

Condition

Overview

Remember that our goal for using Grooper is to automate tasks that we would otherwise have to perform manually.

Imagine we have a pile of papers in our inbox. We can think of this as the batch we just made, so they arrived there via the `Acquire` phase.

If we had to work through these documents by hand, we'd probably have to go through them and make sure they're all facing the same way, remove any sticky notes on them, take out the staples, and potentially white out smudges and marks.

This is the `Condition` phase, and we can automate these tasks in Grooper.

In this phase, we will:

- create and test an Image Processing Profile,
- use the new profile to clean up our batch, and
- use OCR to obtain text from our images that we'll use later.

Let the conditioning commence!

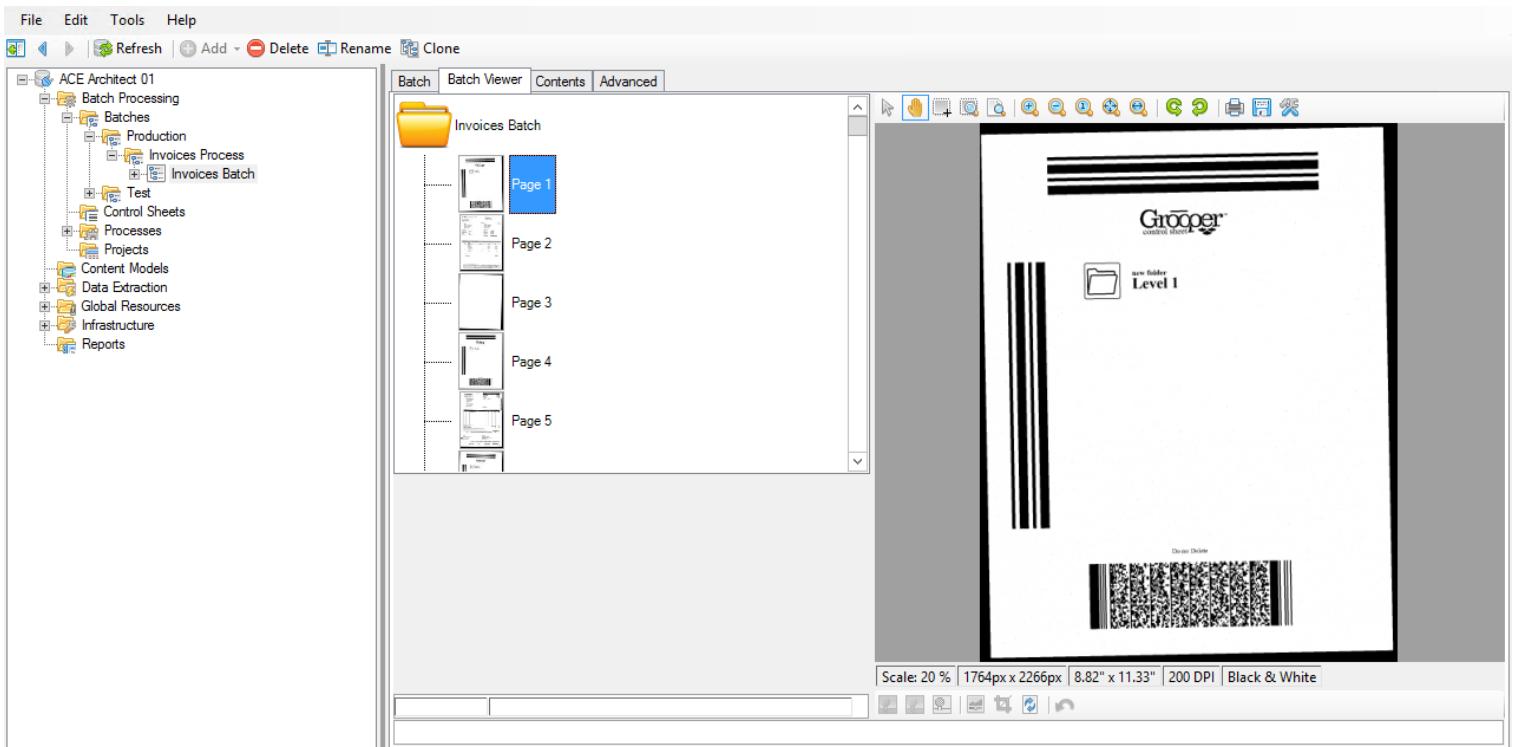
But first

For the next few phases, we'll be testing the results of adding a single Batch Process step at a time. Let's take a deeper look at our batch so that when we start adding steps, the process makes a little bit more sense.

› [Batch Processing / Batches / Production / Invoices Process](#)

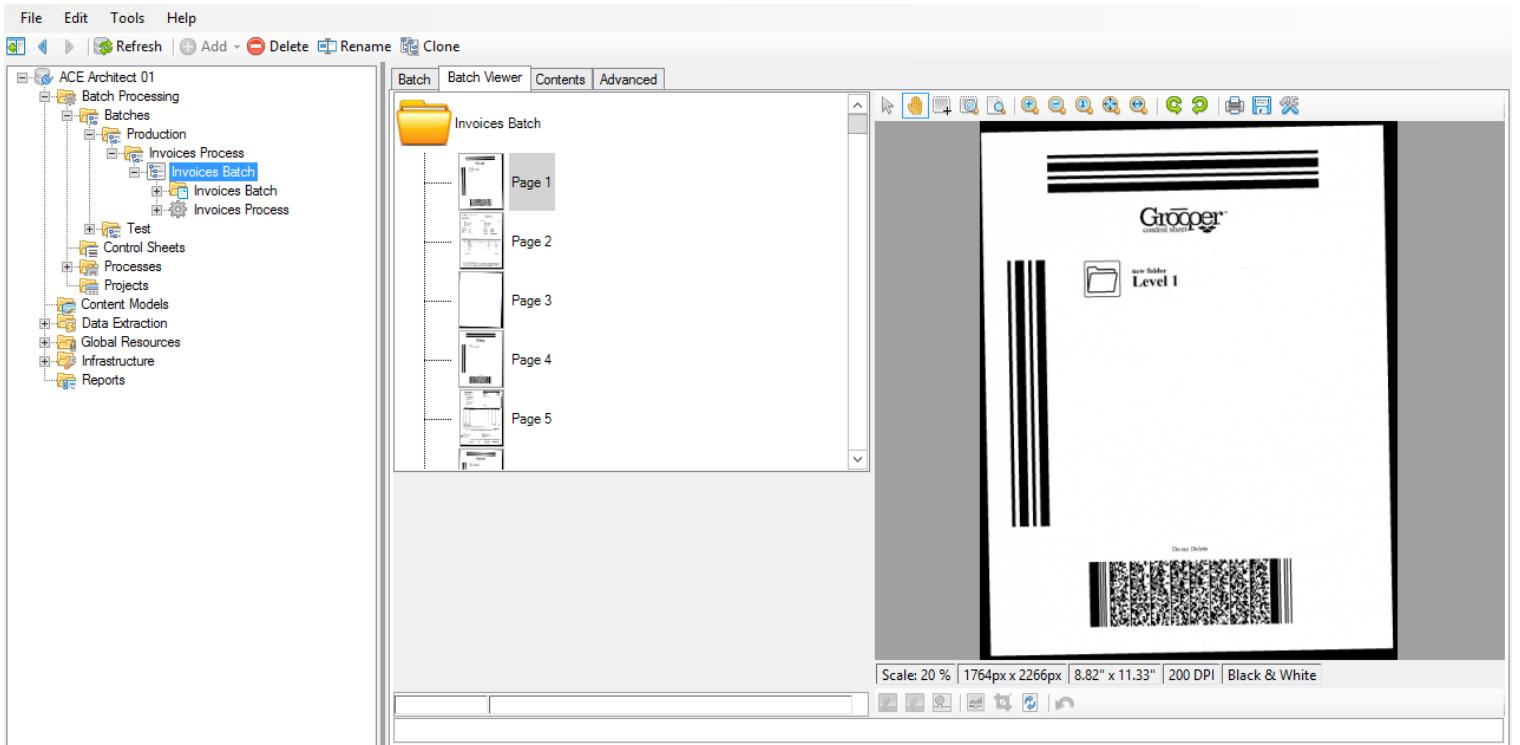
Any batches that are created will also be visible in the node tree. Viewing the batch from this location gives us access to more information about the batch itself.

You can view the batch by switching to the `Batch Viewer` tab.



› Global Resources / IP Profiles / Invoices IP Profile

Click the button next to the batch in the node tree to expand it.



Notice that there are two child objects here:

1. a folder with the same name as the batch, and
2. a gear icon with the name of the Batch Process we used to create the batch.

The screenshot shows the ACE Architect interface. On the left is a tree view of the project structure under 'ACE Architect 01'. A 'Batch Processing' node is expanded, showing 'Batches', 'Production', and 'Test' sub-nodes. Under 'Production', there is a 'Invoices Process' node which has a 'Invoices Batch' folder and a gear icon labeled 'Invoices Batch'. The main workspace shows a 'Batch Folder' dialog for 'Invoices Batch'. The 'General' tab displays properties like Content Type (Batch), Has PDF Version (False), and Flagged (False). The 'Native File Properties' tab shows Control Link (Batch), Has Native Version (False), and File Name. The 'Text Extraction' tab indicates Culture as English (United States). Below the dialog, a preview pane shows a folder icon for 'Invoices Batch' and four pages labeled 'Page 1', 'Page 2', 'Page 3', and 'Page 4'.

The screenshot shows the ACE Architect interface with the 'Batch Processing' node selected in the tree view. The main workspace displays the 'Batch Process' dialog for the 'Invoices Batch' gear icon. The 'General' tab shows the Content Type as 'Batch Process'. The 'Steps in Batch Process' section contains one step named 'Scan' with an order of 1 and an activity type of 'Scan'. The 'Validation Errors - No Issues Found' section is empty. Below the dialog, a detailed description of 'Batch Process' is provided, stating it defines a repeatable sequence of steps to achieve a specific information processing objective. It also describes 'Remarks' about the sequence of steps and their collective workflow process.

Note

When you create a production batch and assign it a particular Batch Process, it attaches a copy of that Process to that batch. This is to ensure that, should there be any changes to the process after the batch is created, it won't affect how this batch is processing.

An important note is that because this Process is only a *copy* of the original, it doesn't maintain a link to the original.

If we want to make changes to the Process and subsequently test those changes against an batch, we need to tell that batch to update.

This is like telling Grooper, "Hey, I've changed the steps I want you to take when you process."

We'll be doing this quite a few times, so it won't hurt to become familiar with the technique!

Cloning to test

We need to clean up our batch images, so we're going to create an Image Processing Profile to do that. However, profiles can be tested only against test batches, so we can't use our production batch.

We can, however, clone our production batch to our test batches. This way we don't have to create a brand new test batch to work with.

➤ [Batch Processing / Batches / Production / Invoices Process / Invoices Batch](#)

Press **Clone To Test**, and then **Execute** on the window that appears.

Note

A batch must first be paused before **Clone To Test** will appear.

Warning

Make sure you press **Clone To Test** and NOT **Clone** in the upper toolbar.

- **Clone To Test** makes an exact replica of the batch in the test batches.
- **Clone** is a way to create an exact copy of an object in-place in the node tree. If we used this option instead, we would have two identical production batches (and we'd have to rename the second one).

Once the clone is complete, you will see a confirmation window; press **OK**.

Now you can view the cloned batch by navigating to **Batch Processing → Batches → Test → Production Clones → Invoices Process → Invoices Batch**.

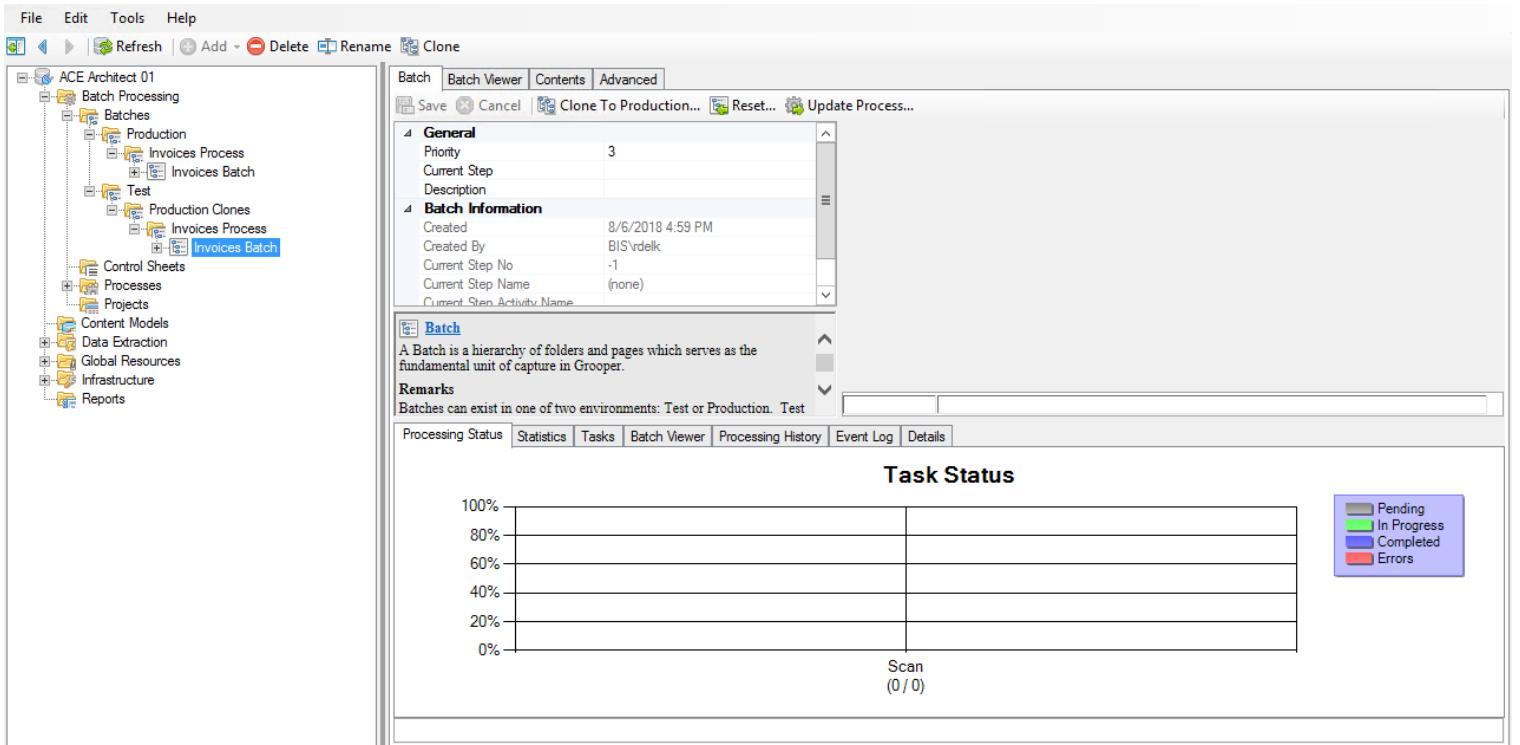


Image Processing

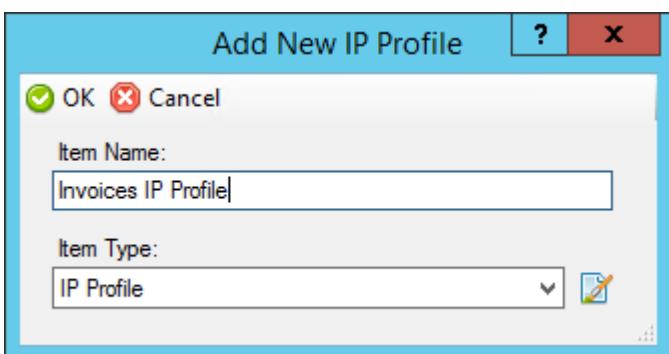
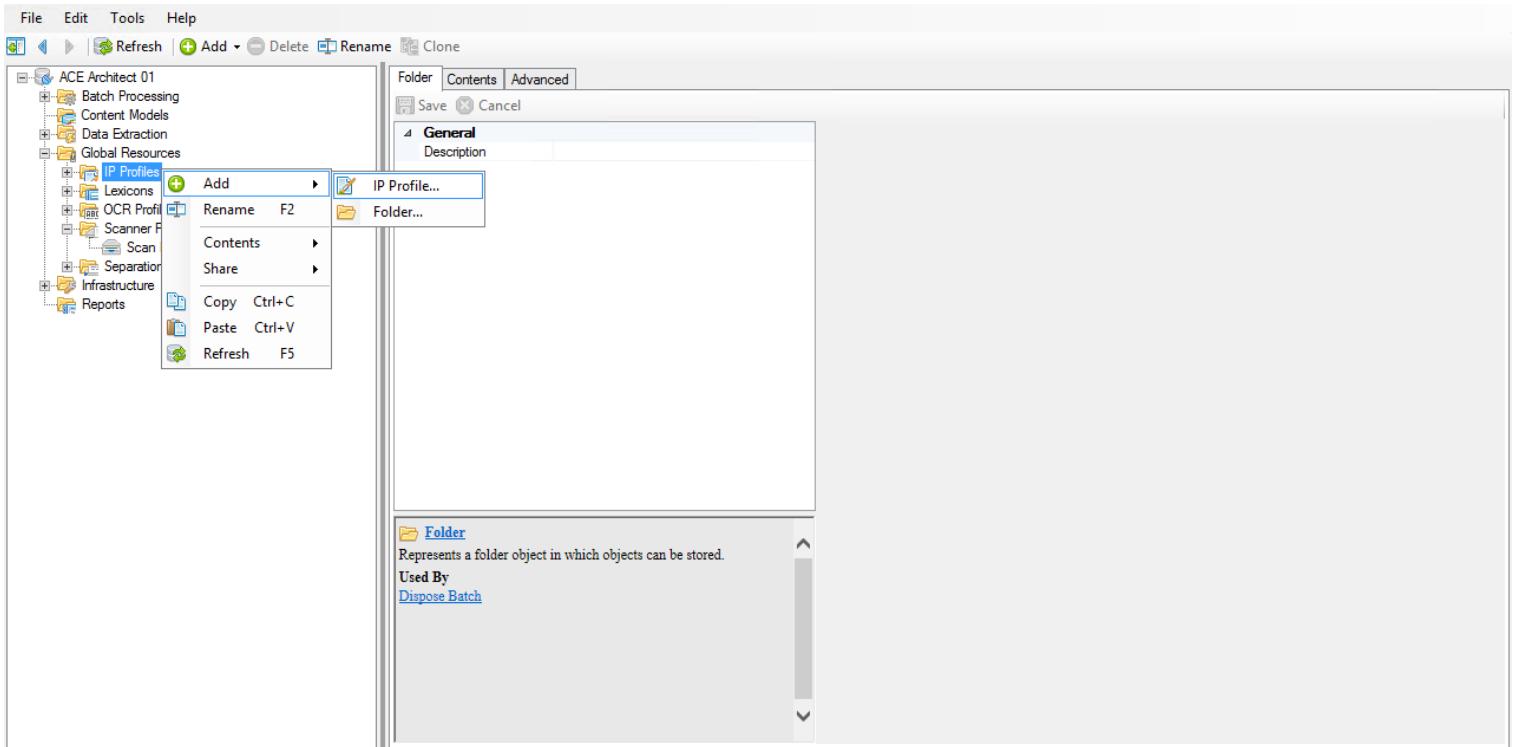
Our current objective is to clean up the images, which we learned is done via an Image Processing Profile (or "IP Profile").

