



PL15737

## Utilizing the Job Processor – Workflow Automation

Ian Cross  
A2K Technologies

### Learning Objectives

- Learn what the Job Processor is
- Learn how to get the best out of your Job Processor
- Learn about coolOrange PowerJobs
- Learn how to Automate time-consuming tasks

### Description

Did you realize there was a Job Processor with your Vault data management software? Do you know what it does and what it is capable of? Come and join me in exploring this magical beast. Find out what it can do—and with the help of a third party, witness what it can really extend too. This class will use real-world examples to show you how to automate some of the laborious and time-consuming exercises that you, or your CAD drafter, do on a daily basis. This session features Vault Professional and Inventor Professional.

### Your AU Expert(s)

Ian Cross is currently a Consulting Technical Lead for A2K Technologies in Australia and has been successfully working with Autodesk's high performance data management solution for more than 8 years with different Platinum Autodesk Resellers around the world. Over the past 10 years, he has worked at 3 different Platinum Autodesk Resellers around the world as a trainer, consultant, product manager, and product support. He has also held the post of CAD manager for a global manufacturing company. Ian Cross's specialties are Vault software, Inventor software, AutoCAD software, and AutoCAD Electrical software.

Ian is an Autodesk Inventor, AutoCAD and AutoCAD Electrical certified professional as well as a product specialist to AutoCAD, Raster Design, Showcase, Inventor Publisher, Inventor iLogic interface and other mechanical products.



AUTODESK UNIVERSITY

## About A2K Technologies



A2K Technologies is a company which fosters innovation through delivering software and hardware solutions, consulting, training, development and managed services.

Our highly knowledgeable and industry-experienced staff from the Architecture, Engineering, Construction, Infrastructure, and Manufacturing sectors enhances our customers' organisational capabilities, to deliver on project outcomes and differentiate from the competition.

With a great footprint throughout the ANZ region, A2K has strategic partnerships with many major software and hardware vendors, including Autodesk, Microsoft, Adobe, HP, Ultimaker, Symantec, and Citrix.

We have become a trusted technology advisor to our customers through the breadth and depth of our service offering and technical expertise, our commercial flexibility and high levels of customer service and understanding.

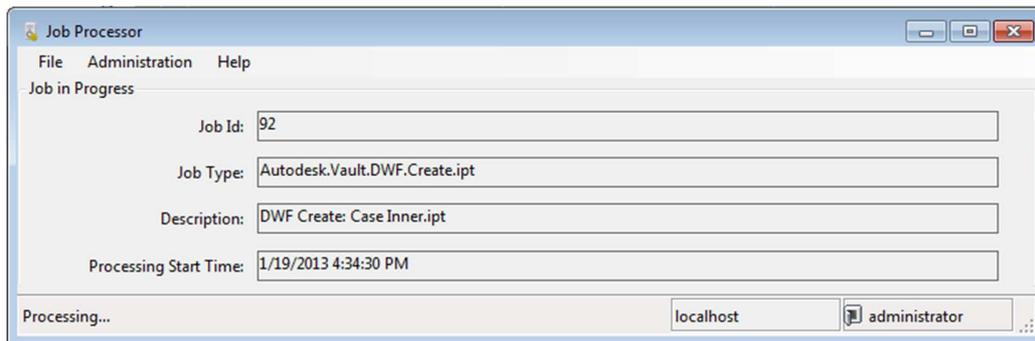
Our Professional Services and Consulting divisions include experienced technical consultants with industry experience. Our operations, resources and infrastructure equate to the highest-level of technical support, and a wide product offering of business software and hardware.

## What is the Autodesk Vault Job Processor?

The Job Processor is a separate application that reserves queued jobs and pulls them from the job server to process them. Since the job processor is installed along with the Vault client, any workstation with the appropriate edition of Vault can be used to process jobs.

From the Job Processor dialog a user can pause and resume processing, set the Vault user account that is used to process jobs, and view the types of jobs that the Job Processor is configured to process.

### Job Processor Dialog Details



Detail	Description
Job ID	Displays the number of the job currently being processed.
Job Type	Displays a description of the job being processed.
Description	Displays more information about the job in the queue.
Status	Displays the current state of the Job Processor.
Status Bar	Displays the server name and the user account.
Processing Start Time	Time at which the Job Processor began working on a job.

