

# Grinder

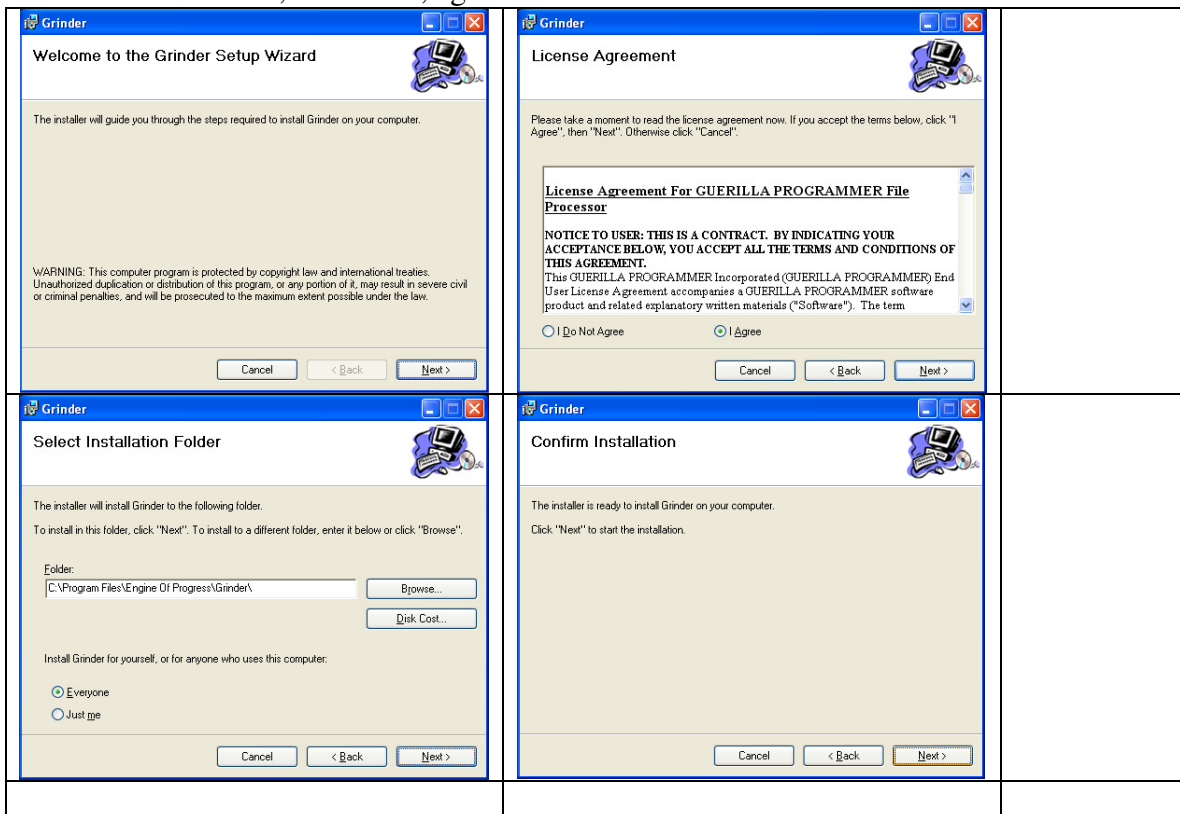
## User's Guide

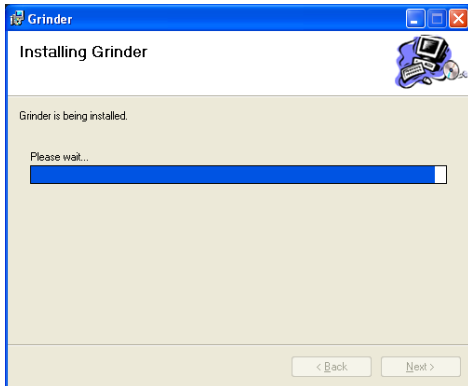
### Grinder Overview

Grinder is a Win32 service that uses Windows Workflows (WF) to process files. Included with the service are custom workflow activities specific to file processing, a configuration tool, a tool to manually control the service, and a tool to build workflows.

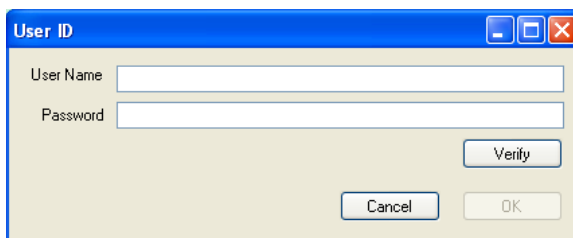
### Grinder Installation

Grinder's installation process is a straight forward process. Simply execute GrinderInstaller.msi, click next, agree to our terms and click next a few more times.