We can start creating one now that we've got a batch against which we can test it.

Creating an IP Profile

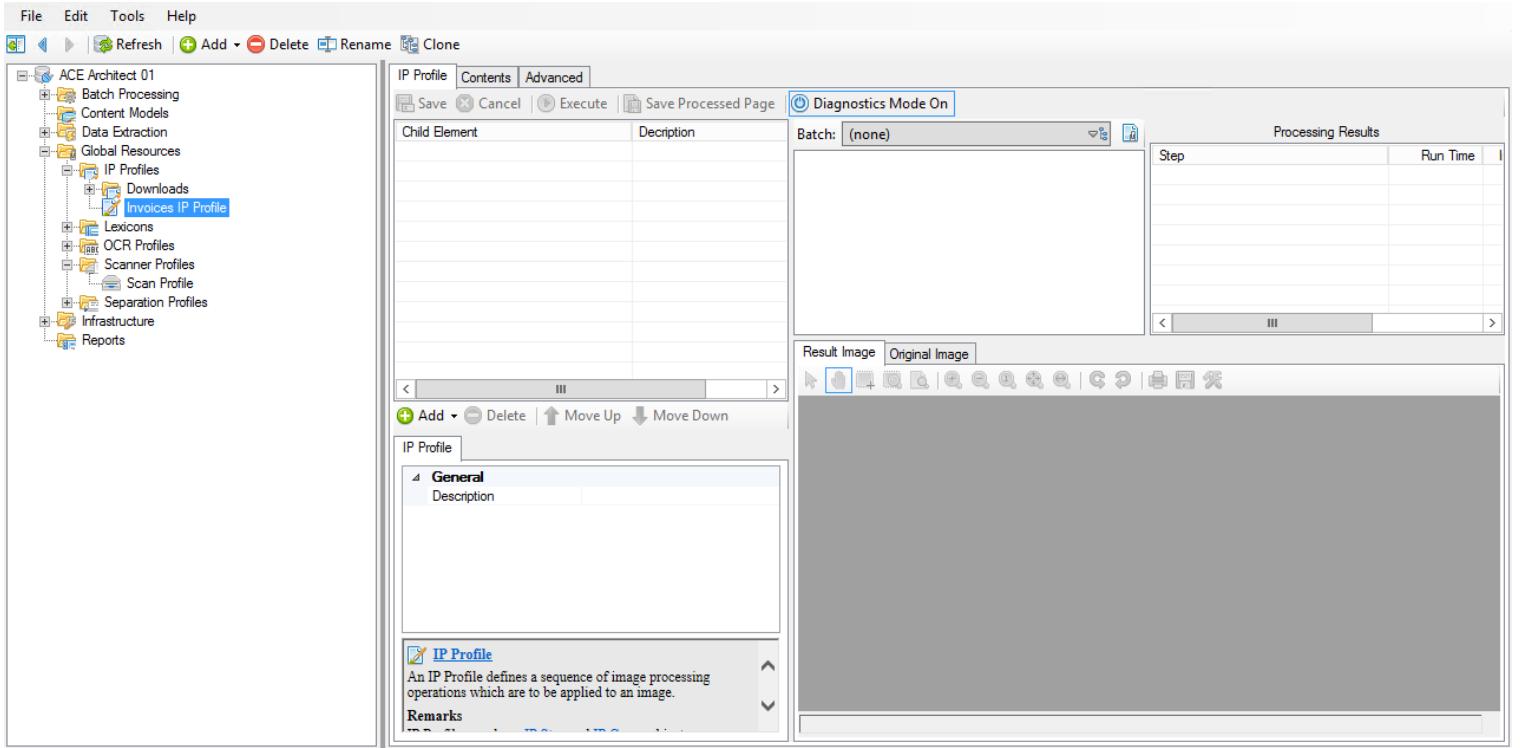
> Global Resources / IP Profiles

1. Right click and select Add → IP Profile... .
2. Name it Invoices IP Profile .



Configuring the IP Profile

Once you have your IP Profile created, you should see the configuration screen.



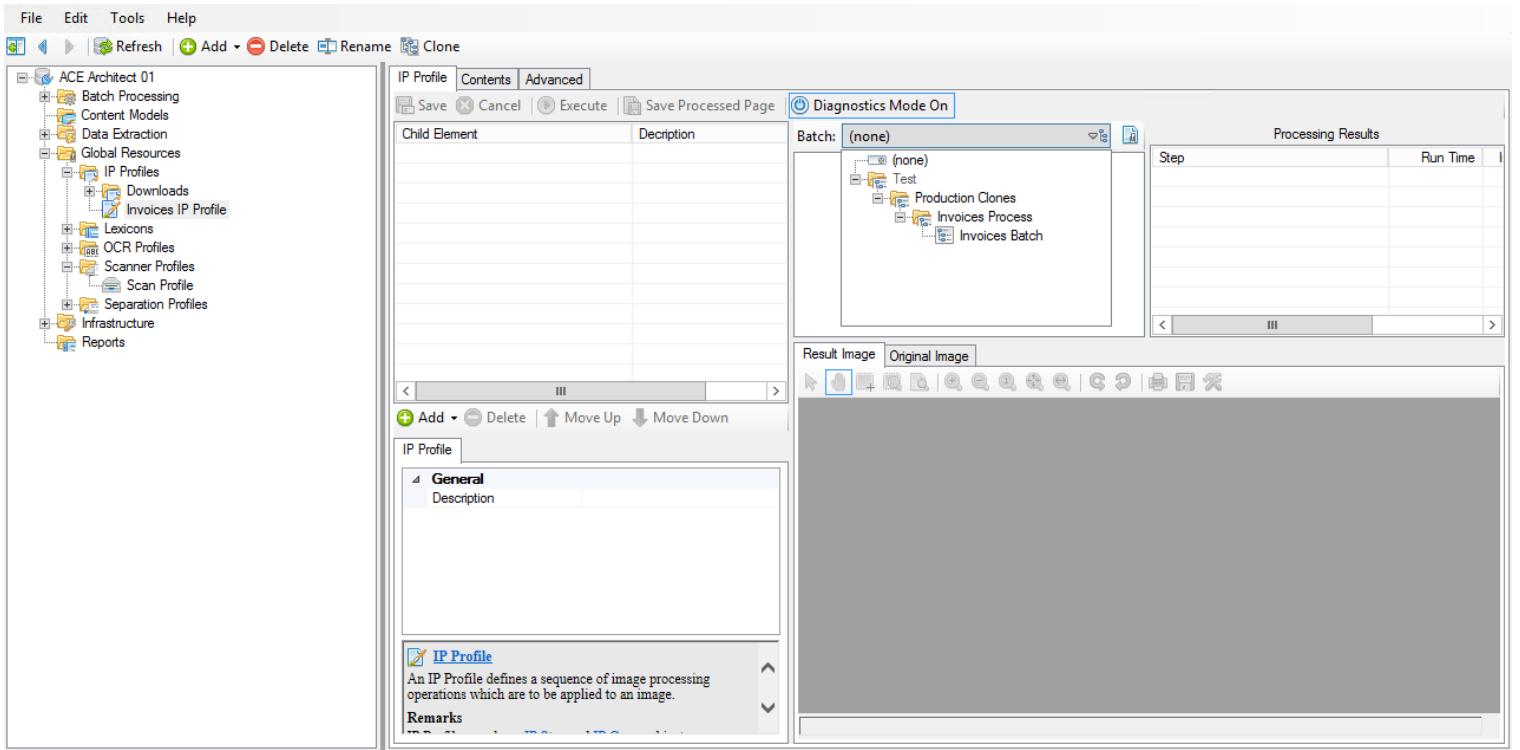
Setting up an IP Profile is a bit like setting up a Batch Process. We'll create a list of things to do (in an IP Profile we'll work with "commands") when the profile runs against a page. Then we'll actually get to test it out against our test batch before we put it into production.

Selecting a batch

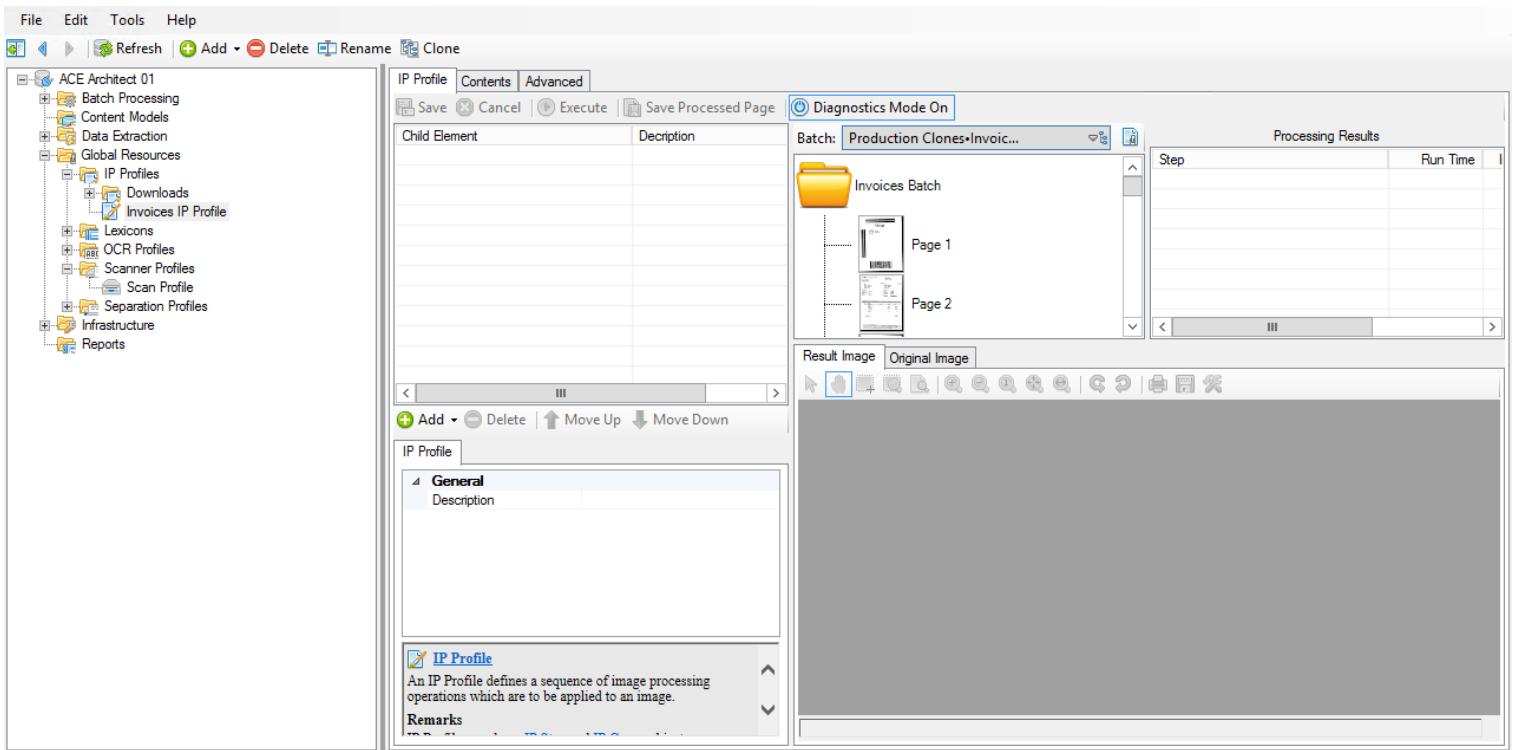
> Global Resources / IP Profiles / **Invoices IP Profile**

From the **Batch** dropdown select our cloned **Invoices Batch**.

We're going to build the profile, but we first need to select a batch for testing. Otherwise we won't know if the commands we're adding will work.



After you select the batch, it will appear in the batch viewer below.

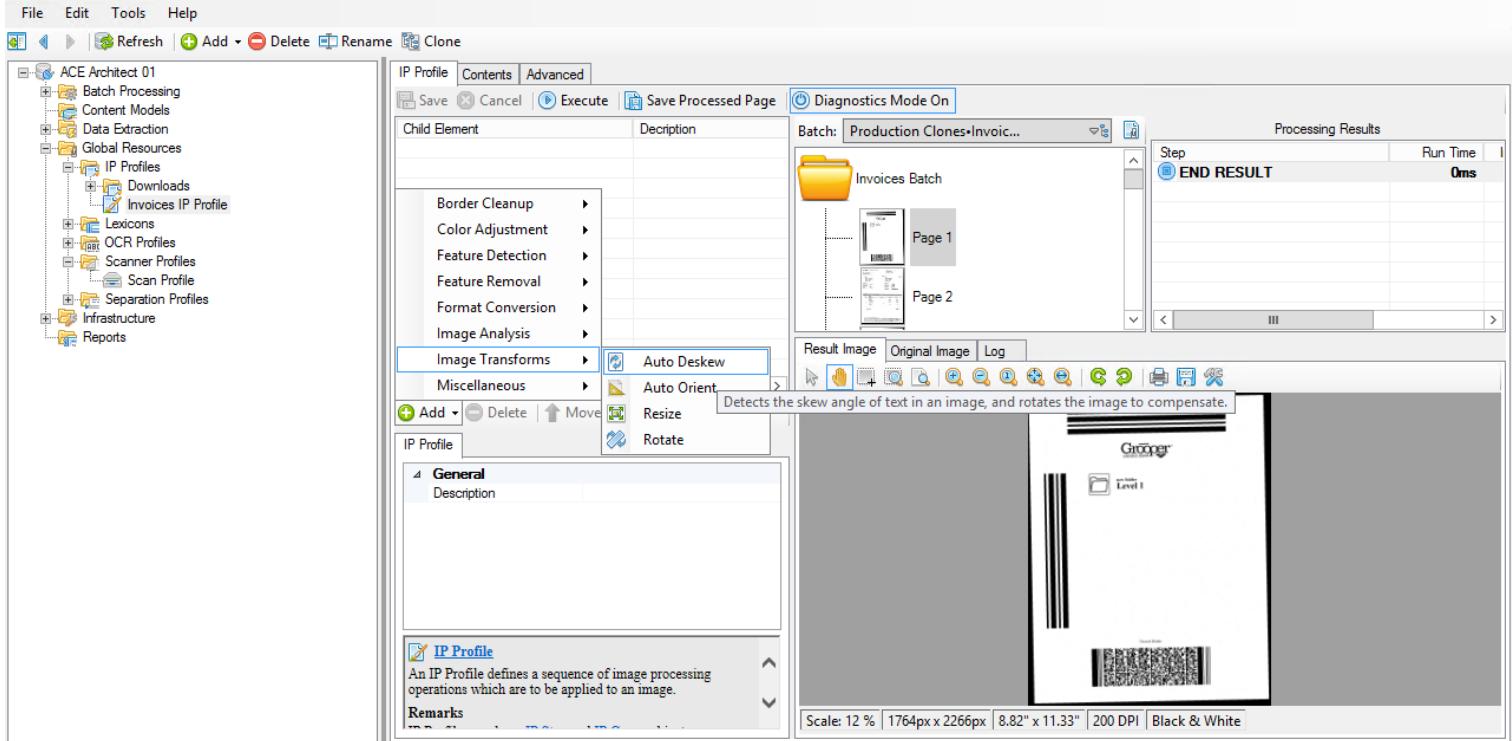


Let's add a command!

Adding a Deskew command

The first thing we want to do is deskew the images.

Press **Add** and select **Image Transforms → Auto Deskew**.



You should now see the "Auto Deskew" command in the list in the "Child Element" column.

Tip

If you're not seeing an image in the lower right panel, click on one of the pages in the batch.

Tip

When adding commands, if you're unsure what their purposes are, hover over them with your cursor. A tooltip will pop up and give you a brief description.

In the panel below, there are different properties that you can modify for each command, but we're going to leave these ones at their default configurations.