### Job Server Components

The Job Server consists of two components:

1. **Job Queue** - A list, or queue, of jobs submitted by clients (Inventor, AutoCAD, Vault, Autoloader) waiting to be processed. This queue is stored in and managed by the Vault Server.
2. **Job Processor** - is a separate application that reserves queued jobs and pulls them from the job server to process them. Since the job processor is installed along with the vault client, any workstation with Autodesk Vault Workgroup and Professional can be used to publish jobs.

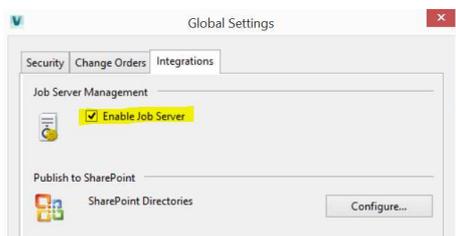
To start with we will have a look at some of the JobProcessor functions and menus, it is quite simple to locate and see the menu and settings of the JobProcessor.

We will also have a look at the configuration of the XML file as well as the lifecycle event editor used to trigger the jobs at specific state change.

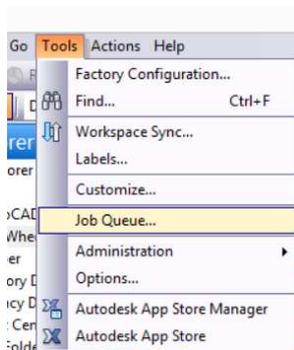
After that we will look into Powerjobs, the PowerShell scripting language and discover where all the relevant files reside.

In Vault you have the ability to turn on and off the Jobprocessor queue. In order to queue jobs, it has to be turned on. You can find this setting in the vault client under Tools>Administrator>Global Settings.

On the Integrations Tab you will find the “Enable Job Server” checkbox. Make sure this is checked to enable the Job Server.



Through the Vault Menu >Tools >Job Queue, you can have a look into the queue and see which jobs are pending, processing, or in error.



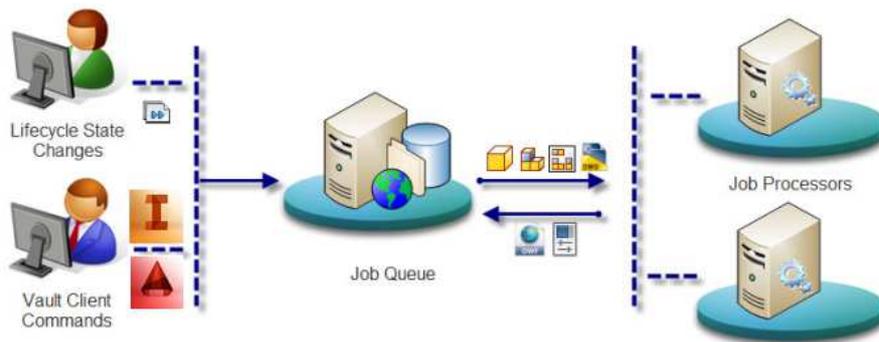
The configuration file Jobprocessor.exe.config, which is located in the Explorer folder nearby the Jobprocessor.exe, contains the definition for which jobs should be executed by the Jobprocessor, and more. It is an XML file. To open that file, we can use a simple notepad, or better we download the free XML Notepad from the Microsoft website (<http://www.microsoft.com/en-us/download/details.aspx?id=7973>).

We will take a look here to increase the time that the Jobs are processed.

## How It Works

Jobs are submitted to the job server when:

- A user checks in a file which needs a visualization file created.
- A user invokes an Update View command inside of the Vault client application.
- Autoloader is used to load files into the vault and visualization files are needed.
- A status change occurs on a file and an updated visualization file is needed.
- A status change occurs on a file and properties need to be synchronized in the file.



## Job Processor Licensing

The Job Processor consumes one Vault server license during the time it connects to the server to reserve a job. The Job Processor is not continuously logged into the Vault server while it processes the job and so the Vault server license it acquired is released. If a job being processed requires Inventor, an Inventor license is consumed while the job server processes the job and is released when the job finishes.