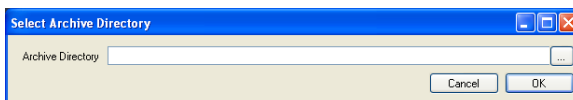




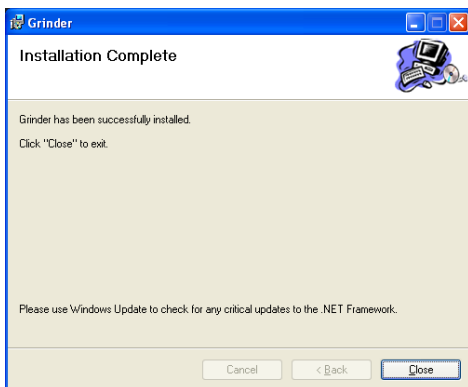
Eventually you'll get to the step where the installer copies the files. After the files are copied the installer executes an external program to setup and configure the service.



Enter a service account for your service. If you plan to copy files to remote file shares use a domain account. You will also have to make sure that any directories used in your workflows allow the service account access (Read, Write, Modify). Also give the account the right to login as a service.



When files are being processed the service first makes an archive copy.

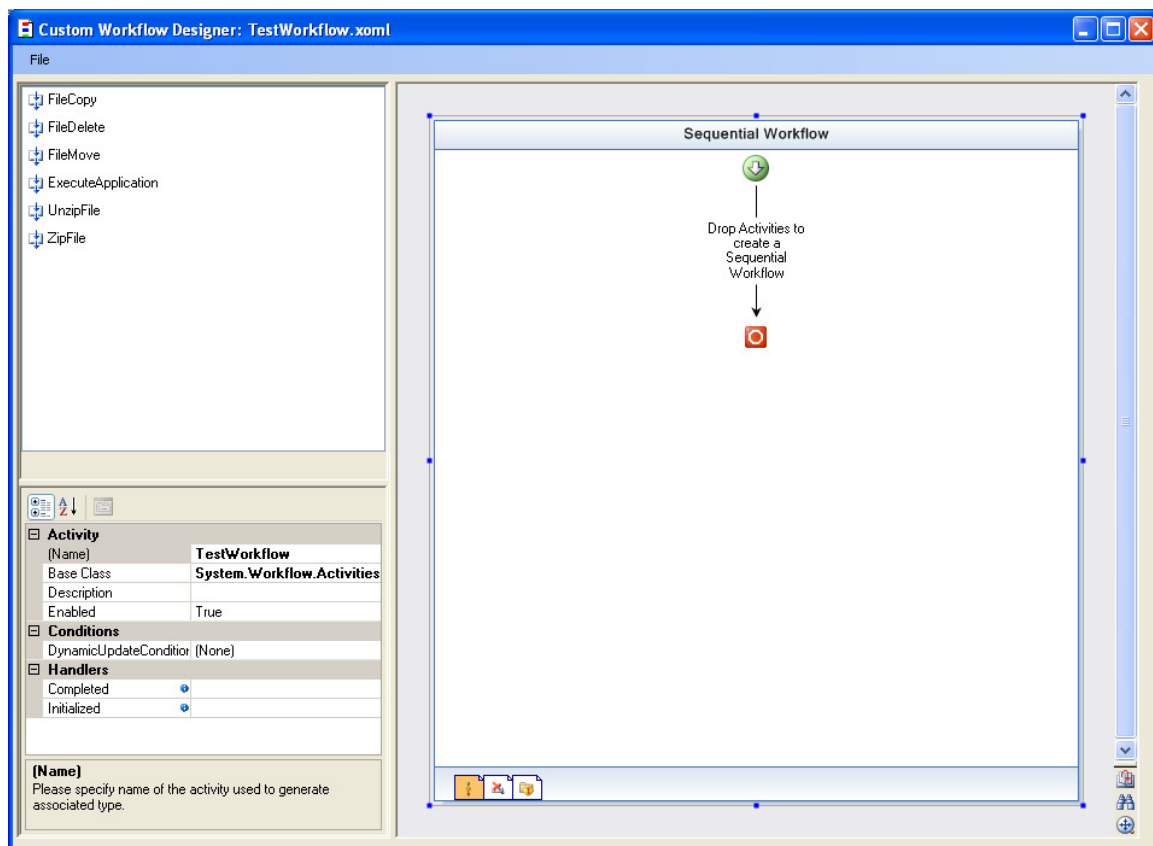


Once the installer has completed the basic service configuration is done. The installer will have given the service accounts the needed permissions for the directories it writes to.