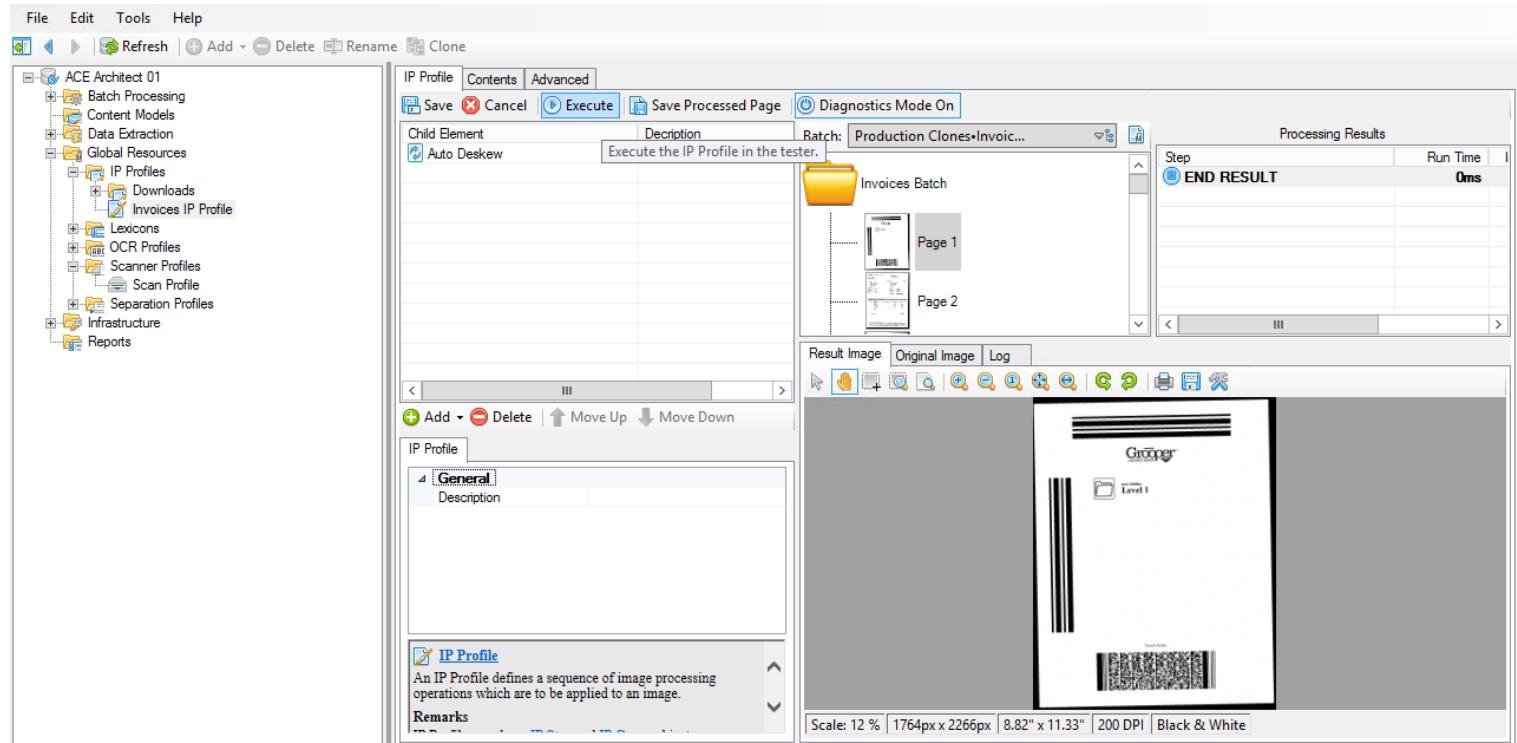
Let's test it out so far to make sure it's working.

Testing the command

> Global Resources / IP Profiles / **Invoices IP Profile**

Keeping your eye on the image in the lower right panel, press **Execute** in the toolbar.

This will run all commands in the list against the selected page from top to bottom.

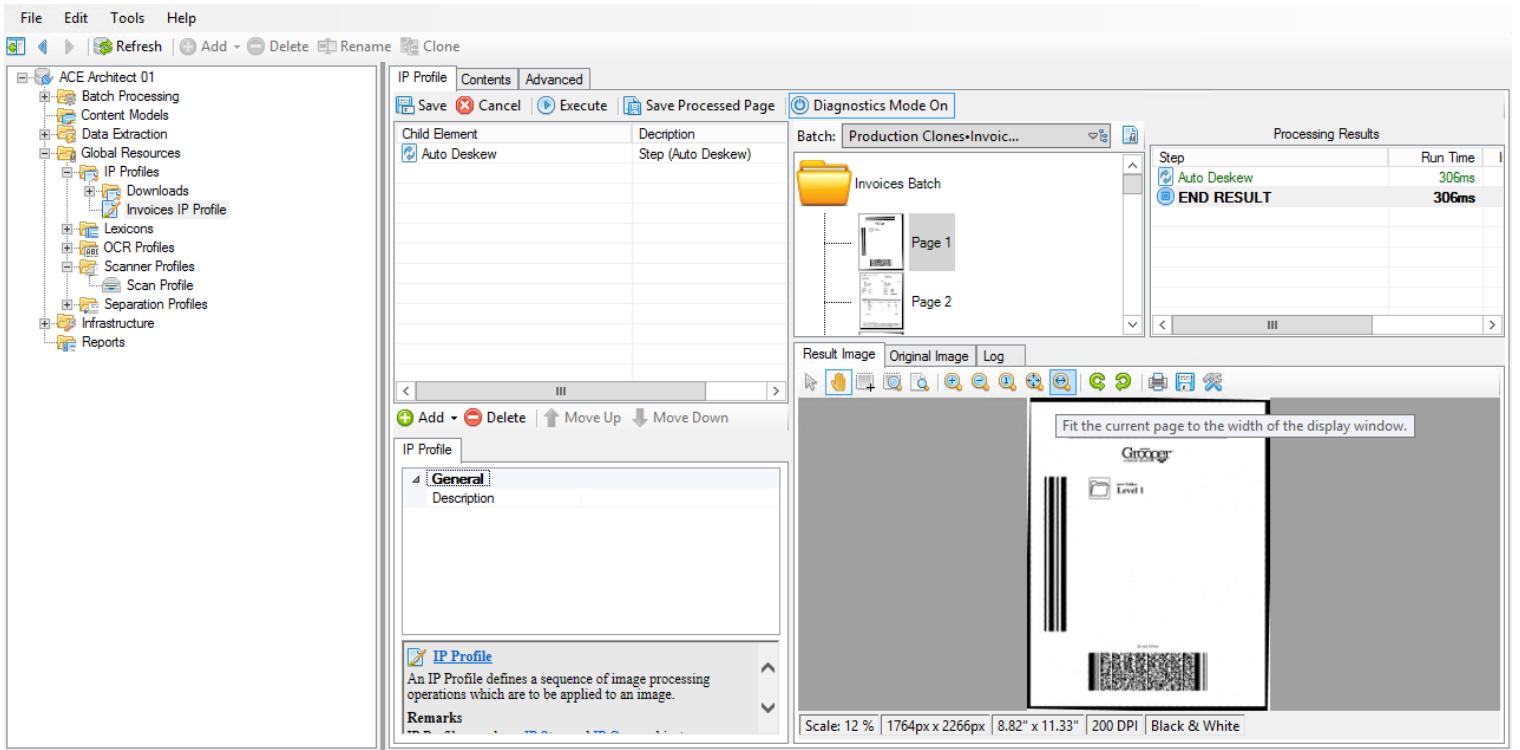


If you were watching, you probably noticed that the image did rotate, but now we have some extra white space around the edges that we didn't have before. That's okay, because we have plenty of other commands at our disposal to take care of that. Right now our primary concern is that the text is oriented correctly (we'll talk about why here in a bit).

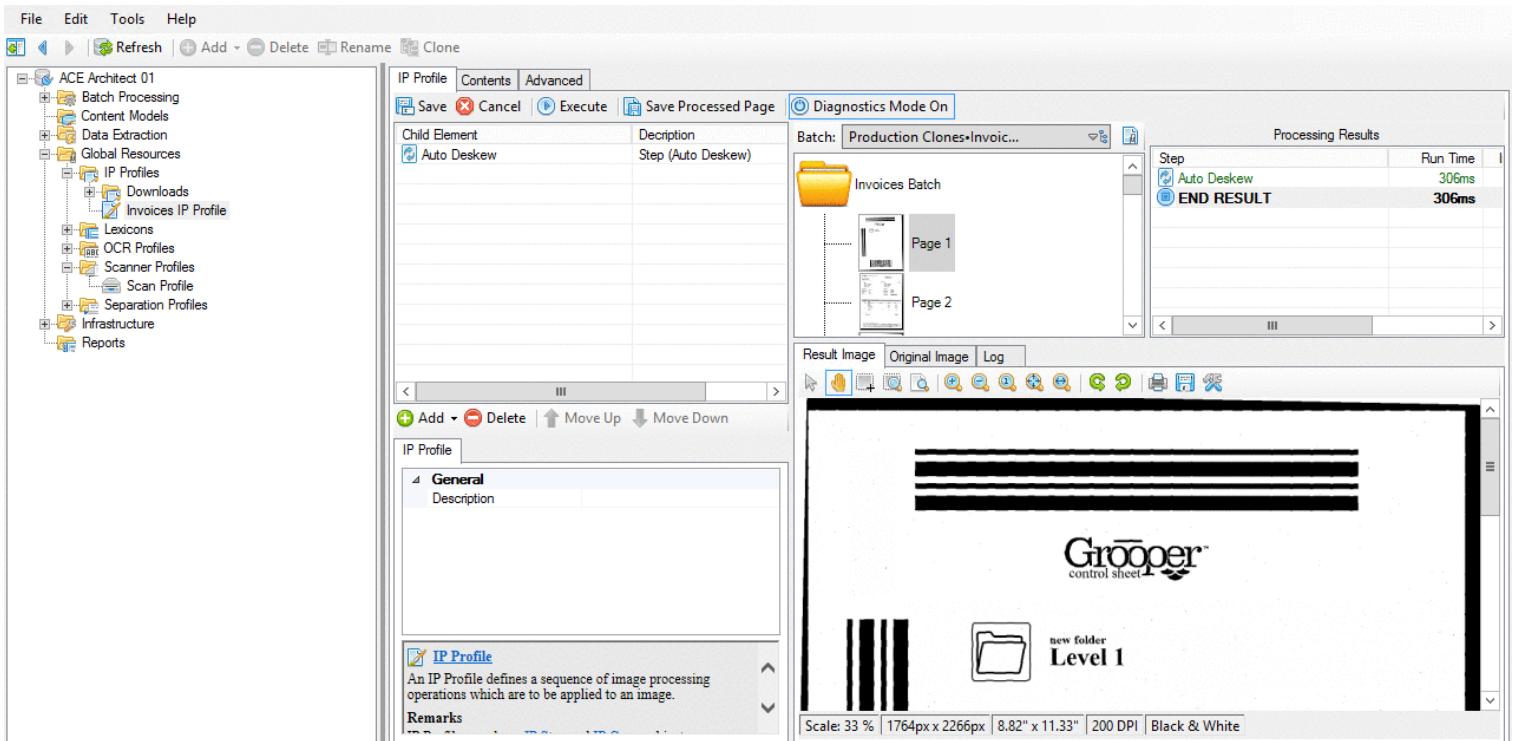
> Global Resources / IP Profiles / **Invoices IP Profile**

In the lower right panel, click the rightmost magnifying glass to zoom the image to fit the panel.

This will make it easier to see.



You can see the effect your commands have on your image by switching back and forth between **Result Image** and **Original Image**.



Check it out on page two.

File Edit Tools Help

Refresh | Add | Delete | Rename | Clone

ACE Architect 01

- Batch Processing
- Content Models
- Data Extraction
- Global Resources
 - IP Profiles
 - Downloads
 - Invoices IP Profile
 - Lexicons
 - OCR Profiles
 - Scanner Profiles
 - Scan Profile
 - Separation Profiles
- Infrastructure
- Reports

IP Profile | Contents | Advanced

Save | Cancel | Execute | Save Processed Page

Diagnostics Mode On

Child Element Description

Auto Deskew Step (Auto Deskew)

Batch: Production Clones+Invoic...

Processing Results

Step Run Time

Auto Deskew 385ms

END RESULT 385ms

Result Image | Original Image | Log

ACME | INTERNATIONAL

Checks to:
Acme International, Inc
123 South Main
Durham, NH 03824
Phone (603) 333-4444

Invoice Page 1 / 01

Bill To:
Grooper Industries
13900 N Harvey
Edmond, OK 73013
405-507-7000

Your Reference Date: 11/14/2008
P.O. number: 201017081
Customer number: 18003405
Customer contact:
Currency: USD Our Reference
Invoice number: 74451405
Ship-to Number: 18103943
Sales order no: 33241729

Scale: 22% | 2611px x 3400px | 8.70" x 11.33" | 300 DPI | Black & White

This screenshot shows the ACE Architect software interface. The left sidebar contains a tree view of project resources, including Global Resources with an 'Invoices IP Profile' entry. The main workspace has several panes: 'IP Profile' (with tabs for General, IP Profile, and Remarks), 'Diagnostics Mode On' (showing a file browser with 'Invoices Batch' containing 'Page 1' and 'Page 2'), 'Processing Results' (listing a single step named 'Auto Deskew' with a run time of 385ms), and a preview pane showing an invoice from 'ACME | INTERNATIONAL' to 'Grooper Industries'. The preview includes detailed shipping and billing information and a scale bar.

› Global Resources / IP Profiles / Invoices IP Profile

Press **Save**.

File Edit Tools Help

Refresh | Add | Delete | Rename | Clone

ACE Architect 01

- Batch Processing
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- Reports

IP Profile | Contents | Advanced

Save | Cancel | Execute | Save Processed Page

Diagnostics Mode On

Child Element Description

Save the changes to the IP Profile. (Auto Deskew)

Batch: Production Clones+Invoic...

Processing Results

Step Run Time

Auto Deskew 385ms

END RESULT 385ms

Result Image | Original Image | Log

ACME | INTERNATIONAL

Checks to:
Acme International, Inc
123 South Main
Durham, NH 03824
Phone (603) 333-4444

Invoice Page 1 / 01

Bill To:
Grooper Industries
13900 N Harvey
Edmond, OK 73013
405-507-7000

Your Reference Date: 11/14/2008
P.O. number: 201017081
Customer number: 18003405
Customer contact:
Currency: USD Our Reference
Invoice number: 74451405
Ship-to Number: 18103943
Sales order no: 33241729

Scale: 22% | 2611px x 3400px | 8.70" x 11.33" | 300 DPI | Black & White

This screenshot is identical to the one above, but it shows the 'Save' dialog box with the message 'Save the changes to the IP Profile. (Auto Deskew)' before the 'Execute' button. The rest of the interface and preview pane are the same.

Tip

Save often!

A good rule of thumb is to save every time you make a change you know you're going to keep.

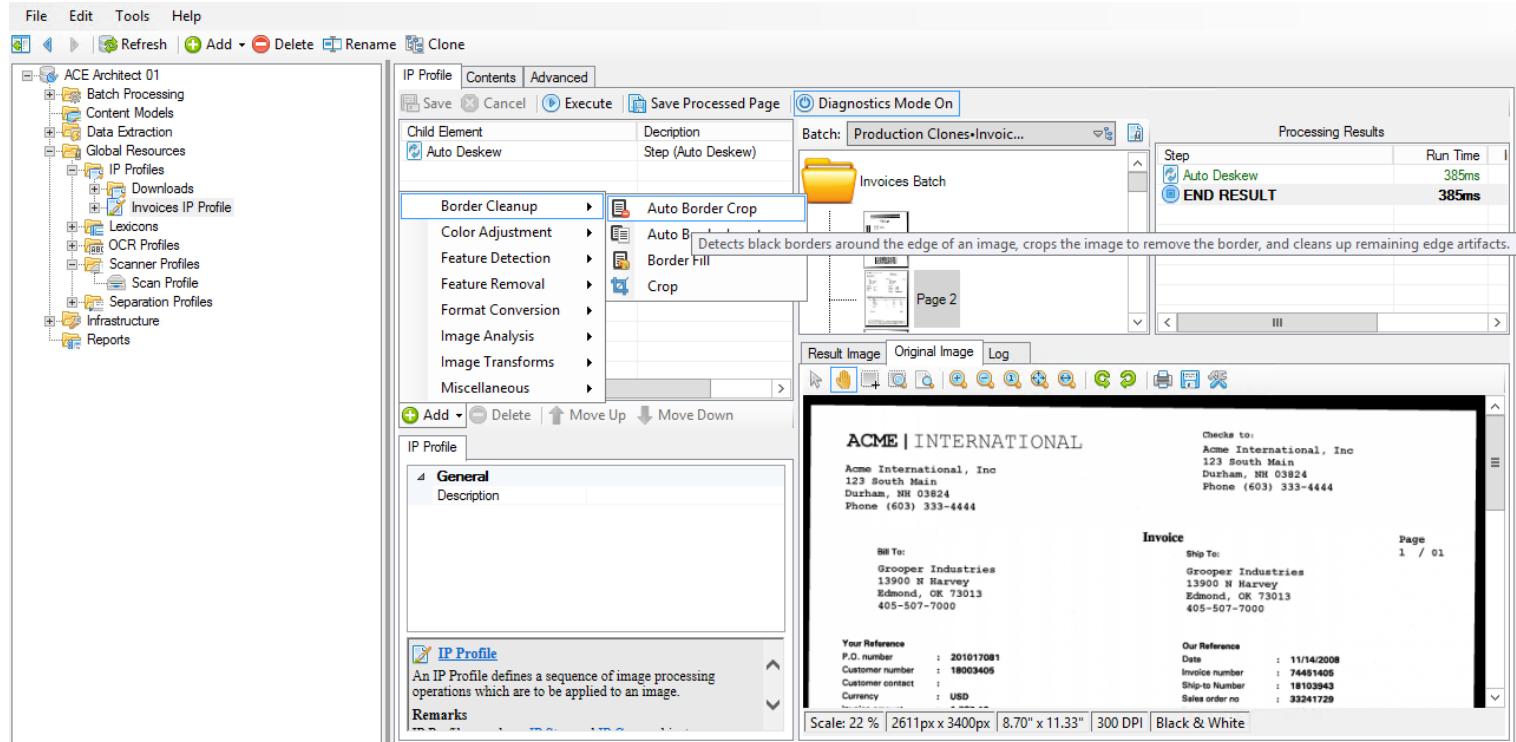
We're done with the Deskew command. Remember that the goal is to make sure the text is displayed in horizontal lines, so try not to focus on the border skew.

Speaking of borders, let's take care of them.

Border cleanup commands

> Global Resources / IP Profiles / Invoices IP Profile

Press Add , and then Border Cleanup → Auto Border Crop .



