data
For Each node In list
    If node.SelectSingleNode("title") <> null then
        me.Title[index] = node("title").InnerText;
    Endif;
    If node.SelectSingleNode("link") <> null then
        me.Link[index] = node("link").InnerText;
    Endif;
    If node.SelectSingleNode("description") <> null then
        me.Description[index] = node("description").InnerText;
    Endif;
    If node.SelectSingleNode("pubDate") <> null then
        me.Pubdate[index] = node("pubDate").InnerText;
    Endif;
    index = index + 1;
    If index > me.maxArticles then
        Exit For;
    Endif;
Next;
```

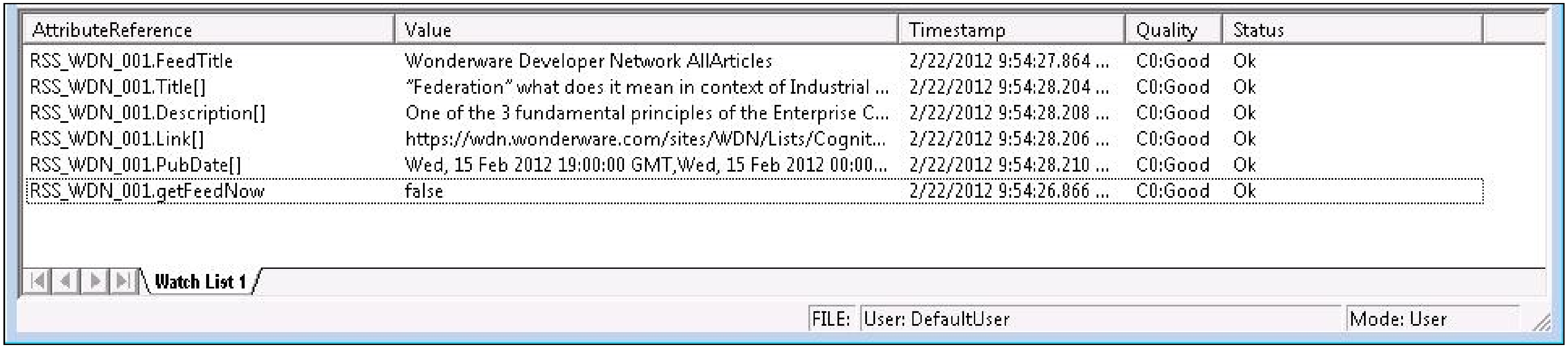
Deploy and Test the RSS Reader

1. After saving the **$RSS_WDN** template object, create an instance of the object. The **$RSS_WDN** instance will be named **RSS_WDN_001** by default. Place the instance under an Engine and Area then deploy the object.
2. Right click on the **RSS_WDN_001** object then select **View in Object Viewer**.
3. Add the following attributes to the watch window:

- **RSS_WDN_001.FeedTitle**
- **RSS_WDN_001.Title**
- **RSS_WDN_001.Description**
- **RSS_WDN_001.Link**
- **RSS_WDN_001.PubDate**
- **RSS_WDN_001.getFeedNow**

Note: When adding arrays to the watch window, enter **-1** to display the entire array.