## Basic Job Processor Tasks

Following are basic tasks you can perform with the Job Processor.

- [Log into the Job Processor](#)
- [View Job Types](#)
- [Configure the Job Processor to Start Automatically](#)
- [Schedule the Job Processor](#)

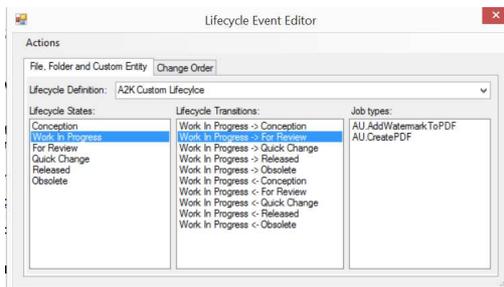
## Customize the Job Processor

You can customize the job types list and configure job check frequency, task scheduling, and other Job Processor functions to suit your work environment by modifying the JobProcessor.exe.config file.

Individual jobs are processed by Connectivity.JobProcessor.Delegate.Host.exe, a separate application, but the jobs are controlled by JobProcessor.exe.

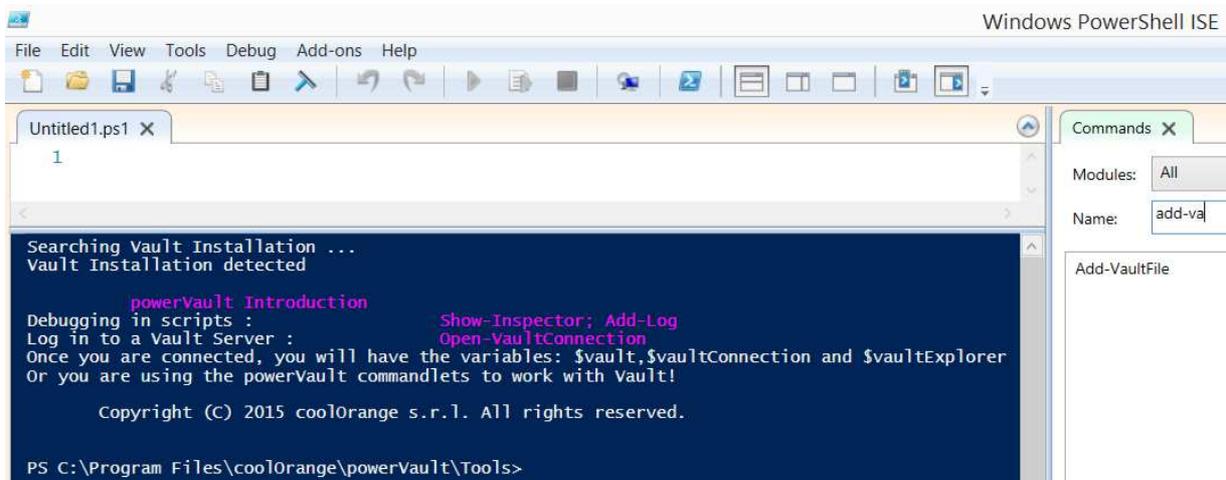
## The Lifecycle Event Editor

The Lifecycle Event Editor is an application that comes with the Vault Software Development Kit (SDK). It allows us to add jobs to specific lifecycle state changes. So if we want to create a PDF on a specific lifecycle transition via the Jobserver, we can use the LifecycleEventEditor to have this happen. In order to use the lifecycle event editor, you must install the SDK. You can find the setup under C:\Program Files\Autodesk\ADMS Professional 2017\SDK, or in the folder where you have installed the ADMS Server. After running the Setup you will find under C:\Program Files (x86)\Autodesk\Autodesk Vault 2017 SDK the content of the SDK. The LifecycleEventEditor is located in the Util folder. Just start the tool, login with your Vault credentials, select the lifecycle and the transition you look for then add your custom event.



## PowerVault

It's a native PowerShell extension that allows you to talk with Vault via pure PowerShell command lets. With powerVault, you get command lets for dealing with files and items. For instance Open-VaultConnection for establishing a connection to Vault, or Get-VaultFile for getting/downloading a file, or Get-VaultItem for getting an item. But also Add-VaultFile or Update-VaultFile or Update-VaultItem. Such command let's make it very easy to either get information from Vault or creating and updating information in Vault. You don't have to deal with the complexity of the Vault API, instead you can just execute the command you like and let the command let do the rest for you.