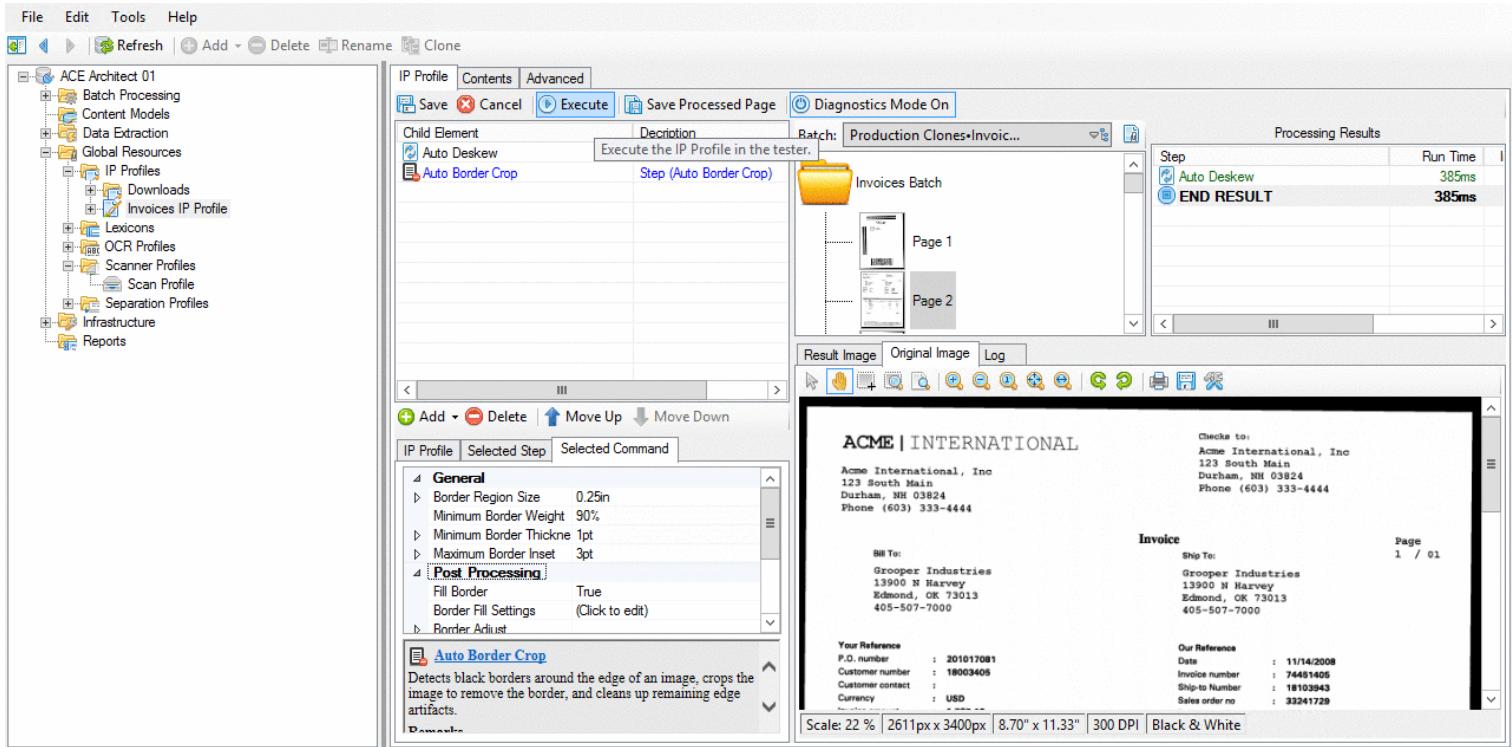
We aren't going to change any of the default properties, so let's see what happens.

> Global Resources / IP Profiles / Invoices IP Profile

Press Execute . Click back and forth between the images to see the changes.

Tip

As you're building an IP Profile and adding and testing commands, make sure you are on the **Result Image** to see if your configuration is working. It's not unusual to be adding commands and not see any changes in your image, only to realize you never switched over from the **Original Image** view!



Note

The **Border Crop** command changes the size of your image. You can see this in the information panel below the image itself.

Our Border Crop works pretty well, but there are some images that still have a bit leftover. We don't necessarily want to increase the size of our crop because we risk cutting off any text that might be close to the edge of the page (for example, **Page 7** in our batch). We'll take care of that another way.

> Global Resources / IP Profiles / **Invoices IP Profile**

Save the profile.

File Edit Tools Help

Refresh Add Delete Rename Clone

ACE Architect 01

- Batch Processing
- Content Models
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IP Profile Contents Advanced

Save Cancel Execute Save Processed Page Diagnostics Mode On

Child Element Description

Auto Save the changes to the IP Profile. (Auto Deskew)

Auto Border Crop Step (Auto Border Crop)

Batch: Production Clones+Invoic...

Processing Results

Step	Run Time
Auto Deskew	415ms
Auto Border Crop	437ms
END RESULT	852ms

Result Image Original Image Log

ACME | INTERNATIONAL

Acme International, Inc
123 South Main
Durham, NH 03824
Phone (603) 333-4444

Invoice Page 1 / 01

Bill To: Grooper Industries 13900 N Harvey Edmond, OK 73013 405-507-7000

Ship To: Grooper Industries 13900 N Harvey Edmond, OK 73013 405-507-7000

Your Reference P.O. number : 201017081 Customer number : 18003405 Customer contact : Customer currency : USD Invoiced amount : 1,777.15

Our Reference Date : 11/14/2008 Invoice number : 74451405 Ship-to Number : 18103943 Sales order no : 33241729 Purchase number : 6518616

Scale: 23 % | 2543px x 3283px | 8.48" x 10.94" | 300 DPI | Black & White

Global Resources / IP Profiles / Invoices IP Profile

Select Page 1 in our batch. Press Add and select Border Cleanup → Border Fill.

File Edit Tools Help

Refresh Add Delete Rename Clone

ACE Architect 01

- Batch Processing
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IP Profile Contents Advanced

Save Cancel Execute Save Processed Page Diagnostics Mode On

Child Element Description

Auto Deskew 1

Auto Border Crop 2

Batch: Production Clones+Invoic...

Processing Results

Step	Run Time
Auto Deskew	129ms
Auto Border Crop	92ms
END RESULT	221ms

Result Image Original Image Log

Drops out artifacts around the edge of an image.

Grooper control sheet

new folder Level 1

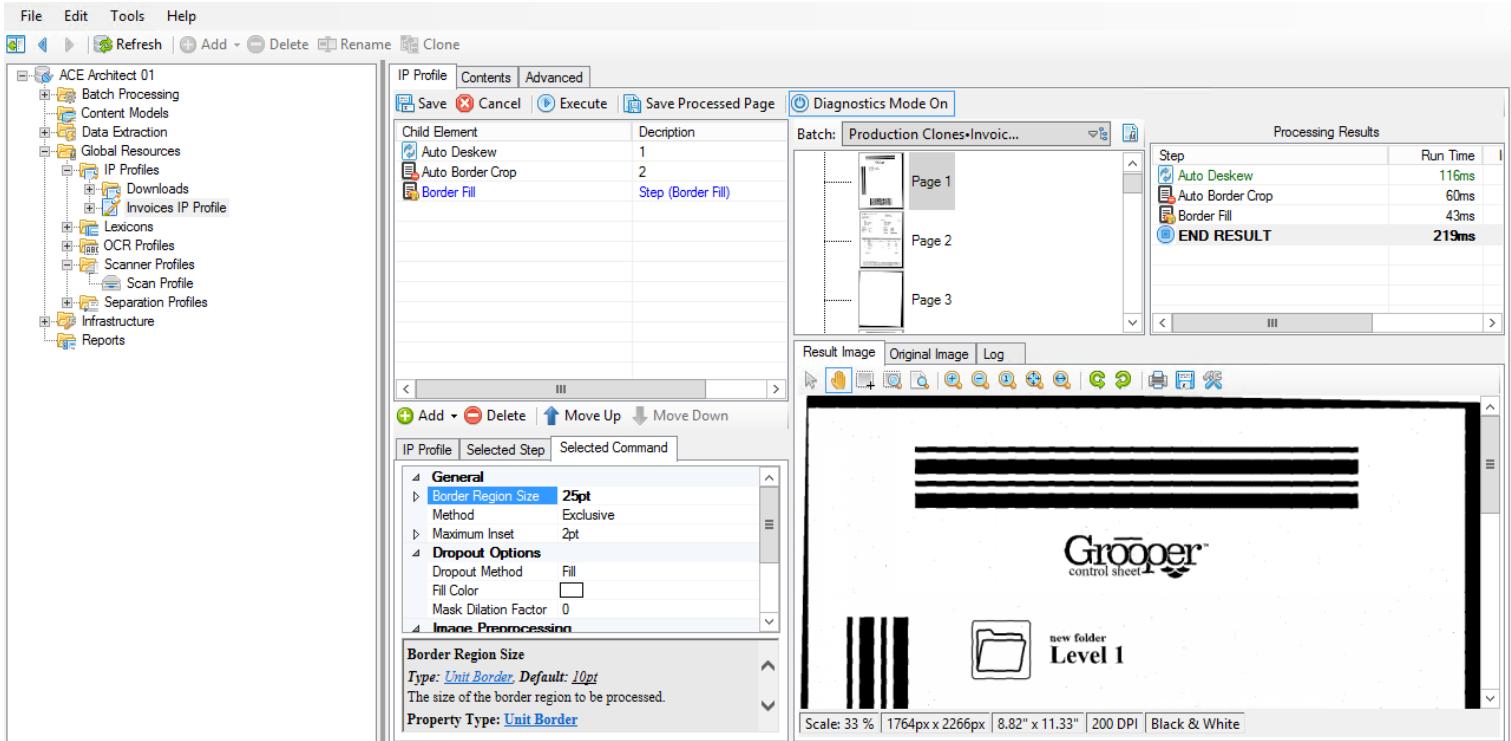
Scale: 33 % | 1764px x 2266px | 8.82" x 11.33" | 200 DPI | Black & White

When you click on a page in the batch viewer, it automatically runs all commands against that page. The only time you need to use **Execute** is when you're adding commands and you want to run them against your current page without navigating away from it.

If you click on **Execute**, nothing happens. That tells us that the default properties for this command probably need to be tweaked for us to see results.

> Global Resources / IP Profiles / **Invoices IP Profile**

1. Select the **Border Fill** command.
2. Change the **Border Region Size** property to **25pt**.



This is increasing how far inward from the border Grooper will look when running this command.

Yet, once again, **Execute** yields no results.

> Global Resources / IP Profiles / **Invoices IP Profile**

1. Select **Page 9** in our batch.
2. Change the **Method** property to **Inclusive**.

File Edit Tools Help

Refresh Add Delete Rename Clone

ACE Architect 01

- Batch Processing
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- Reports

IP Profile Contents Advanced

Save Cancel Execute Save Processed Page Diagnostics Mode On

Child Element Description

Auto Deskew	1
Auto Border Crop	2
Border Fill	Step (Border Fill)

Batch: Production Clones+Invoic...

Processing Results

Step	Run Time
Auto Deskew	308ms
Auto Border Crop	176ms
Border Fill	103ms
END RESULT	587ms

Page 7
Page 8
Page 9

Result Image Original Image Log

Spartan Manufacturing
INVOICE
12 West Laguna Dr
Irvine, CA 92612
Phone: (800) 111-22222
Fax: (308) 333-1182

SHIP TO (SAME AS SOLD TO UNLESS SHOWN)
Grocooper Industries
13900 N Harvey
Edmond, OK 73013

INVOICE DATE
11/10/08 ORIGINAL
INVOICE NUMBER
MA20-552100

PO# RELEASE NUMBER
201011309

SOLD TO
Grocooper Industries
13900 N Harvey
Edmond, OK 73013

REMIT TO:
Spartan Manufacturing
12 West Laguna Dr
Irvine, Ca, 92612

SHIPPING BY: DN
TERMS
11/10/08 1% 10625thNET 30
SHIP DATE
11/10/08
SHIP VIA
DIRECT SHIP RAL CARRIERS
ACCT NUMBER
194306-01
FOB ORG, FRT PPA

TAKEN BY: DN
TERMS
10/24/08 1% 10625thNET 30
SHIP DATE
10/24/08
SHIP VIA
COMBINE FREIGHT MA20 ONLY
ACCT NUMBER
194306-01
FOB ORG, FRT PPA

Scal: 21 % | 2742px x 3398px | 9.14" x 11.33" | 300 DPI | Black & White

Global Resources / IP Profiles / Invoices IP Profile

Press **Execute** and check out the results.

File Edit Tools Help

Refresh Add Delete Rename Clone

ACE Architect 01

- Batch Processing
- Content Models
- Data Extraction
- Global Resources
 - IP Profiles
 - Downloads
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 - Lexicons
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 - Scanner Profiles
 - Scan Profile
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- Infrastructure
- Reports

IP Profile Contents Advanced

Save Cancel Execute Save Processed Page Diagnostics Mode On

Child Element Description

Auto Deskew	Execute the IP Profile in the tester.
Auto Border Crop	2
Border Fill	Step (Border Fill)

Batch: Production Clones+Invoic...

Processing Results

Step	Run Time
Auto Deskew	308ms
Auto Border Crop	176ms
Border Fill	103ms
END RESULT	587ms

Page 7
Page 8
Page 9

Result Image Original Image Log

Spartan Manufacturing
INVOICE
12 West Laguna Dr
Irvine, CA 92612
Phone: (800) 111-22222
Fax: (308) 333-1182

SHIP TO (SAME AS SOLD TO UNLESS SHOWN)
Grocooper Industries
13900 N Harvey
Edmond, OK 73013

INVOICE DATE
11/10/08 ORIGINAL
INVOICE NUMBER
MA20-552100

PO# RELEASE NUMBER
201011309

SOLD TO
Grocooper Industries
13900 N Harvey
Edmond, OK 73013

REMIT TO:
Spartan Manufacturing
12 West Laguna Dr
Irvine, Ca, 92612

SHIPPING BY: DN
TERMS
11/10/08 1% 10625thNET 30
SHIP DATE
11/10/08
SHIP VIA
DIRECT SHIP RAL CARRIERS
ACCT NUMBER
194306-01
FOB ORG, FRT PPA

TAKEN BY: DN
TERMS
10/24/08 1% 10625thNET 30
SHIP DATE
10/24/08
SHIP VIA
COMBINE FREIGHT MA20 ONLY
ACCT NUMBER
194306-01
FOB ORG, FRT PPA

Scal: 21 % | 2742px x 3398px | 9.14" x 11.33" | 300 DPI | Black & White

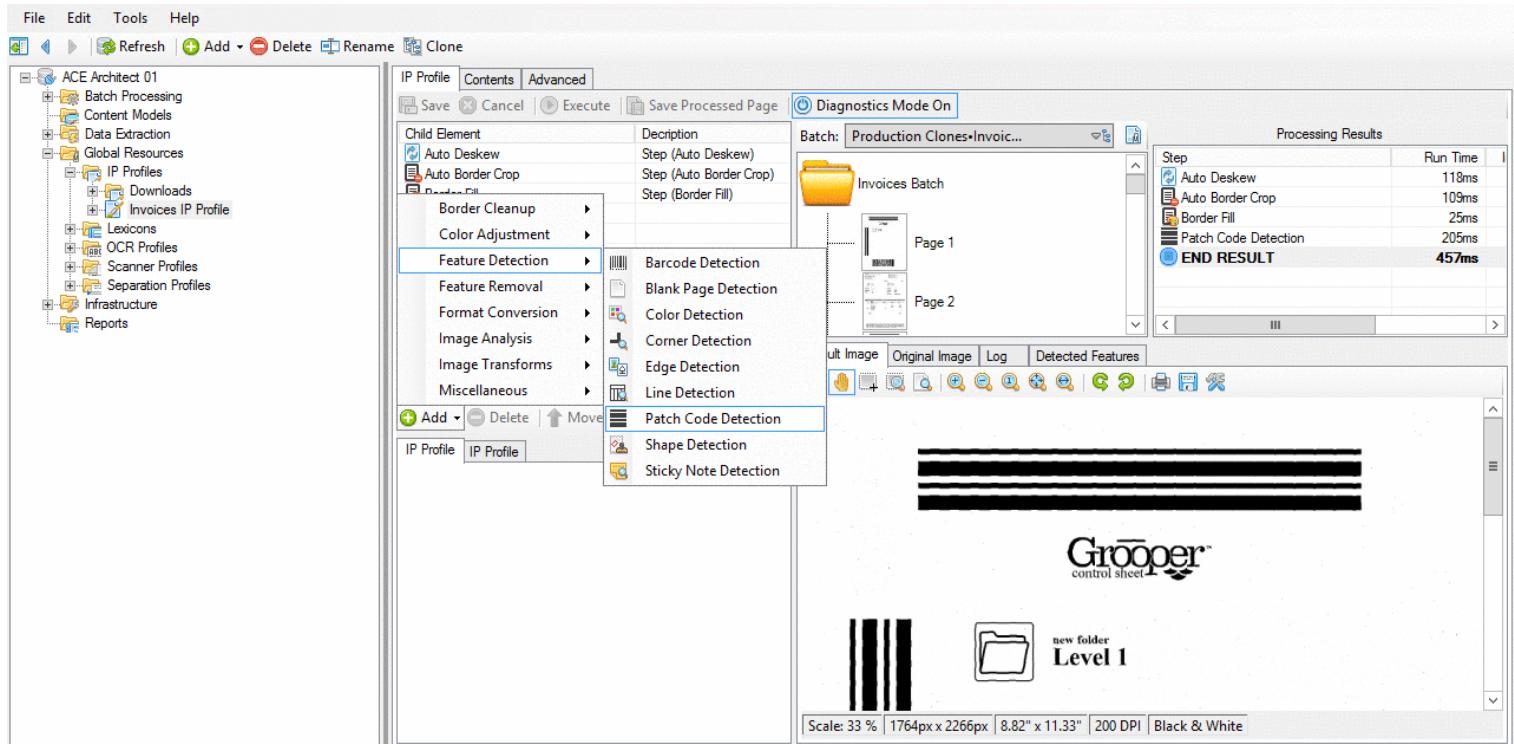
Unlike the **Border Crop** command, **Border Fill** does not change the size of your image. This is because this command serves to fill in the edge of the page with whatever color is set in the **Fill Color** property.

We're not changing the size of the page, only the stuff on it.

> Global Resources / IP Profiles / **Invoices IP Profile**

Press **Add** and select **Feature Detection → Patch Code Detection**.

Save the profile.



Adding to the Batch Process

> Batch Processing / Processes / Working / **Invoices Process** .

1. Press **Add Step...** .
2. In the **Step Properties** for our new empty step, change the **Activity Type** to **Image Processing** .
3. Set the **IP Profile** on the right to the IP Profile we just got done making.
4. **Save** and **Publish** .

The screenshot shows the ACE Architect 01 software interface. On the left is a navigation tree with categories like Batch Processing, Control Sheets, Processes, Content Models, etc. The 'Invoices Process' is selected under the 'Processes' category. The main window displays the 'Batch Process Properties' dialog. The 'General' tab shows the project name 'ACE Architect 01' and a note to 'Add a step to the Batch Process.' The 'Publishing Info' tab shows publication details. The 'Batch Process' tab contains a detailed description of what a batch process is. The 'Steps in Batch Process' section is where steps are added and managed. A validation errors panel indicates 'Validation Errors - No Issues Found'. Below the dialog are two empty panels for 'Step Properties' and 'Activity Properties'.