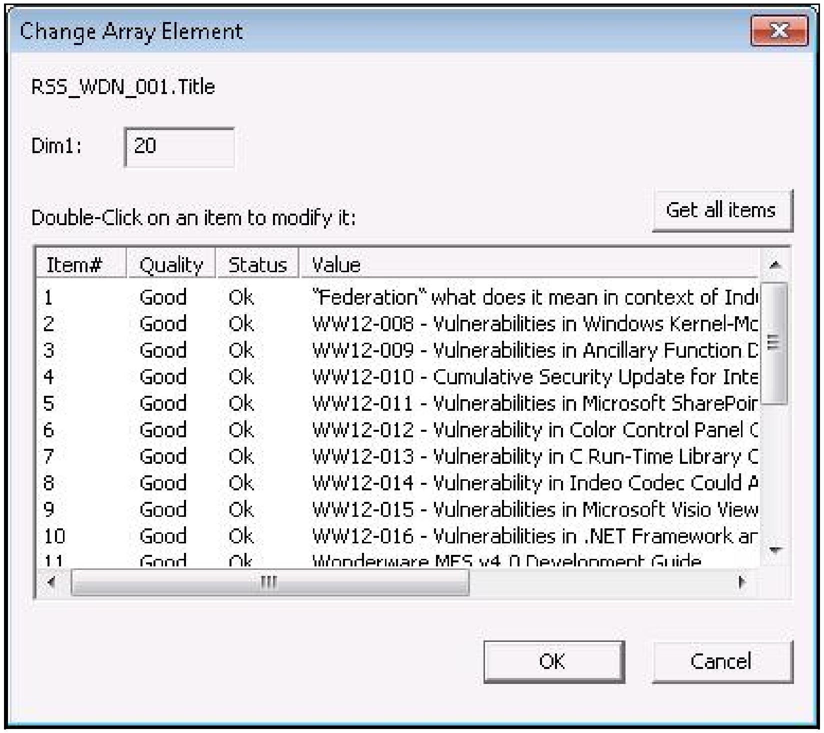
4. In the watch window, double-click **RSS_WDN_001.getFeedNow** and modify the value to **True** then click **OK**. The attributes in the watch window are updated with the values from the RSS feed.



AttributeReference	Value	Timestamp	Quality	Status
RSS_WDN_001.FeedTitle	Wonderware Developer Network AllArticles	2/22/2012 9:54:27.864 ...	C0:Good	Ok
RSS_WDN_001.Title[]	"Federation" what does it mean in context of Industrial ...	2/22/2012 9:54:28.204 ...	C0:Good	Ok
RSS_WDN_001.Description[]	One of the 3 fundamental principles of the Enterprise C...	2/22/2012 9:54:28.208 ...	C0:Good	Ok
RSS_WDN_001.Link[]	https://wdn.wonderware.com/sites/WDN/Lists/Cognit...	2/22/2012 9:54:28.206 ...	C0:Good	Ok
RSS_WDN_001.PubDate[]	Wed, 15 Feb 2012 19:00:00 GMT,Wed, 15 Feb 2012 00:00...	2/22/2012 9:54:28.210 ...	C0:Good	Ok
RSS_WDN_001.getFeedNow	false	2/22/2012 9:54:26.866 ...	C0:Good	Ok

Figure 1: Watch window

You can see the entire arrays' content by double-clicking any of the Attributes in the watch window (that contain an array) and clicking **Get all items** in the **Change Array Element** window (Figure 2 below).



Change Array Element

RSS_WDN_001.Title

Dim1: 20

Double-Click on an item to modify it:

Item#	Quality	Status	Value
1	Good	Ok	"Federation" what does it mean in context of Indu
2	Good	Ok	WW12-008 - Vulnerabilities in Windows Kernel-Mc
3	Good	Ok	WW12-009 - Vulnerabilities in Ancillary Function D
4	Good	Ok	WW12-010 - Cumulative Security Update for Inte
5	Good	Ok	WW12-011 - Vulnerabilities in Microsoft SharePoir
6	Good	Ok	WW12-012 - Vulnerability in Color Control Panel C
7	Good	Ok	WW12-013 - Vulnerability in C Run-Time Library C
8	Good	Ok	WW12-014 - Vulnerability in Indeo Codec Could A
9	Good	Ok	WW12-015 - Vulnerabilities in Microsoft Visio View
10	Good	Ok	WW12-016 - Vulnerabilities in .NET Framework ar
11	Good	Ok	Wonderware MES v4.0 Development Guide

Figure 2: Viewing all array elements

Sample Object

While the above example will read simple text based RSS feeds, there is no handling of html that could be embedded in the feed items.

This *Tech Note* provides a sample object with ArchestrA graphics attached that will strip out most html from the feed before the data is sent to the UDAs. This sample object is built to provide:

- 10 seperate RSS feeds,
- Enables the user to Add and Delete RSS feeds at runtime, and
- Enables the user to define an update interval.