## What is Cool Orange Powerjobs?

**powerJobs is an extension for the Vault job processor. It comes with pre-configured, ready-to-use jobs for PDF creation and more. And the cool thing is that such jobs are script files you can easily tweak to your needs!**

Wouldn't it be great to configure a PDF job the way you want? Defining file name, location where to store the file and more? **With PowerJobs you can!**

## Create your own automation scripts with Cool Orange.

[www.coolorange.com](http://www.coolorange.com)

### Do it yourself

Want to create a new job? No longer struggle with configuration files; just place your PowerShell script into the job folder and you are ready to go. At the next start, powerJobs will recognize the job and perform the needed configuration for you.

### Simple scripting language

Not a developer? Not really familiar with the Vault API? No problem. powerJobs 2015 R2 comes with a set of so-called commandlets that allows you to do a lot with Vault with just few commands and parameters. For instance, get a complete file object with all properties via `$file = Get-VaultFile -File "fullPathAndFileName"`.

The resulting `$file` will have all properties like `$file.Title`, `$file.Company`, etc. Or download the complete assembly with all references to your preferred location via `$file = Get-VaultFile -File '$/Assemblies/Catch Assembly.iam' -DownloadPath "C:\Temp\TestDownload"`.

```
Open-VaultConnection -Vault:"Vault" -Server:"localhost" -User:"Admini
$file = PrepareEnvironmentForFile "Catch Assembly.iam"

$powerJobs.Log.Info("Starting job 'Create PDF as attachment' ...")

#region Settings
$showPDF = $true #change this setting to $true or $false for showing,
$PDFfileName = $file.Name + ".pdf" #define here the file name for the
$inventorExtensions = @("idw","dwg","iam","ipt")
#endregion

# limit publishing to inventor files
$ext = $file.'File Extension'
if( $inventorExtensions -contains $ext )
{
    $localDestFile = "C:\TEMP\" + $PDFfileName
    $checkInAsHidden = !$showPDF

    if ( Save-FileAs -File $file -LocalDestFile $localDestFile )
    {
        $targetFile = $file.Path+"/"+$PDFfileName

        # testing if file exists and is checked out
        $publishedFile = Get-VaultFile -File $targetFile
        if($publishedFile.IsCheckedOut -eq $true)
        {
            throw("Destination file to be updated is checked out.")
        }

        # adding created file to vault and adding it as designVisual
        $publishedFile = Add-VaultFile -From $localDestFile -To Star;
        $parentFile = Update-VaultFile -File $file.'Full Path' -AddAt

        Remove-File $localDestFile
    }
    else
    {
        throw ("Publishing failed")
    }
}
}
}
```

## Creating your own custom jobs

### PDF, Email, Watermark and update properties

#### PDF

After you have installed powerJobs on your Jobserver, a number of 'Standard' jobs are installed by default. You will see them under the Administration>Job Types tab in your job processor, these are the coolOrange default jobs. Examples include PDF, STEP and IGES creation. One of these jobs in particular, named sample.createPDF.ps1, creates PDF files from your AutoCAD or Inventor drawing files.

All of these jobs are located in the following folder C:\ProgramData\coolOrange\powerJobs\Jobs. What I plan to do, is using the Autodesk Vault Lifecycle Event Editor, I will trigger the job processor to use these PowerShell scripts to create PDF files at specific transition states, taking the responsibility away from the end user.

All we need to do is release a document and let the Vault Jobserver do the rest, we will then have PDF of your document attached to the original Inventor/AutoCAD document

#### PDF with Watermark with PDFSharp

Beyond the basic naming or managing of PDF files, there is a high demand for putting a watermark on a PDF, for instance reflecting the lifecycle state on the PDF.

So far the creation of PDF has been made via Inventor or AutoCAD, which is fine for a regular PDF. In order to add watermark to the PDF or create a specific format, additional tools such as Powerjobs are needed. There are different on the market. I have chosen PDFSharp with Powerjobs for manipulating PDF and adding the Watermark.