File Edit Tools Help

ACE Architect 01

- Batch Processing
 - Batches
 - Control Sheets
 - Processes
 - Published
 - Working
 - Invoices Process
 - Projects
- Content Models
- Data Extraction
- Global Resources
- Infrastructure
- Reports

Batch Process | Scripting | Contents | Advanced

Save **Cancel** **Validate**

Batch Process Properties

General

Content Type: Project
Project
Description

Publishing Info

Published Da 8/6/2018 4:16:37 PM
Published Ve c1f259844516-4440-a5d3-d73ef01

Steps in Batch Process

Name	Order	Activity Type
Scan	1	Scan
Image Processing	2	Image Processing

Validation Errors - No Issues Found

Properties of Image Processing Step

General

Activity Type: **Image Processing**
Activity: Image Processing
Scope: Page
Thread Pool: Default
Expressions

Should Submit Expression
Next Step Expression

Properties of Image Processing Activity

General

IP Profile: **Invoices IP Profile**
Enable Undo: False

Processing Options

Error Disposition: Flag, Log
Maximum Consecutive Errors: 0
Concurrency Mode: Multiple

Batch Process

Defines a repeatable sequence of steps which achieve a specific information processing objective in Grooper.

Remarks

A Batch Process is a sequence of individual [Batch Process Step](#) objects, each specifying an [Activity](#) to be applied. Activities may represent automated system tasks, or human-attended tasks which require operator interaction. Collectively, these steps represent a workflow process through which batches of a particular

Activity Type

Type: **String**
The type of activity to be performed at this step. Can be one of the following types:

- [Classify](#): Performs automated document classification using pre-configured training and/or rules.

IP Profile

Type: [IP Profile](#)
The [IP Profile](#) to apply.
Property Type: [IP Profile](#)

An IP Profile defines a sequence of image processing operations which are to be applied to an image. IP Profiles can have [IP](#)

File Edit Tools Help

ACE Architect 01

- Batch Processing
 - Batches
 - Control Sheets
 - Processes
 - Published
 - Working
 - Invoices Process
 - Projects
- Content Models
- Data Extraction
- Global Resources
- Infrastructure
- Reports

Batch Process | Scripting | Contents | Advanced

Save **Cancel** **Validate**

Batch Process Properties

G Save the changes to Batch Process.

Content Type

Project
Description

Publishing Info

Published Da 8/6/2018 4:16:37 PM
Published Ve c1f259844516-4440-a5d3-d73ef01

Steps in Batch Process

Name	Order	Activity Type
Scan	1	Scan
Image Processing	2	Image Processing

Validation Errors - No Issues Found

Properties of Image Processing Step

General

Activity Type: **Image Processing**
Activity: Image Processing
Scope: Page
Thread Pool: Default
Expressions

Should Submit Expression
Next Step Expression

Properties of Image Processing Activity

General

IP Profile: **Invoices IP Profile**
Enable Undo: False

Processing Options

Error Disposition: Flag, Log
Maximum Consecutive Errors: 0
Concurrency Mode: Multiple

Batch Process

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Activity Type

Type: **String**
The type of activity to be performed at this step. Can be one of the following types:

- [Classify](#): Performs automated document classification using pre-configured training and/or rules.

IP Profile

Type: [IP Profile](#)
The [IP Profile](#) to apply.
Property Type: [IP Profile](#)

An IP Profile defines a sequence of image processing operations which are to be applied to an image. IP Profiles can have [IP](#)

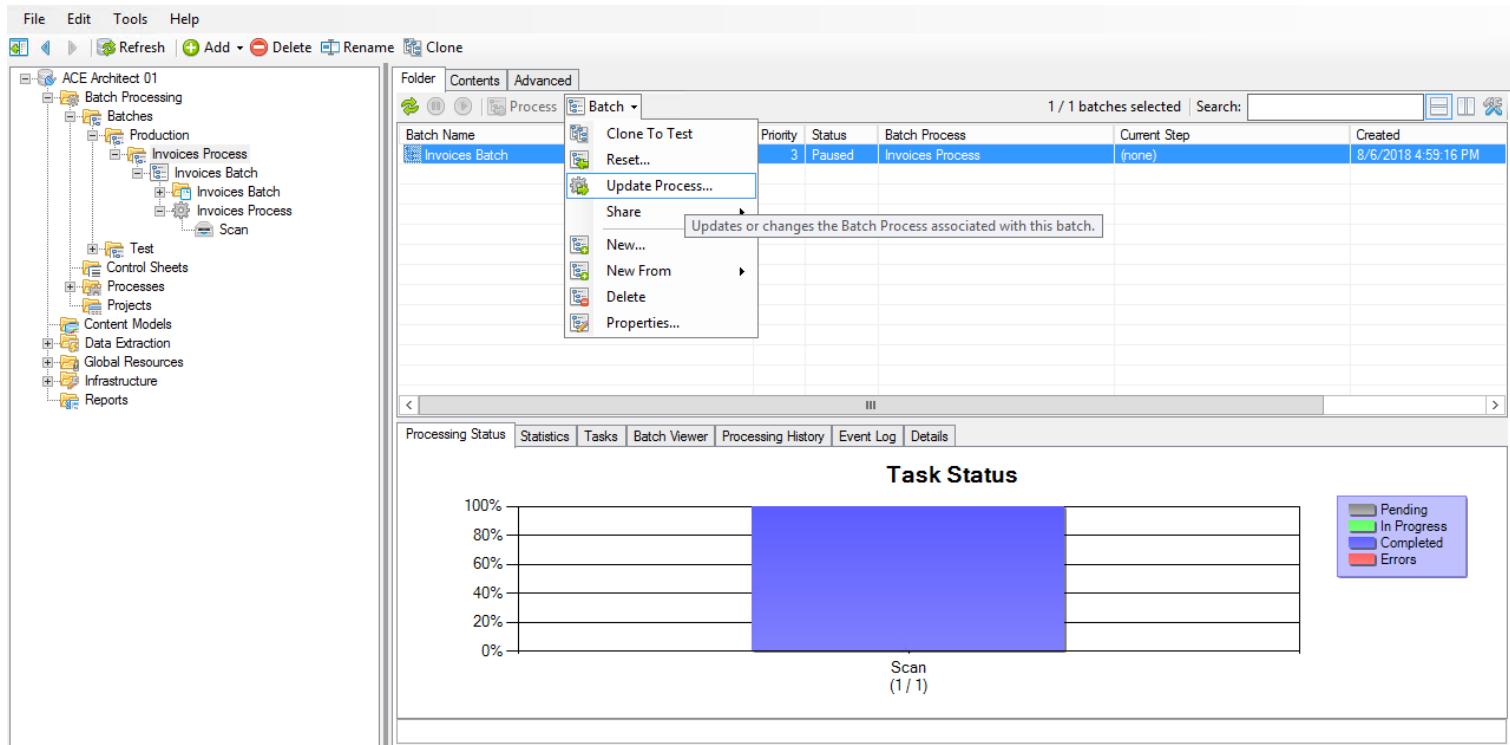
Updating the production batch

> Batch Processing / Batches / Production / Invoices Process / Invoices Process

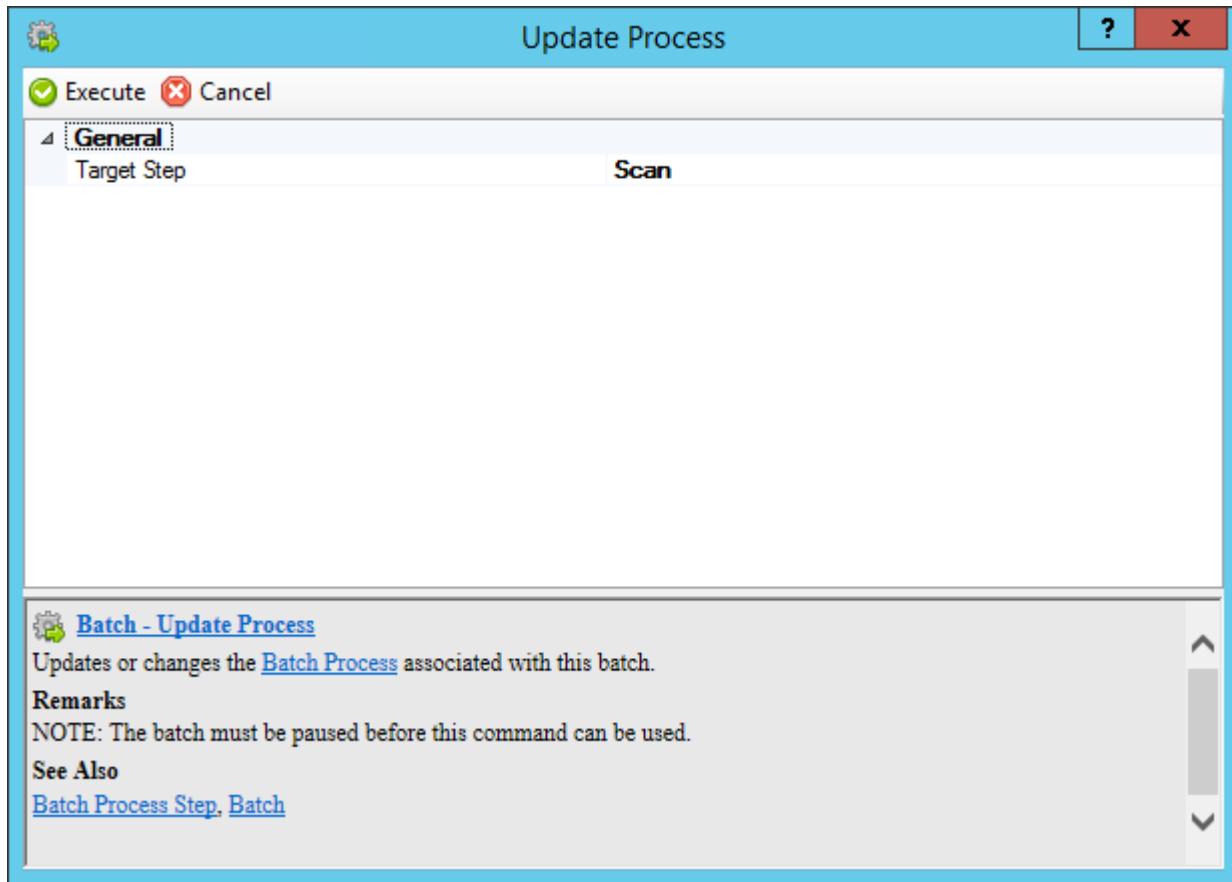
Notice how the Batch Process that is attached to this batch didn't receive the new step we just added. Remember that when this batch was created, the process had only the "Scan" step. We want to tell this batch to check out the changes we made to the process so that it can run through the new Image Processing step.

> Batch Processing / Batches / Production / Invoices Process

Select the batch from the list, and then press **Batch → Update Process...**.



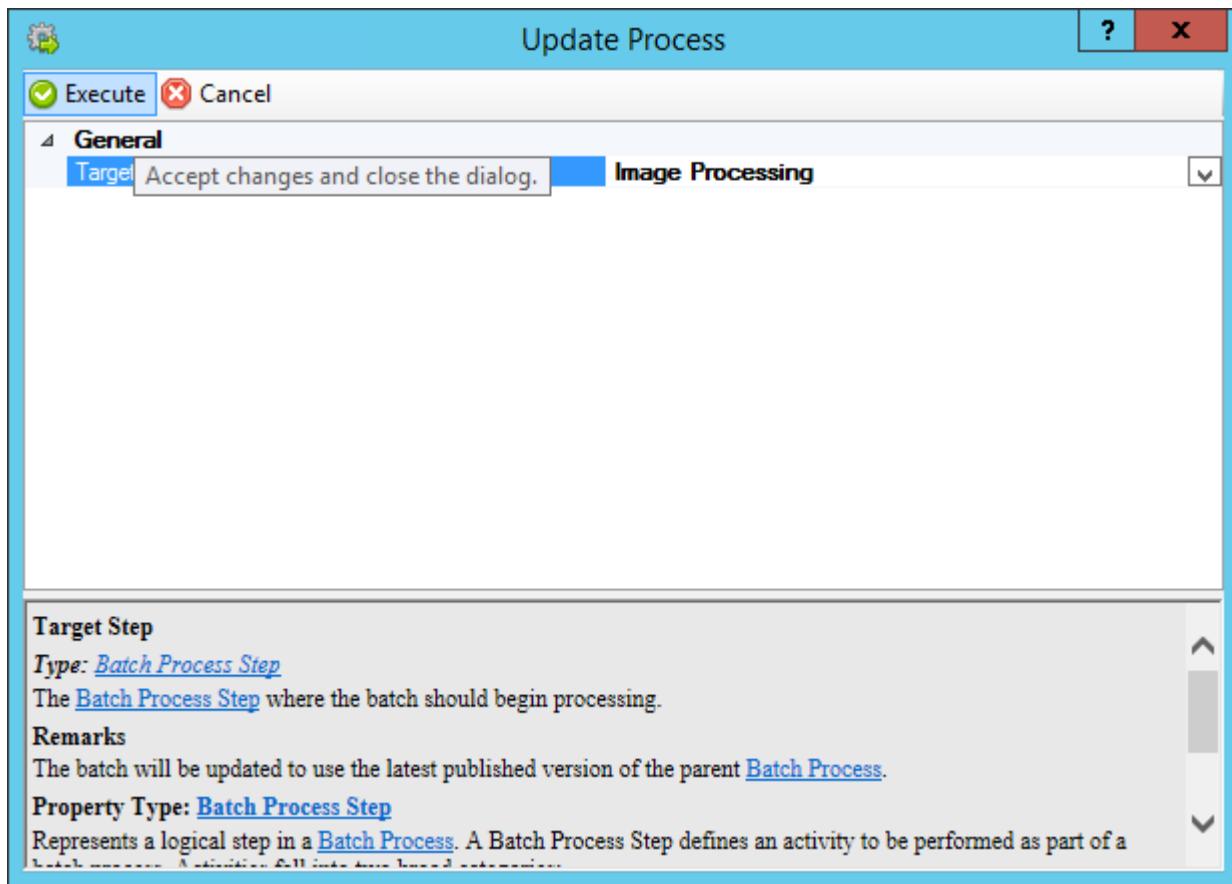
The **Update Process** window will appear.



› Batch Processing / Batches / Production / **Invoices Process**

Select **Target Step**. From the dropdown on the right select the **Image Processing** step, and then press **Execute**.

We're telling Grooper: "Update the process attached to this batch. We're using this process, I've added a step, and I want you to run the batch through it."



We will return to Grooper Design Studio, only now our batch's **Task Status** panel has another step in it.

Batch Name	Priority	Status	Batch Process	Current Step	Created
Invoices Batch	3	Paused	Invoices Process	Image Processing	8/6/2018 4:59:16 PM

Task Status

100%
80%
60%
40%
20%
0%

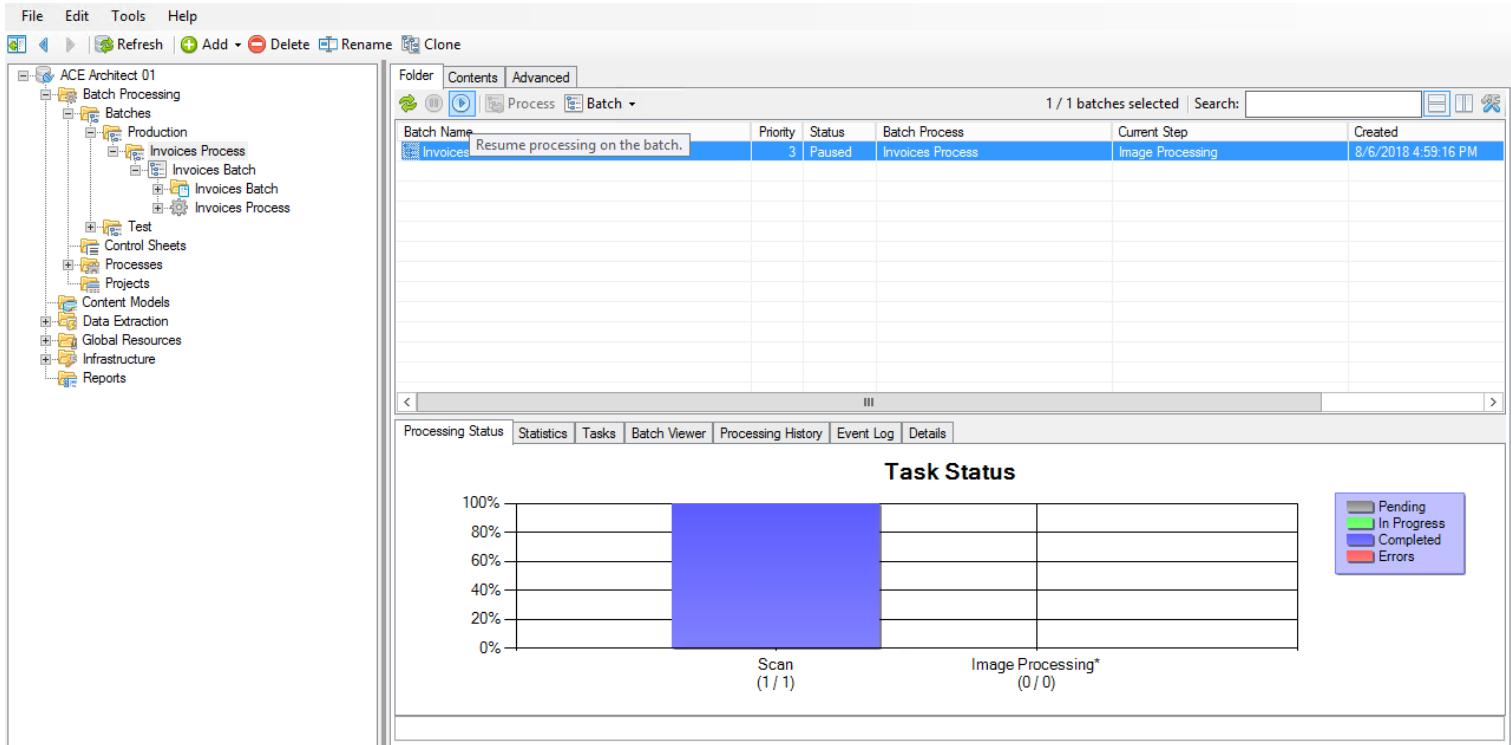
Scan (1 / 1) Image Processing* (0 / 0)

Pending
In Progress
Completed
Errors

The task doesn't have a progress bar because the batch is still paused.