Note: The sample object was created using Wonderware System Platform 2012.

Download and Extract RSS.zip.

1. To import the **$RSS** object, open the ArchestrA IDE then select **Galaxy / Import / Object(s)** from the main menu.
2. Select the **$RSS.aaPKG** file that was downloaded above.

This sample object includes a few more UDAs:

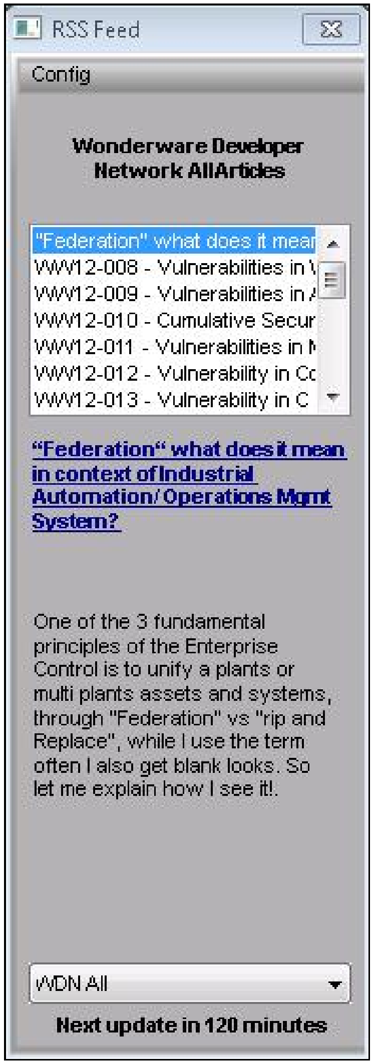
- **URLDesc**: This UDA holds the description of 10 RSS feeds. The user can select from this list of 10 RSS feeds which are displayed in the ArchestrA graphic object drop down list. This UDA can be populated at design time or runtime.
- **URLList**: This UDA holds the URL of the 10 RSS feeds. When the user selects an RSS feed from the ArchestrA graphic object drop down list, the URL will be used as the current feed. This is used together with the URLDesc UDA to relate a feed name with the feed URL. For example, if URLDesc[1] contains "WDN ALL" then URLList[1] should contain the URL of the "WDN ALL" RSS feed. This UDA can be populated at design time or runtime.
- **AutoGetFeedPV**: Contains how many minutes have passed since the last auto feed update.
- **AutoGetFeedSP**: Contains how often in minutes that the current feed will be updated.
- **AutoGetFeedSW**: **True** = Current feed will auto update. **False** = Current feed will not be updated automatically.
- **GetFeedNowCounter**: Used to reset **getFeedNow** in-case of error.

The following additional scripts and modifications to the **GetFeed** script are included:

- **FeedError**: This script will reset the GetFeedNow UDA if GetFeedNow remains true because of an error (such as the feed is not available for download).
- **FeedTimerAuto**: This script will run once a minute as long as the **AutoGetFeedSW** UDA is true. The script will control the automatic feed updates.
- **FeedTimerReset**: This script will reset the automatic feed update timer when the **AutoGetFeedSW** becomes false.
- **GetFeed**: This script has been modified to strip out most HTML from the RSS item description. Code has also been added to strip out any leading control characters from the RSS item title and description.

After creating and deploying an instance of **$RSS**, you can use the ArchestrA graphics in an InTouch application (see the InTouch HMI and ArchestrA Integration Guide for information on using ArchestrA Symbols in WindowMaker).

Two ArchestrA graphics objects are included with the sample object. One graphic is laid out in a vertical position (Figure 3 below) and the other graphic is laid out in a horizontal position (Figure 4 below). Both Graphics have the same functionality.