## Creating Grinder Workflows

One of the goals of Grinder is to make creating workflows to process files easy to create. The workflows Grinder uses are built on Windows Workflow and can be developed using Visual Studio. However, for non-developers the Custom Workflow Designer is a better choice. The designer provides everything needed to create the workflow and then compile it so the Grinder service can use it.

To create a new workflow launch the designer, go to File/New. You will be first asked to give the workflow a name. The name may not contain spaces or any punctuation. Use a simple name like “TestWorkflow” or “InvoiceProcessing”. The designer then will ask you to save the file. Grinder has a special directory to keep all of the workflow files (XOML is the type of file being created). After that you will see the following:



You may now begin building the actual workflow. Simply drag the actions from the palette on the left on to the workflow in on the right.

Grinder’s workflow designer restricts which actions can be used in the workflows. Specifically, you cannot use the Code action, branching action or the looping action. These actions require additional coding that is better done using Visual Studio. If you need to create a more complex workflow then please refer to the developer’s guide for additional information.

Each action that you place on the workflow will require configuration. For instance the copy action will require that you set the source and destination for the copy. For flexibility Grinder has macros that are expanded during execution. For instance FULLPATH is the macro that grinder will replace with the full path to the file being processed.

In our example we would set the source value to `${FULLPATH}` which would cause grinder to change that to the full path of the file the workflow is processing. The destination could be set to

`${TEMP}\${CLIENTID}_${FILEID}_${FILENAMENOEXT}_${DATE(yyyyMMdd-hhmmss)}.${EXT}`. If the full path to the incoming file was `c:\incoming\test.txt` (I'm leaving a few details out, but I think you can fill them in) then `${FULLPATH}` will become `C:\incoming\test.txt`. The destination will become:  
`C:\TEMP\FooCo_TEXT_test_20071114.txt`. The macros are documented in the next section.

Grinder ships with a default set of Actions. They are documented in the developer's guide. Additional actions can be added to the designer by editing the Designer's configuration file. Simply copy the new action dll in to Grinder's directory and put the new action's strong name in the Actions section of the configuration document.

## ***Grinder Macros***

In order to make workflows easier to write and more flexible, Grinder provides a library of macros that are used to substitute values inside workflow actions. When grinder is making the substitutions it will search for values in the following order:

- Symbols
- File Properties
- Directory Properties
- Service Properties
- Environment variables

The format for a macro is `${macro}`. For example `${FULLPATH}`. Grinder will search for a macro named FULLPATH and substitute the value for `${FULLPATH}`.

The following are the built in symbols:

Macro	Description
GUID	Expands to a GUID
EXT	The extension for the file being processed
FILENAME	The filename without the full path for the file being processed.
WORKITEMFILE NAME	The name of the file being worked on.
FILENAMENO EXT	The filename of the file being processed without the full path or the extension.
DIRECTORY	The path for the current file being processed.
FULLPATH	The full path to the file for the current file being processed.

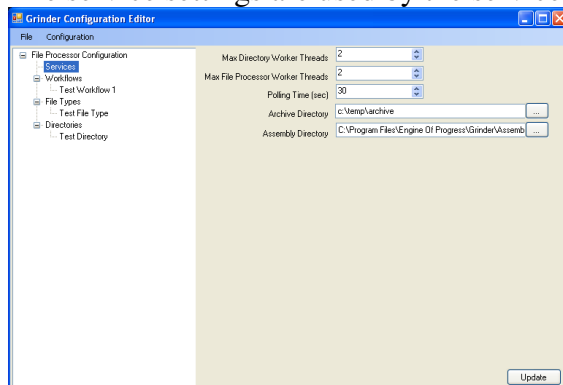
RND	Generate a random number between 0 and 1000												
ARCHIVEPATH	Path to the archive directory												
DATE	<p>Expands to the current date based on the supplied format string. For example – DATE(yyyyMMdd) will generate 20071008.</p> <p>Date format macros:</p> <table> <tr> <td><b>yyyy</b></td><td>year. It will always be formatted with 4 digits, which will cause an issue for the year 9999.</td></tr> <tr> <td><b>MM</b></td><td>month. It will always be formatted with two digits</td></tr> <tr> <td><b>dd</b></td><td>day. It will always be formatted with two digits</td></tr> <tr> <td><b>HH</b></td><td>hour in twenty-four format. It will always be formatted with two digits</td></tr> <tr> <td><b>Mm</b></td><td>minutes. It will always be formatted with two digits</td></tr> <tr> <td><b>ss</b></td><td>seconds. It will always be formatted with two digits.</td></tr> </table> <p><i>The format string is the standard data format string used by .NET's DateTime object. Any valid DateTime format string will work here.</i></p>	<b>yyyy</b>	year. It will always be formatted with 4 digits, which will cause an issue for the year 9999.	<b>MM</b>	month. It will always be formatted with two digits	<b>dd</b>	day. It will always be formatted with two digits	<b>HH</b>	hour in twenty-four format. It will always be formatted with two digits	<b>Mm</b>	minutes. It will always be formatted with two digits	<b>ss</b>	seconds. It will always be formatted with two digits.
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## Grinder Configuration