> Batch Processing / Batches / Production / **Invoices Process**

Press **Resume Batch**, and then **Execute** on the confirmation window that appears.



Now the batch has a gray progress bar for the **Image Processing** step. We know this means that it's ready and waiting for us to tell it to start this activity.

Before we do that, let's look at what we just did.

> Batch Processing / Batches / Production / **Invoices Process**

Expand this node in the node tree.

Batch Process Properties

General

Name	Order	Activity Type
Scan	1	Scan
Image Processing	2	Image Processing

Steps in Batch Process

Validation Errors - No Issues Found

Batch Process
Defines a repeatable sequence of steps which achieve a specific information processing objective in Grooper.

Remarks
A Batch Process is a sequence of individual [Batch Process Step](#) objects, each specifying an [Activity](#) to be applied. Activities may represent automated system tasks, or human-attended tasks which require operator interaction. Collectively, these steps represent a workflow process through which batches of a particular

Now we see that there's an **Image Processing** step that wasn't here the last time we looked. This is the result of the **Update Process...** that we did to the batch.

The batch received the latest updates from our **Invoices Process**, which had a new step, so now it's ready to run it!

> Batch Processing / Batches / Production / **Invoices Process**

Navigate back up to **Batch Processing → Batches → Production → Invoices Process**, select the batch, and press **Process**.

The screenshot shows the ACE Architect 01 software interface. On the left is a navigation tree with categories like Batch Processing, Production, Control Sheets, Processes, Projects, Content Models, Data Extraction, Global Resources, Infrastructure, and Reports. The 'Batch Processing' section is expanded, showing 'Batches' which further includes 'Invoices Process'. A central window displays a table of batches. The first row shows 'Invoices Batch' with a priority of 3, status 'Ready', batch process 'Invoices Process', current step 'Image Processing', and created date '8/6/2018 4:59:16 PM'. Below the table is a 'Task Status' chart. The chart has two main sections: 'Scan (1 / 1)' and 'Image Processing* (0 / 153)'. A legend indicates four states: Pending (grey), In Progress (green), Completed (blue), and Errors (red). The 'Image Processing*' section shows a blue bar at the 0% mark.

You'll see the **Grooper Unattended Client** window appear. This is the part of the Grooper suite that processes unattended activities .

When this shows up, you don't need to press anything - it will start working automatically.

The screenshot shows the Grooper Unattended Client window. On the left, there's a sidebar with 'Start' and 'Stop' buttons, and a tree view of tasks. The main area is divided into two panes. The left pane shows 'General' settings: Thread Pool (Default), Thread Count (1), Thread Priority (Normal), Batch (Invoices Batch), Step (Image Processing), and Activity Type (Image Processing). The right pane shows 'Processing' statistics: Threads Running (1), Start Time (10:18 AM), Time Elapsed (00:00:09), Tasks Completed (20), Errors (0), Tasks/Minute (124.27), and Est. Time Remaining (00:01:03). Above these panes is a table showing a single batch entry: 'Invoices Batch' with a priority of 3, status 'Ready', batch process 'Invoices Process', current step 'Image Processing', and created date '8/6/2018 4:59:16 PM'. Below the table is a 'Task Status' chart. It has two main sections: 'Scan (1 / 1)' and 'Image Processing* (18 / 153)'. The 'Image Processing*' section shows a blue bar at approximately 12% completion.

If you take a look at the **Image Processing** step, you can see it working on the pages.

When it's done, it will have a blue progress bar similar to the Scan step.

The screenshot shows the ACE Architect 01 software interface. On the left, there's a navigation tree with categories like Batch Processing, Production, Control Sheets, Processes, Projects, Content Models, Data Extraction, Global Resources, Infrastructure, and Reports. Under Production, there are sub-folders for Invoices Process and Test. The main workspace on the right displays a table titled 'Batch Processing' with one row for 'Invoices Batch'. The table columns are Batch Name, Priority, Status, Batch Process, Current Step, and Created. The status is 'Working' and the current step is 'Image Processing'. Below the table is a 'Task Status' section with a bar chart. The chart has two segments: 'Scan (1 / 1)' and 'Image Processing* (153 / 153)'. A legend indicates four states: Pending (grey), In Progress (green), Completed (blue), and Errors (red). The bar chart only shows completed tasks.

But how do we know that it actually worked, and that our images have been cleaned up satisfactorily?

Image Review

In a production environment, you might want to have users review the images before they move on to any other steps in your Batch Process.

In Grooper, we can do this with an **Image Review** step. This is an attended activity that will display the batch to the users and give them an opportunity to approve or rescan any images that need it.

Adding an Image Review step

› Batch Processing / Batches / Production / **Invoices Process**

1. Press **Add Step...**.
2. Under **Step Properties**, set the **Activity Type** to **Image Review**.
3. **Save** and **Publish**.

Batch Process Properties

Steps in Batch Process

Name	Order	Activity Type
Scan	1	Scan
Image Processing	2	Image Processing
Image Review	3	Image Review

Properties of Image Review Step

General

- Activity Type: Image Review
- Activity: Image Review
- Scope: Batch
- Description:

Expressions

- Should Submit Expression:
- Next Step Expression:

Properties of Image Review Activity

General

- Pre-Defined Flag Messages: Image Review Messages
- Allowed IP Profiles: (0 IP Profile objects)
- Require Review of All Pages: True
- Allow Completion with Flags: True

UI Configuration

- Command Options: (0 Command Options objects)
- User Activity Timeout: 0

Batch Process
Defines a repeatable sequence of steps which achieve a specific information processing objective in Grooper.

Remarks
A Batch Process is a sequence of individual Batch Process Step objects, each specifying an Activity to be applied. Activities may represent automated system tasks, or human-attended tasks which require operator interaction. Collectively, these steps represent a workflow process through which batches of a particular

Batch Process Step
Represents a logical step in a Batch Process.

Remarks
A Batch Process Step defines an activity to be performed as part of a batch process. Activities fall into two broad categories:

- Attended Activities - Activities which require a human

Image Review
Image Review is an attended activity which provides a user interface optimized for quickly reviewing and/or correcting Batch Page images.

Remarks
Launches Attended Client with the Batch Viewer and Thumbnail

Now we need to go update our batch.

> Batch Processing / Batches / Production / Invoices Process

1. Pause the batch.
2. Select the Batch dropdown and select Update Process... .
3. In the Update Process window, set Target Step to Image Review .
4. Press Execute .

File Edit Tools Help

Refresh | Add | Delete | Rename | Clone

ACE Architect 01

- Batch Processing
 - Batches
 - Invoices Process
 - Test
 - Control Sheets
 - Processes
 - Projects
- Content Models
- Data Extraction
- Global Resources
- Infrastructure
- Reports

Folder Contents Advanced

Process Batch

1 / 1 batches selected | Search: []

Batch Name	Priority	Status	Batch Process	Current Step	Created
Invoices Batch	3	Completed	Invoices Process	(none)	8/6/2018 4:59:16 PM

Processing Status Statistics Tasks Batch Viewer Processing History Event Log Details

Task Status

Pending In Progress Completed Errors

Update Process

Execute Cancel

General

Target Step Scan

Target Step

Type: [Batch Process Step](#)

The [Batch Process Step](#) where the batch should begin processing.

Remarks

The batch will be updated to use the latest published version of the parent [Batch Process](#).

Property Type: [Batch Process Step](#)

Represents a logical step in a [Batch Process](#). A Batch Process Step defines an activity to be performed as part of a

We should see another step in the Task Status panel, just like when we added Image Processing .

File Edit Tools Help

Refresh | Add | Delete | Rename | Clone

ACE Architect 01

- Batch Processing
 - Batches
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- Infrastructure
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Folder Contents Advanced

Process Batch

1 / 1 batches selected | Search:

Batch Name	Priority	Status	Batch Process	Current Step	Created
Invoices Batch	3	Paused	Invoices Process	Image Review	8/6/2018 4:59:16 PM

Processing Status Statistics Tasks Batch Viewer Processing History Event Log Details

Task Status

Pending In Progress Completed Errors

Batch Processing / Batches / Production / Invoices Process

Resume the batch.

File Edit Tools Help

Refresh | Add | Delete | Rename | Clone

ACE Architect 01

- Batch Processing
 - Batches
 - Production
 - Invoices Process
 - Test
 - Control Sheets
 - Processes
 - Projects
- Content Models
- Data Extraction
- Global Resources
- Infrastructure
- Reports

Folder Contents Advanced

Process Batch

1 / 1 batches selected | Search:

Batch Name	Priority	Status	Batch Process	Current Step	Created
Invoices Batch	3	Paused	Invoices Process	Image Review	8/6/2018 4:59:16 PM

Processing Status Statistics Tasks Batch Viewer Processing History Event Log Details

Task Status

Pending In Progress Completed Errors

> Batch Processing / Batches / Production / **Invoices Process**

Press **Process** to start this activity.

File Edit Tools Help

Refresh Add Delete Rename Clone

ACE Architect 01

- Batch Processing
 - Batches
 - Production
 - Invoices Process
 - Test
 - Control Sheets
 - Processes
 - Projects
 - Content Models
 - Data Extraction
 - Global Resources
 - Infrastructure
 - Reports

Folder Contents Advanced

Process Batch

1 / 1 batches selected | Search:

Batch Name	Priority	Status	Batch Process	Current Step	Created
Invoices Batch		Process the selected batch through the current step.	Invoices Process	Image Review	8/6/2018 4:59:16 PM

Processing Status Statistics Tasks Batch Viewer Processing History Event Log Details

Task Status

Pending
In Progress
Completed
Errors

Image Review is an attended activity, so clicking **Process** will open up the **Grooper Attended Client** module (like it did when we scanned).

Processing Task Batch Help

Start Stop Open Task... Close Task Complete Task New Batch...

Batch Viewer Thumbnail Viewer Settings...

Invoices Batch

Page 1

Page 2

Page 3

Page 4

Page 5

Page 6

Page 7

Grooper control sheet

new folder Level 1

General

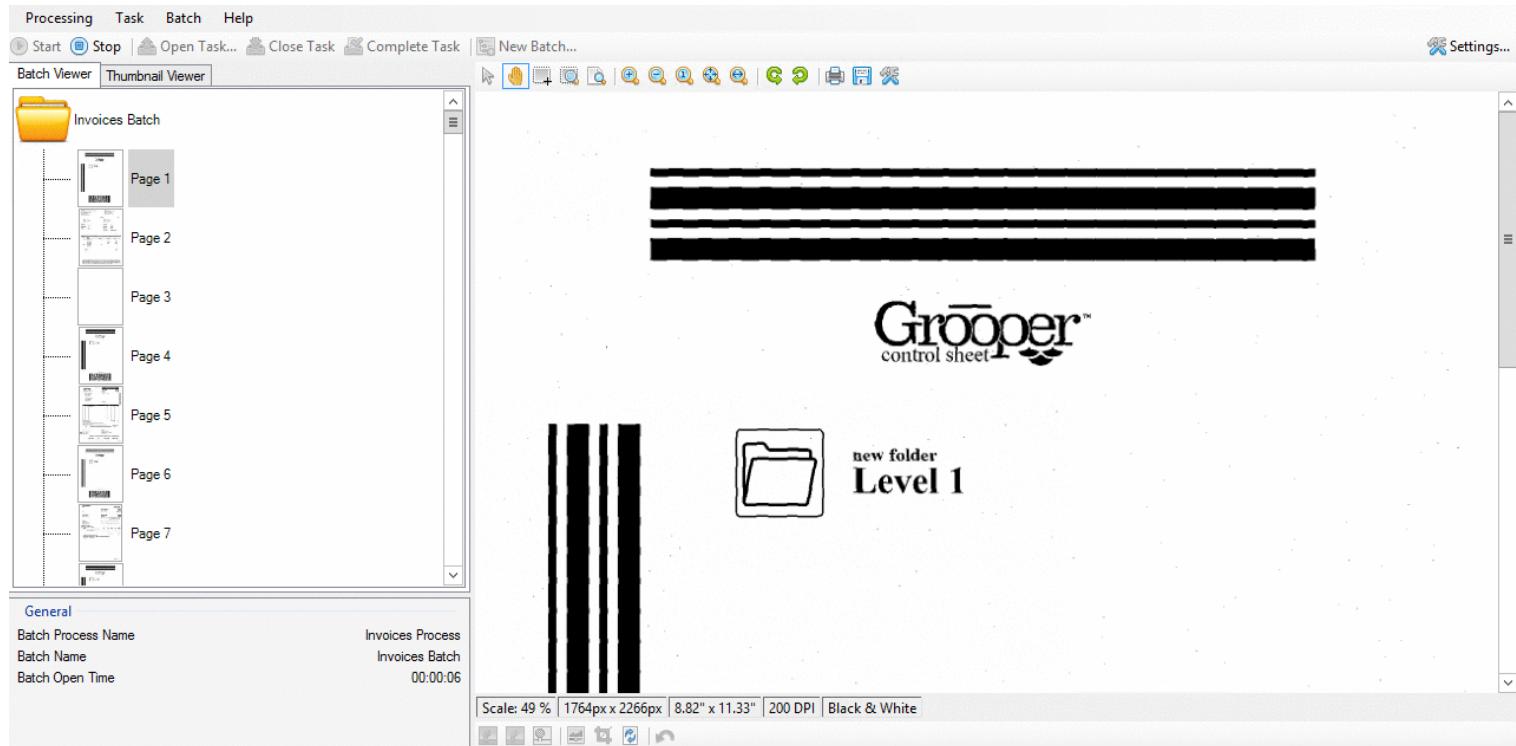
Batch Process Name: Invoices Process
Batch Name: Invoices Batch
Batch Open Time: 00:00:06

Scale: 49% | 1764px x 2266px | 8.82" x 11.33" | 200 DPI | Black & White

Opening Image Review

> Batch Processing / Batches / Production / **Invoices Process**

Switch to the **Thumbnail Viewer** tab.

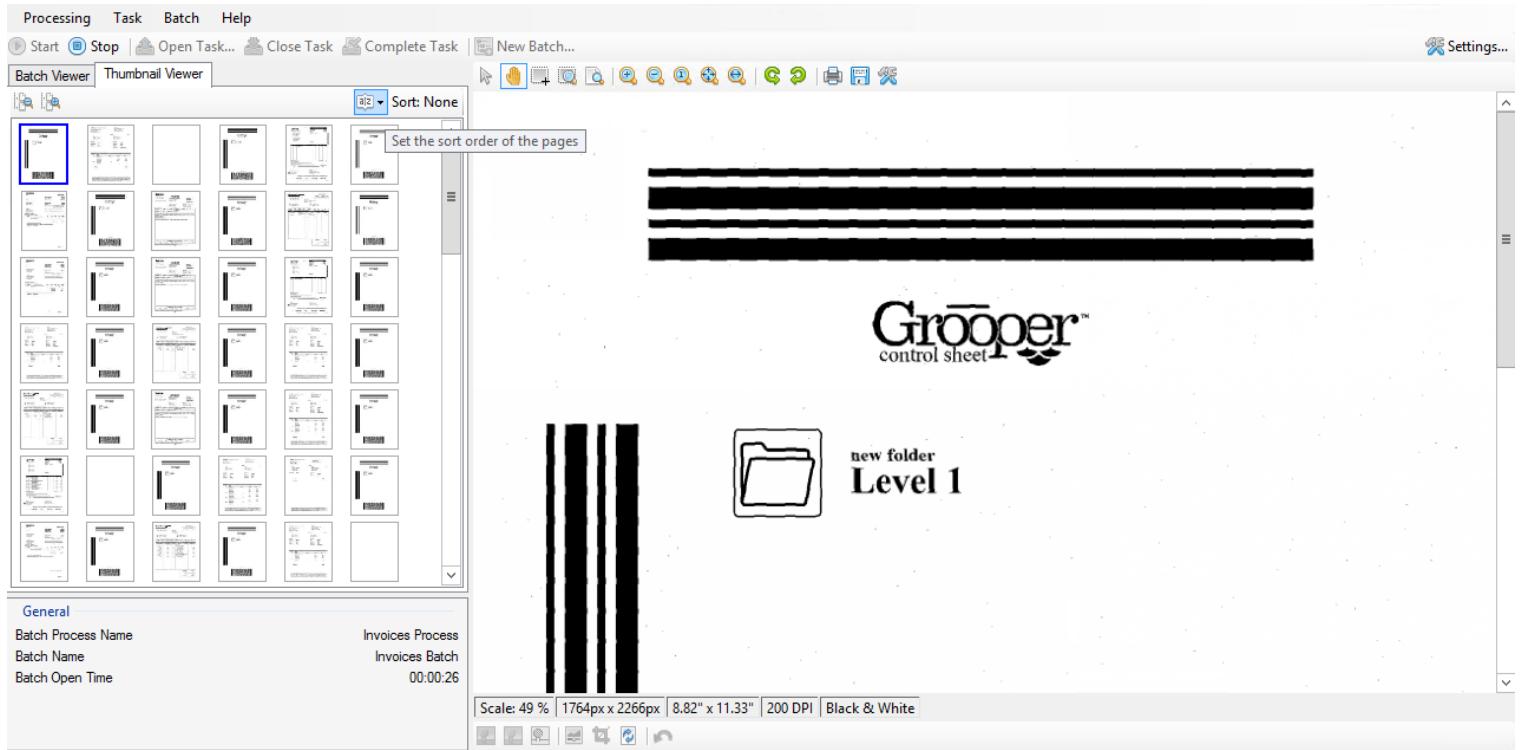


This gives us an easy way to see all of the thumbnails of the batch at a glance.

If you haven't noticed yet, there are a few blank pages in this batch. We don't really care about processing those, so let's get rid of them.