Wonderware Developer Network AllArticles

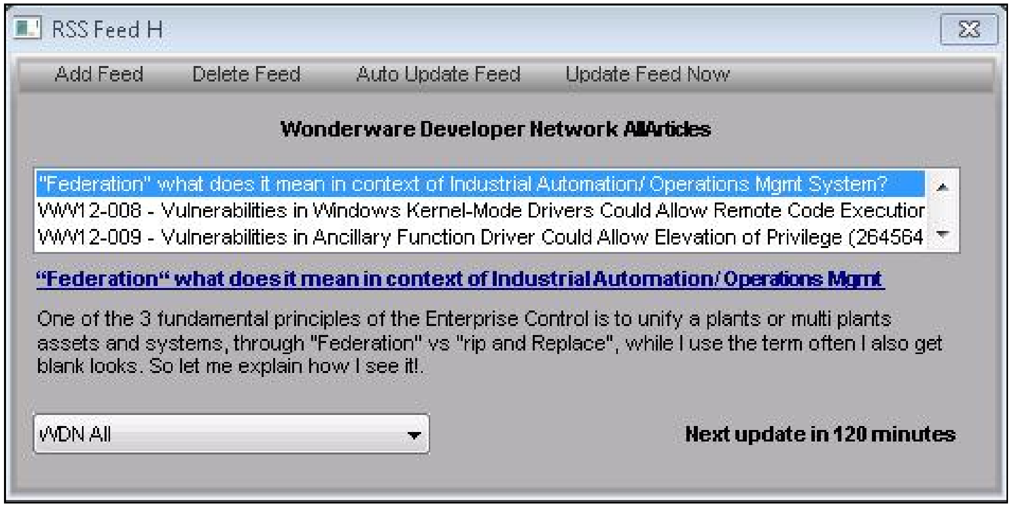
"Federation" what does it mear
WW12-008 - Vulnerabilities in \
WW12-009 - Vulnerabilities in /
WW12-010 - Cumulative Secur
WW12-011 - Vulnerabilities in M
WW12-012 - Vulnerability in Cc
WW12-013 - Vulnerability in C

“Federation“ what does it mean in context of Industrial Automation/ Operations Mgmt System?

One of the 3 fundamental principles of the Enterprise Control is to unify a plants or multi plants assets and systems, through "Federation" vs "rip and Replace", while I use the term often I also get blank looks. So let me explain how I see it!.

Next update in 120 minutes

Figure 3: Vertical Graphic



Wonderware Developer Network AllArticles

"Federation" what does it mean in context of Industrial Automation/ Operations Mgmt System?
WW12-008 - Vulnerabilities in Windows Kernel-Mode Drivers Could Allow Remote Code Executior
WW12-009 - Vulnerabilities in Ancillary Function Driver Could Allow Elevation of Privilege (264564

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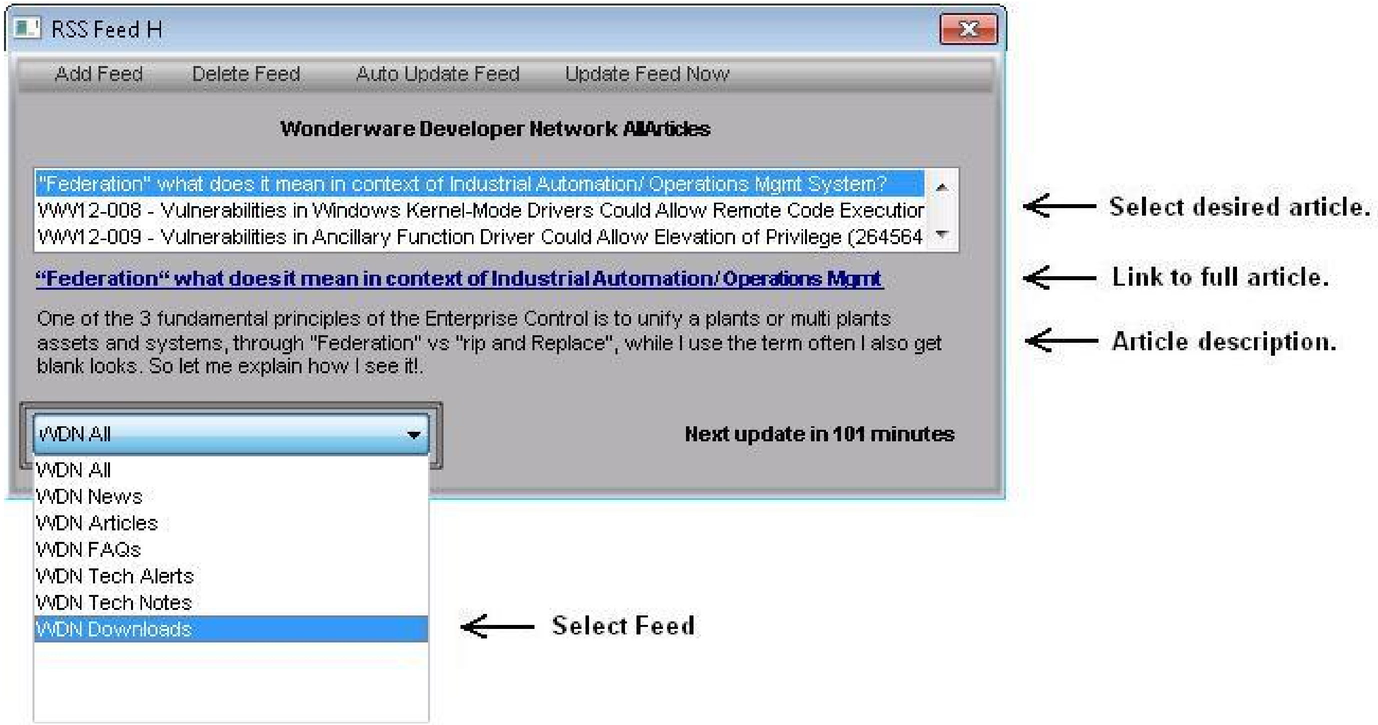
Next update in 120 minutes

Figure 4: Horizontal Graphic

1. To view an RSS article, click the desired article.
2. Click the link to view the full article in a Web browser.

   For WDN, you must supply your CustomerFIRST login.