[http://www.coolorange.com/wiki/doku.php?id=powerjobs:tutorials:adding\\_a\\_watermark\\_to\\_a\\_pdf\\_with\\_pdfsharp](http://www.coolorange.com/wiki/doku.php?id=powerjobs:tutorials:adding_a_watermark_to_a_pdf_with_pdfsharp)

#### Email

One more fantastic way to utilize the JobServer and to automate your workflow is to send out Automatic notifications to Vault and Non-Vault users.

It is often requested that when a file is released, rejected, approved or hits any particular state, that people want to be notified. The JobServer is more than up to this task when it is coupled with PowerJobs.

To send an email, it is mandatory that you need a SMTP server, so I am utilizing Gmail and sending emails via there.

With PowerShell, you have a CMDlet command called send-MailMessage, all that is required is that you give it the required arguments such as from, to, subject, body and a valid SMTP server and emails can be sent when files get to certain lifecycle states.

In my example I will be sending an email to myself once a file is released.

Some sample code courtesy of coolOrange that sends an email with the file name with from and to state in the subject, and a Vault link in the body. If the user clicks on the link, Vault will start and point to the according file.

```
$lfcTransId = $vault.Job.Params["LifeCycleTransitionId"]  
$fileID = $vault.Job.Params["FileId"]  
$file = $vault.DocService.GetFilesById($fileID)  
$folders = $vault.DocService.GetFoldersByFileMasterId($file.MasterId)  
$folder = $folders[0]  
$folderPath = $folder.FullName
```



```

$folderPath = $folderPath.Replace("$", "%24").Replace("/", "%2f")
$fullPath = $folderPath + "%2f" + $file.Name.Replace(" ", "+")
$link =
"http://localhost/AutodeskDM/Services/EntityDataCommandRequest.aspx?Vault=Vault&ObjectId="+$fullPath+"&ObjectType=File&Command=Select"
$ifcTrans = $vault.DocExtService.GetLifeCycleStateTransitionsByIds(@($ifcTransId))
$ifcs = $vault.DocExtService.GetLifeCycleStatesByIds(@($ifcTrans[0].FromId,$ifcTrans[0].ToId))
$oldState = $ifcs[0].DispName
$newState = $ifcs[1].DispName
Send-MailMessage -From "email@email.com" -To "email@email.com" -Subject "The file $($file.Name) has
changed from $oldState to $newState" -Body "Dear xxx, if you like to view the related document, just follow this link: $link" -
SmtpServer 10.0.0.18

```

**Update properties.**

From time to time as your files transition through their lifecycle, certain properties need to be completed, whether it be a completion percent, a change onto a new lifecycle scheme or even a change in revision properties.

What will happen here, as the file goes through its release process and is released, more than often the file revision is changed from Alpha to Numeric, which currently out of the box vault will not do for you. A manual process which every time you release a file you need to remember to complete.

We can automate this, as the file comes in to release, it will be changed on to a new numeric revision scheme.

Sample code: *Update-VaultFile -File \$file.'Full Path' -Revision "YOURFORMAT" -RevisionDefinition "YourRevScheme"*

**About Cool Orange**



We at coolOrange believe in empowering all Autodesk users to freely express their personal requirements - we know it can be done!

We are passionate about 2 things: new technologies and Autodesk products! Therefore, we constantly scan the market for new, thrilling technologies and turn them into small yet powerful apps for Autodesk products.

From our headquarters in Lana, Italy - located in beautiful South Tyrol - and our subsidiary in Gersthofen, Germany near Augsburg, we have been making a valuable contribution to the Autodesk world since 2009 by developing applications and customized software solutions.

**Conclusion**

The purpose of this demonstration was to introduce you to the Autodesk Vault JobProcessor, it is relatively unknown and it has been my intention to give you a feeling of what is possible with the help of PowerShell and coolOrange PowerJobs.

The internet is full of tips, tricks and sample code snippets, from personal blogs to powerful PowerShell communities and information.

A2K Technologies have a very strong partnership with coolOrange, please keep an eye out on our blog, [blog.a2ktechnologies.com.au](http://blog.a2ktechnologies.com.au) for updates and information on what we can do to help you and your business.