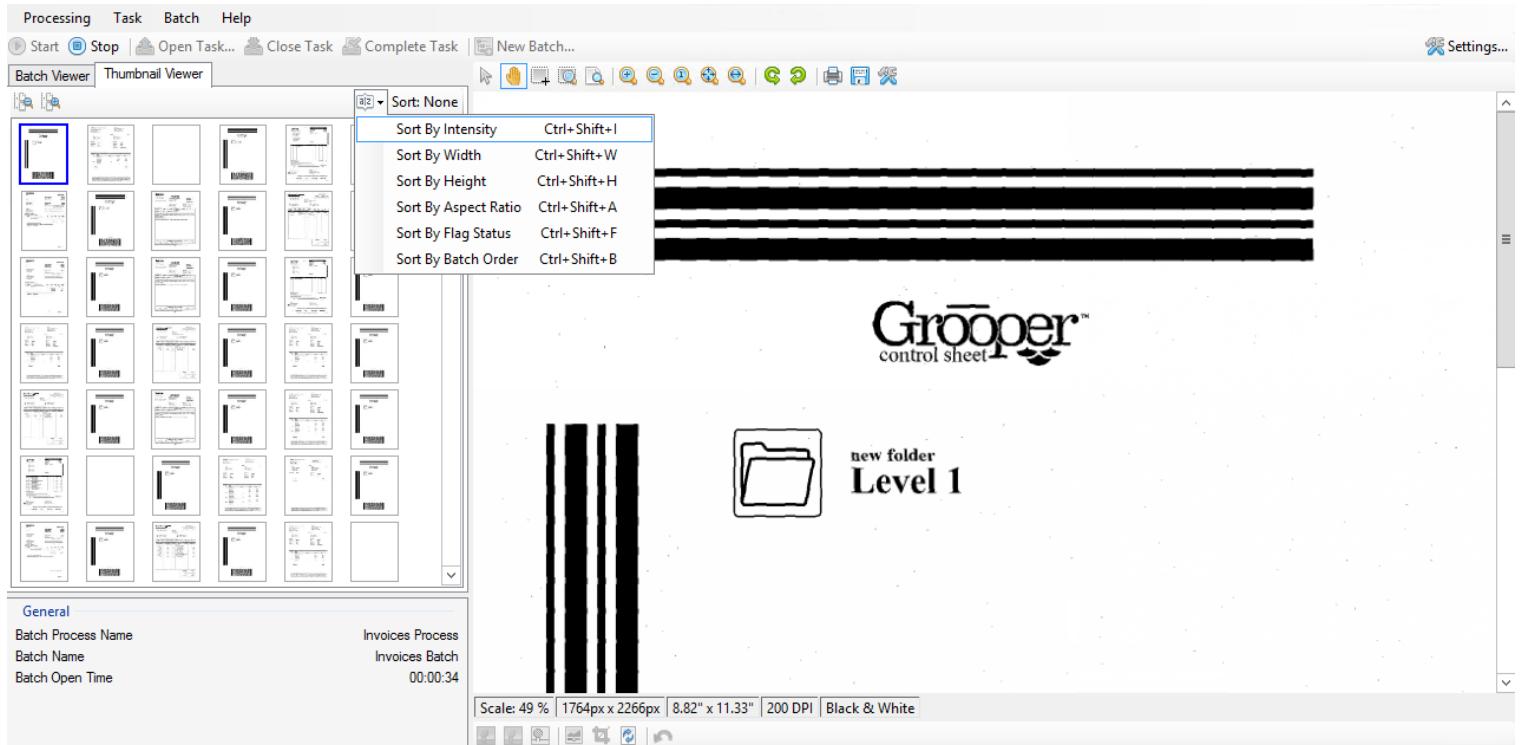
> Batch Processing / Batches / Production / **Invoices Process**

In the **Thumbnail Viewer**, press **Sort** in the upper right corner.



Batch Processing / Batches / Production / **Invoices Process**

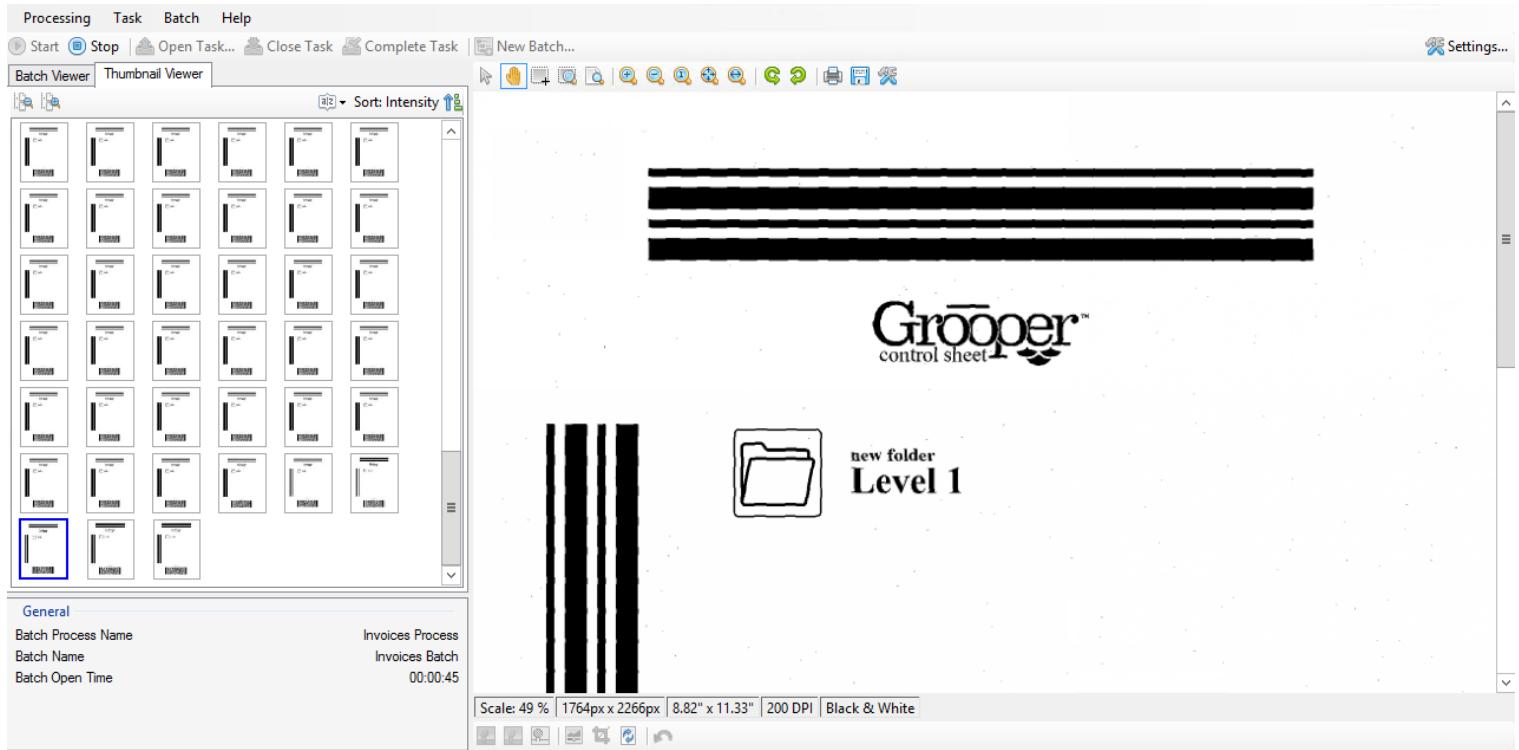
Select the **Sort By Intensity** option.



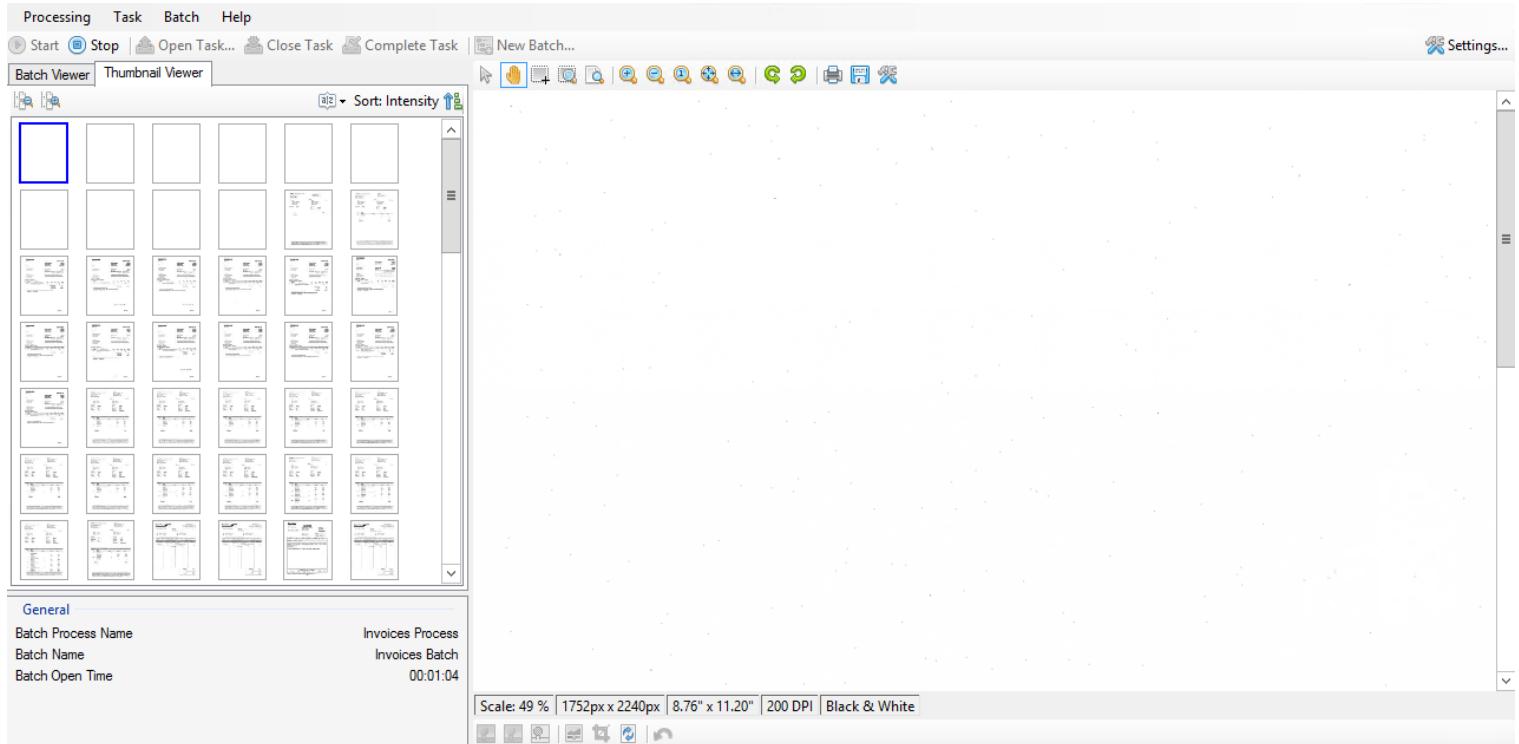
This will arrange the images by how intense they are, based on the black pixel count. Images will be arranged from top to bottom by least amount of black pixels to most.

Note

This does not permanently arrange the images in this order. This is just a technique to see how many blank pages we have.



If you scroll to the top, you can see all of the pages with the least amount of black pixels - the blank pages we want to remove.



Deleting blank pages

> Batch Processing / Batches / Production / **Invoices Process**

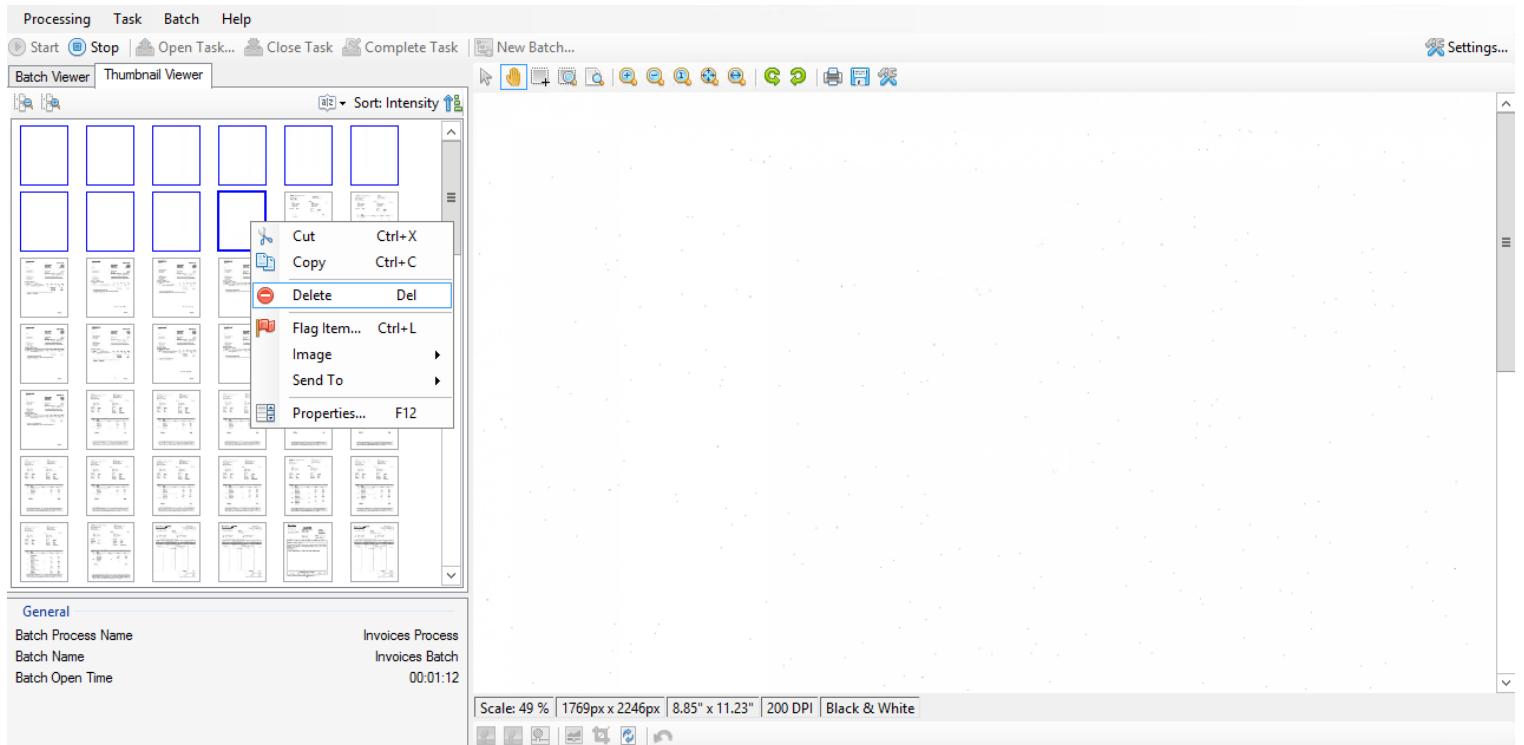
1. Select the blank pages. You can do this in the same way you select files on your computer.

- Using your **Ctrl** key and clicking on the page you want to select
- Clicking the first blank page, holding **Shift** on your keyboard, and then clicking on the last blank page

2. Delete the pages. Either:

- press the **Del** key on your keyboard, or
- right click on the selected pages and select **Delete**.

3. Confirm the deletion when the confirmation window comes up.



Ta-da! They're all gone.

Processing Task Batch Help

Start Stop Open Task... Close Task Complete Task New Batch...

Batch Viewer Thumbnail Viewer

Sort: Intensity

ACME | INTERNATIONAL

Acme International, Inc
123 South Main
Durham, NH 03824
Phone (603) 333-4444

Checks to:
Acme International, Inc
123 South Main
Durham, NH 03824
Phone (603) 333-4444

Invoice

Bill To:
Grooper Industries
13900 N Harvey
Edmond, OK 73013
405-507-7000

Ship To:
Grooper Industries
13900 N Harvey
Edmond, OK 73013
405-507-7000

Your Reference
Customer number : 18003405

Our Reference
Date : 12/05/2008
Invoice number : 74454835
Ship-to Number : 18103443

Item total 2,432.98

Invoice amount 2,432.98

General

Batch Process Name	Invoices Process
Batch Name	Invoices Batch
Batch Open Time	00:02:04
Image Review	
Pages Deleted	10

Scale: 32 % | 2735px x 3426px | 9.12" x 11.42" | 300 DPI | Black & White

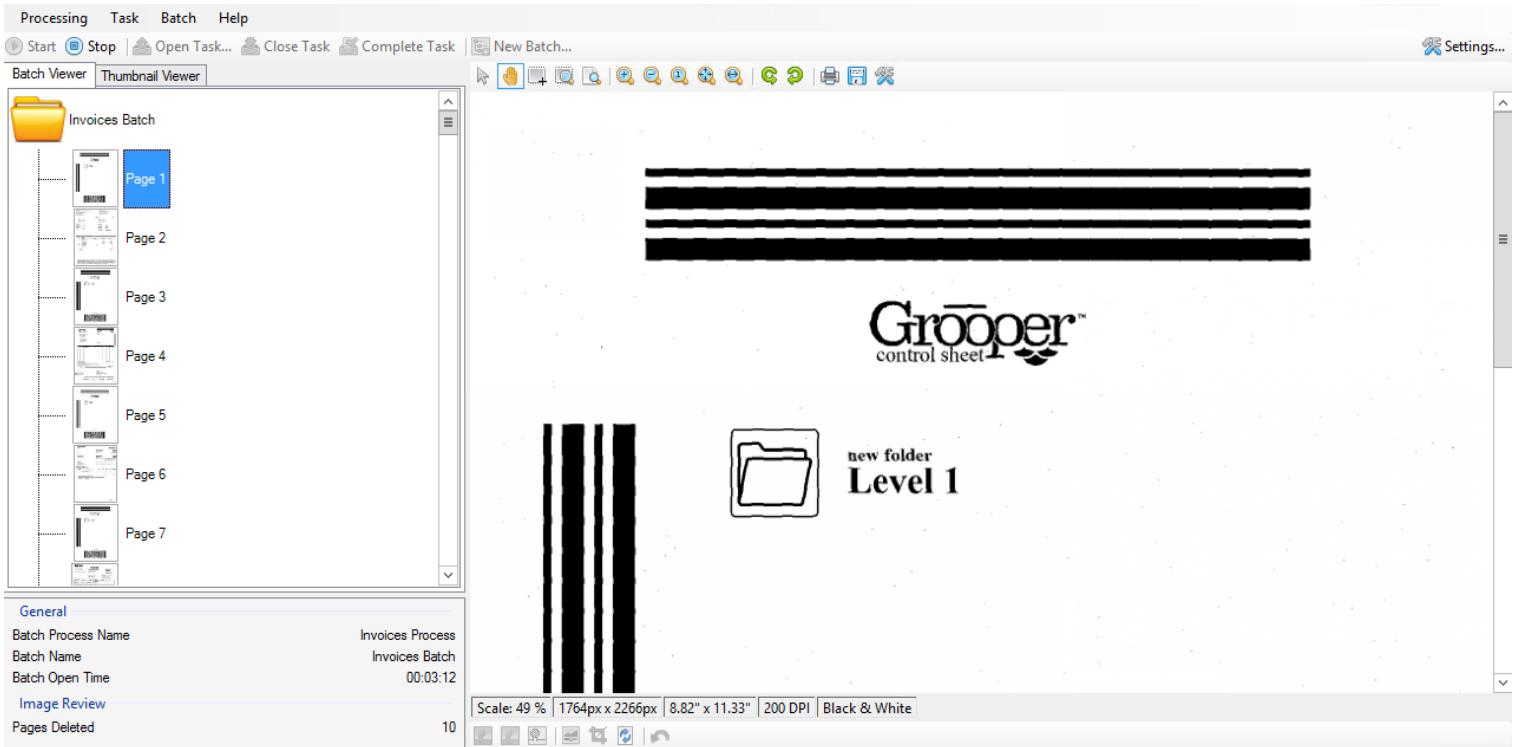
Note

This is only one of many ways that blank pages can be removed in Grooper.