3. A short description of the article is also displayed if available. To access a different RSS feed, select the feed from the drop down list.



Wonderware Developer Network AllArticles

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WDN All

Next update in 101 minutes

WDN All
WDN News
WDN Articles
WDN FAQs
WDN Tech Alerts
WDN Tech Notes
WDN Downloads

Select desired article.

Link to full article.

Article description.

Select Feed

FIGURE 5: OVERVIEW

Menu Items

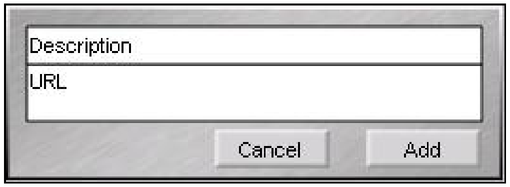


FIGURE 6: ADD FEED

Add Feed or **Config/Add Feed** will add a user defined feed description and URL to the first empty element in the **URLDesc** and **URLList** UDAs. The feed description will be displayed in the drop down list.

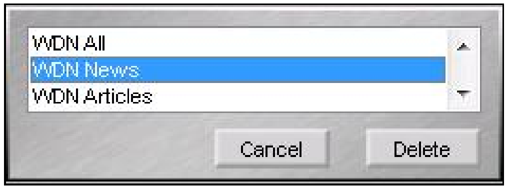
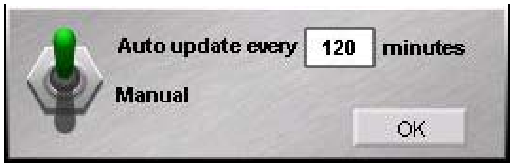


FIGURE 7: DELETE FEED

Delete Feed or **Config/Delete Feed** will delete the selected feed from the **URLDesc** and **URLList** UDAs. The feed will also be removed from the drop down list.


Auto update every 120 minutes

Manual

FIGURE 8: AUTO UPDATE FEED

Auto Update Feed or **Config / Auto Update Feed** is used to configure if and how often the current feed is updated.

Update Feed Now or **Config / Update Feed Now** updates the current feed on demand.

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