Grinder's configuration is stored in an XML file that can either be edited by hand or using the configuration editor.

## Service settings

The service settings are used by the service for all processing.



### Max Directory Worker Threads

When the service scans the monitored directories it uses a thread pool to increase the performance of the scan. The default setting is 2. We recommend using two times as many threads as you have physical processors.

### Max File Processor Worker Threads

The files that are found in the directories are queued up from processing. The File Processor uses a threadpool to process the files. The default setting is two. We recommend using two times as many threads as you have physical processors.

### **Polling Time (sec)**

The number of seconds the directory scanner waits between scanning for files in the directories.

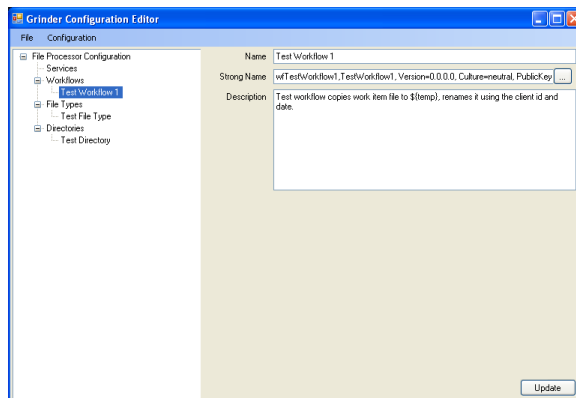
### **Archive Directory**

Each file that is found is copied to the archive directory for backup purposes. It is recommended that this directory be cleaned out on occasion.

### **Assembly Directory**

The workflows are compiled in to DLLs which are stored in this directory. The Grinder process will not load assemblies from anywhere else.

## **Workflow settings**



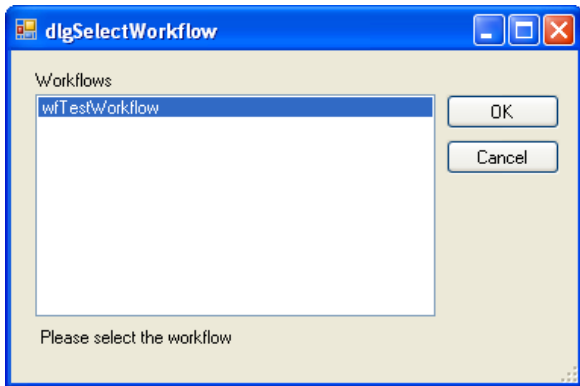
### **Properties**

Name	Name of the workflow. Used for identification
Strong Name	Complete strong name for the workflow
Description	Description of the workflow

### **Add Workflow**

Adds a workflow. The name and description are for documentation purposes. The Strong Name is the full strong name is used by Grinder to load the workflow. Workflow assemblies have to be put in the Assembly Directory set in the services section.

To select a workflow click on the ellipses. An open file dialog will let you select the assembly. Once you've selected an assembly you will be presented with a list of workflows in the assembly to select from:



Once you select the workflow the editor will generate the strong name for you.

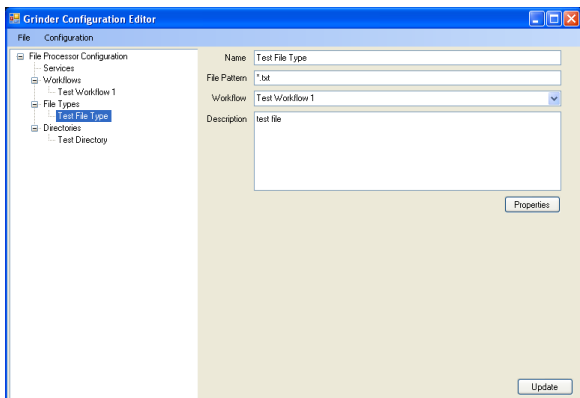
### Reload Workflow

Scans the assemblies directory and creates workflow enteries for each workflow found.