> Batch Processing / Batches / Production / **Invoices Process**

Switch to the **Batch Viewer** tab.

Notice that the order of the pages didn't actually change, and now our batch is free of any blank pages.



Verifying the images

In order to complete this activity, the images have to be verified. This means that they need to be checked to make sure the previous step (Image Processing) worked correctly on all of the pages.

To verify that an image has been reviewed, you can:

1. right click on the image and press **Mark As Reviewed**, or
2. press **Enter** on your keyboard.

You know an image has been reviewed when there is a green on the image.

Each image has to be reviewed before **Complete Task** in the toolbar will light up, so it's probably easiest to press **Enter** for each of these.

➤ **Batch Processing / Batches / Production / Invoices Process**

Make sure every image in the batch has been marked as reviewed.



For this exercise, Image Processing works on all of the pages.

To complete this step quickly, select the first page in the batch and hold your **Enter** key down. It will quickly verify all of the pages in the batch.

When you have reviewed all of the pages in the batch, **Complete Task** in the toolbar will light up.

The screenshot shows the Batch Processing software interface. On the left, a tree view shows a folder named "Invoices Batch" containing seven pages labeled Page 1 through Page 7. The right side displays a detailed invoice document. The header of the invoice reads "EXPRESS Dallas, TX". The body of the invoice includes "Bill To:" information for "Grooper Industries" located in Edmond, OK, and "Shipped To:" information for the same address. Payment terms are listed as "Mail Payment To: Express Manufacturing 12333 N Dallas Tollway Dallas, TX 75032". Financial details include an invoice number (16862865), date (12/2/2008), purchase order (710015038), total (\$216.80), and due date (1/1/2009). A note states "You may deduct \$4.34 if paid on or before 12/12/08." and "Terms: 2% 10 Days, Net 30 Days, on Merchandise Only." At the bottom, a table provides a breakdown of the invoice items with columns for Line, McMaster Part Number, Description/Customer ID #, You Ordered, We Shipped, Balance Due, Unit Price, and Extended Amount. The table also includes a scale bar: 35% | 2496px x 3283px | 8.32" x 10.94" | 300 DPI | Black & White.

> **Batch Processing / Batches / Production / Invoices Process**

Press **Complete Task** to finish this activity and return to Grooper Design Studio.

Processing Task Batch Help

Start Stop Open Task... Close Task Complete Task New Batch... Settings...

Batch Viewer Thumbnail Viewer Complete the current task.

Spartan Manufacturing

INVOICE

SHIP TO (SAME AS "SOLD TO" UNLESS SHOWN)
Grooper Industries
13900 N Harvey
Edmond, OK 73013

INVOICE DATE
11/04/08 ORIGINAL
INVOICE NUMBER
ING2-757792

PO / RELEASE NUMBER
0020112357

SOLD TO:
Grooper Industries
13900 N Harvey
Edmond, OK 73013

REMIT TO:
Spartan Manufacturing
12 West Laguna Dr
Irvine, Ca, 92612

ENT BY: IN629817		TAKEN BY: DF		PAGE 1 OF 1	
ORDER DATE	TERMS	SHIP DATE	SHIP VIA	ACCT NUMBER	F.O.B.
10/23/08	1% 10&25thNET 30	10/27/08	DIRECT SHIP UPS GROUND SERVICE	776665-02	FOB ORG, FRT PPA
ORDER DUE DATE	OCN: 146839	COMMENTS:	DIRECT FROM MFG		

LINE	VEN	MNUO	CUSTOMER INFORMATION	CUST PO ITEM	QUANTITIES	UNIT PRICE	UNIT	NET AMOUNT
DESCRIPTION	ITEM	QTY	ORDER	BID	SHIPPED			
1 00999 Z 65000 727-15 BLOW OFF YELLOW NOZZLE	3	4	0	4	32.130			128.52
CPNO: 165926								

Scale: 31 % | 273px x 3434px | 9.18" x 11.45" | 300 DPI | Black & White

General

Batch Process Name: Invoices Process

Batch Name: Invoices Batch

Batch Open Time: 00:00:49

Image Review

Mark As Reviewed: 101

And that's it! We've successfully cleaned up our images. But now what do we do?

OCR

You may be wondering why it's so important for us to have the images as clean as we can get them? Why can't we just store them however they came in? They weren't that bad, right?

Well, believe it or not, there is a reason behind the madness.

About OCR

Remember that our overarching goal with Grooper is to automate the process of processing documents, collecting information from them, and sending them on their way.

We're well on our way to getting that information from the documents, but we have to do a few things to prepare Grooper to get the information for us.

What is OCR?

We're going to be performing what's called OCR, which stands for "optical character recognition." This means we're going to tell Grooper to look at the images in our batch, identify what on these images is text, and store that text for us to use later.

Image someone who doesn't know how to read. Letters on a page would simply look like a bunch of symbols without meaning, right?

Now image that that person is a computer. For a scanned document, a computer doesn't even know the symbol is a letter, but instead an arbitrary combination of pixels. The OCR process is how the computer takes an image and, **line by line**, finds combinations of pixels that it ultimately determines are letters, numbers, spaces, special characters, and so on.

For this to happen successfully, the quality of the images has to be as high as possible. If we tried to OCR low-quality images, the text identified by the OCR engine won't be very good, which essentially breaks down everything we do from this point forward.

When do I need to OCR?

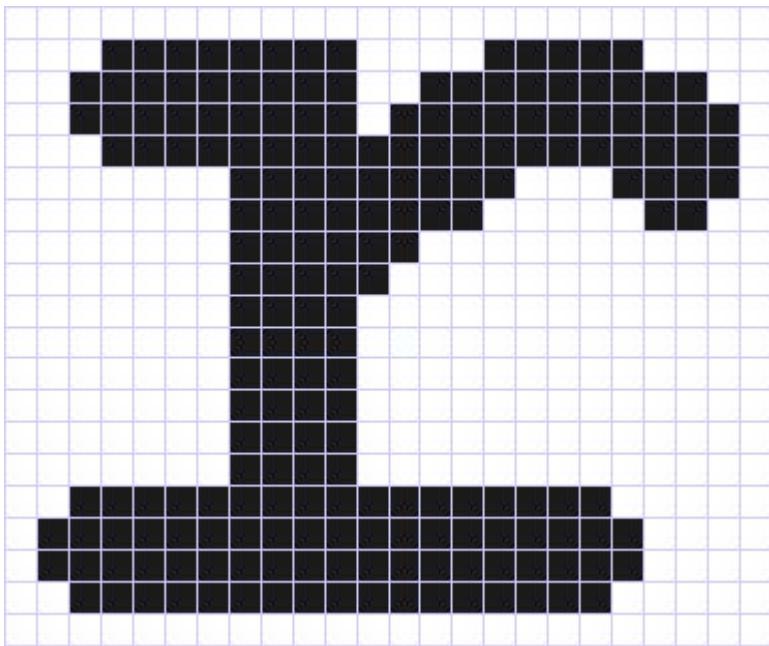
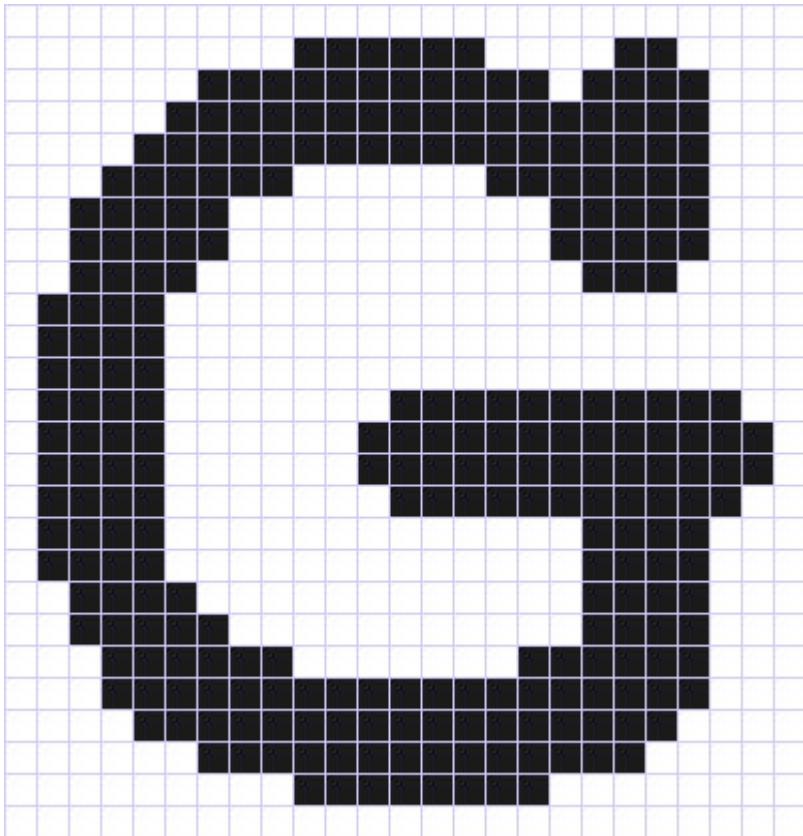
To harness all the power of Grooper, pages must be OCRed. There are perhaps very simple batch processes that could be created that utilized human interaction for every step, and in that case OCR would not be required, but that's like buying a Ferrari to take trips to the grocery store.

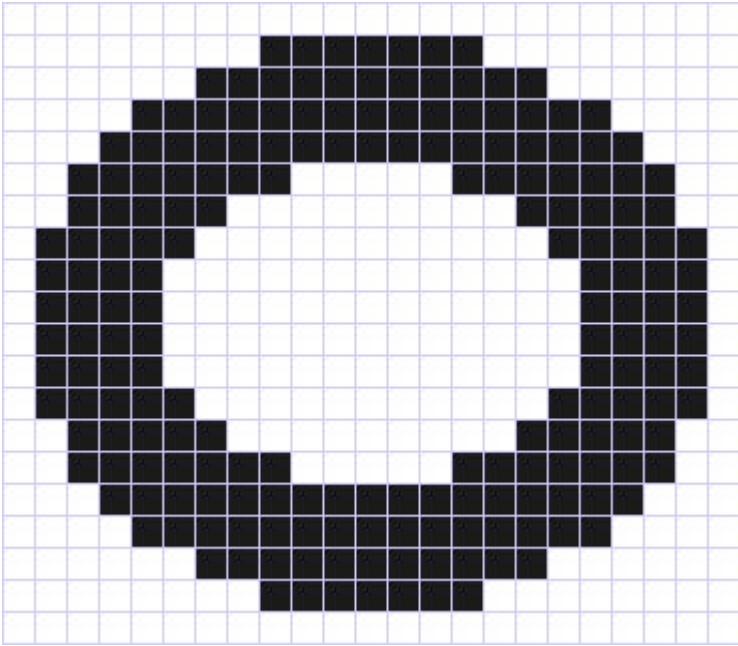
All the power of Grooper, from separation, to classification, to extraction, leverages the computer's ability to read the document, and to that end require a page be OCRed. Therefore it is *crucial* to have the highest quality documents we can get in order for the automation process to run as smoothly as possible.

How does OCR work?

Check out [this video](#) on Wikipedia. It's a nice demonstration of a very manual approach to OCR. You can see the person live scanning the document, line by line, and the computer "reads" the letters as the scanning happens.

With Grooper, page scanning happens (usually) all at once. During the OCR process the image is broken into vertical and horizontal lines of pixels to identify individual letter characters and spacing.





Adding an OCR step

> Batch Processing / Processes / Working / **Invoices Process**

1. Press **Add Step...**.
2. Under **Step Properties**, set the **Activity Type** to **OCR**.
3. Under **Properties of OCR Activity**, set the **OCR Profile** to **Full Text - Accurate**.
4. **Save** and **Publish** the process.

File Edit Tools Help

Refresh | Add | Delete | Rename | Clone

ACE Architect 01

- Batch Processing
 - Batches
 - Control Sheets
 - Processes
 - Published
 - Working
 - Invoices Process
- Content Models
- Data Extraction
- Global Resources
- Infrastructure
- Reports

Batch Process Scripting Contents Advanced

Save Cancel Publish Unpublish Validate

Batch Process Properties

General
 Content Type: Project
 Description:
Publishing Info
 Published Date: 8/7/2018 10:48:27 AM
 Published Version: 2f33da2-7740-47dd-af6f-9b002661

Steps in Batch Process

Name	Order	Activity Type
Scan	1	Scan
Image Processing	2	Image Processing
Image Review	3	Image Review
OCR	4	OCR

Validation Errors - No Issues Found

Properties of OCR Step

General
 Activity Type: OCR
 Activity: OCR
 Scope: Page
 Thread Pool: Default
Expressions
 Should Submit Expression
 Next Step Expression

Properties of OCR Activity

General
OCR Profile: Full Text - Accurate
 Auto Normalize: False
 Save Page Layout Data: False
 Page Scope: All Pages
 Minimum Confidence: 50%
 Flag Empty Documents: False
Processing Options
 Error Disposition: Flag, Log
 Maximum Consecutive Errors: 0
 Concurrency Mode: Multiple

Activity Type
Type: String
 The type of activity to be performed at this step. Can be one of the following types:

- Classify: Performs automated document classification using pre-configured training and/or rules.

OCR Profile
Type: OCR Profile
 The OCR Profile which should be applied to each page.
Property Type: OCR Profile
 Defines settings which control how OCR is performed.

Batch Processing / Batches / Production / Invoices Process

1. Pause the batch.
2. Select the Batch dropdown and select Update Process... .
3. In the Update Process window, set Target Step to OCR .
4. Press Execute .

File Edit Tools Help

Refresh | Add | Delete | Rename | Clone

ACE Architect 01

- Batch Processing
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- Data Extraction
- Global Resources
- Infrastructure
- Reports

Folder Contents Advanced

Process Batch

1 / 1 batches selected | Search:

Batch Name	Priority	Status	Batch Process	Current Step	Created
Invoices Batch	3	Completed	Invoices Process	(none)	8/6/2018 4:59:16 PM

Processing Status Statistics Tasks Batch Viewer Processing History Event Log Details

Task Status

Pending In Progress Completed Errors

Update Process

Execute Cancel

General

Target Step **Scan**

Target Step

Type: [Batch Process Step](#)

The [Batch Process Step](#) where the batch should begin processing.

Remarks

The batch will be updated to use the latest published version of the parent [Batch Process](#).

Property Type: [Batch Process Step](#)

Represents a logical step in a [Batch Process](#). A Batch Process Step defines an activity to be performed as part of a

> Batch Processing / Batches / Production / **Invoices Process**

1. **Resume** the batch.
2. Press **Process** to kick off the OCR activity.

Screenshot of the ACE Architect 01 application interface showing the Batch Processing module.

Left Sidebar: Navigation tree for ACE Architect 01, including sections like Batch Processing, Production, Control Sheets, Processes, Projects, Content Models, Data Extraction, Global Resources, Infrastructure, and Reports.

Top Bar: Standard application menu (File, Edit, Tools, Help) and toolbar with icons for Refresh, Add, Delete, Rename, and Clone.

Central Area:

- Batch Processing View:** Shows a table of batches. One batch is selected: "Invoices Batch" (Priority 3, Status Paused, Current Step OCR, Created 8/6/2018 4:59:16 PM).
- Task Status Chart:** A stacked bar chart titled "Task Status" showing the progress of four tasks: Scan (1/1), Image Processing (153/153), Image Review (1/1), and OCR* (0/0). The legend indicates colors for Pending (grey), In Progress (green), Completed (blue), and Errors (red).

The Grooper Unattended Client should kick off again and start processing against the pages in the batch.

Screenshot of the ACE Architect 01 application interface showing the Grooper Unattended Client configuration window.

Left Sidebar: Navigation tree for ACE Architect 01, including sections like Batch Processing, Production, Control Sheets, Processes, Projects, Content Models, Data Extraction, Global Resources, Infrastructure, and Reports.

Top Bar: Standard application menu (File, Edit, Tools, Help) and toolbar with icons for Refresh, Add, Delete, Rename, and Clone.

Central Area:

- Grooper Unattended Client Configuration Window:** A modal dialog with tabs for "Start" and "Stop". The "General" tab shows settings: Thread Pool (Default), Thread Count (1), Thread Priority (Normal), Batch (Invoices Batch), Batch Process (Step), and Activity Type (OCR).
- Task Status Chart:** A stacked bar chart titled "Task Status" showing the progress of four tasks: Scan (1/1), Image Processing (153/153), Image Review (1/1), and OCR* (7/143). The legend indicates colors for Pending (grey), In Progress (green), Completed (blue), and Errors (red).

Recap

That's it for the Condition phase! We've successfully prepped our images and extracted text from them.

Here's a list of everything we learned:

- how to clone a batch from production to test,
- how to create an Image Processing Profile (or "IP Profile"),
- how to configure our IP Profile to clean up our images,
- how to update an existing batch when you change its Batch Process,
- how to perform Image Review on the images, and
- how to extract text from the images using Optical Character Recognition (or "OCR")

And thus your arsenal of Grooper knowledge grows!

Up next

We currently have a batch of loose pages with some patch code sheets. This batch consists of multiple invoices, but Grooper isn't aware of that yet. You and I know where one invoice ends and another begins, so it's up to us to tell Grooper how to recognize that as well.