### Create Workflow

Launches the workflow designer

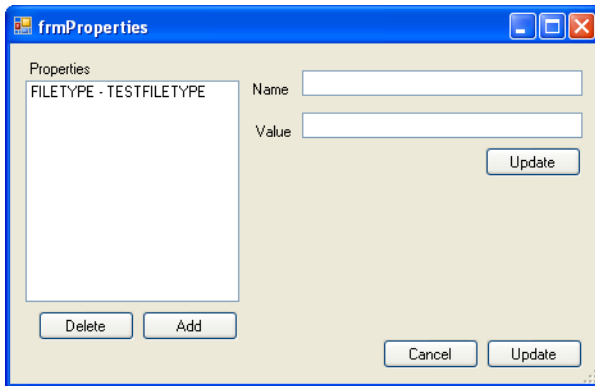
## File type settings



Name	Name of the file type
File Pattern	Pattern used to identify files of this type (*.txt for instance)
Workflow	Name of the workflow used to process the file
Description	Description of the file type
Properties	Properties associated with this file type. Properties are a collection of name and value pairs.

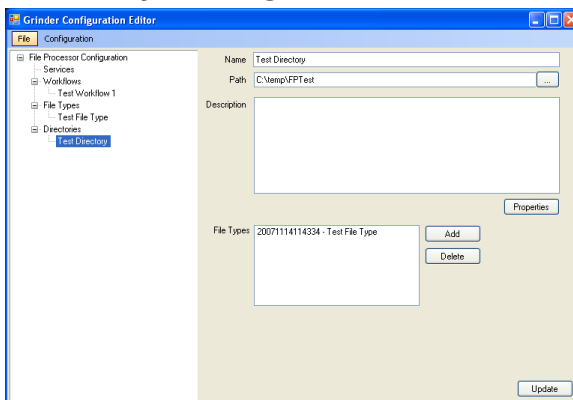
### Add File Type

Creates a file type that Grinder will look for and process. The name is used in the directory settings. The file pattern is used to find files that match this file type. For example \*.txt. The workflow setting is the name of the workflow that will be used to process the file. The description is simply to document the file type. The properties collection will store properties associated with the file type. For example:



To add a property click add and then edit the name and value then click the 'update value'. When finished click Update to save the properties.

## Directory settings



Name	The name of the directory
Path	Path to the directory to be monitored
Description	Documentation for the directory
Properties	Properties associated with this directory. Properties are a collection of name and value pairs.
File Types	The file types that will be searched for in the directory

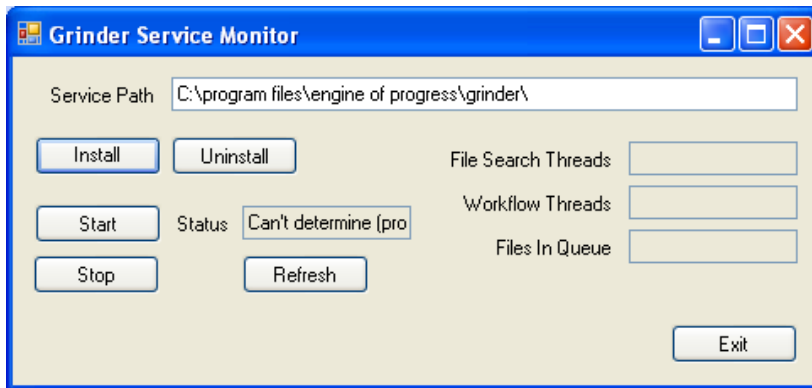
### Add Directory

Add a new directory to the configuration.

## Using the Grinder Service Monitor

The service monitor is provided as a way to easily start and stop the Grinder service. This is necessary anytime you change the configuration for Grinder.





Install	Installs the Grinder service.
Uninstall	Uninstalls the Grinder service.
Start	Starts the grinder service.
Stop	Stops the grinder service.
Refresh	Refreshes the status box indicating whether or not the service is running.
Exit	Closes the application

## ***Troubleshooting***

Grinder writes extensive trace logs that you can use to determine where things are going wrong. Generally speaking the logs are of greater use if you have the source code (you don't), but they will indicate if the problem originates inside our code or a result of something you did.

The logs are stored under Grinder in the deceptively names "Logs" directory.

### **The answer is almost always security**

Because the grinder service runs as a user account the most common issue is not have the necessary rights to read/write/modify files in the directory. Anytime you add a directory to be monitored you should make sure the service account access to the directory (in particular Grinder will be deleting the file it processes).

If all else fails email [support@engineofprogress.com](mailto:support@engineofprogress.com) and we will do what we can to help.