



LEVERAGE MODERN COMPUTING POWER WITH ENVI SERVER AND ENVI ENTERPRISE

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ENVIpalooza
An Insider's Guide to GEOINT

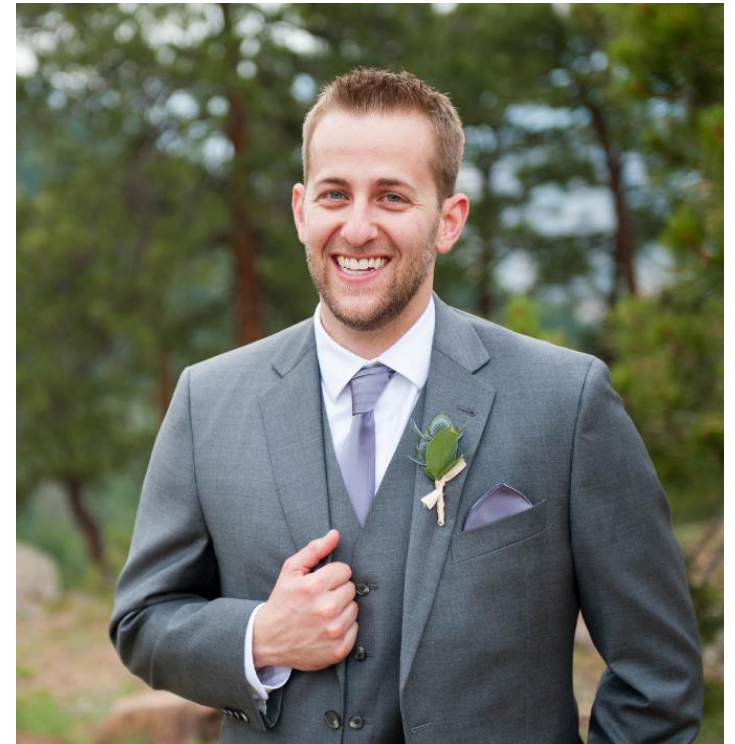
Contact Information and Introductions



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Agenda



What is ENVI Server?

The Path to ENVI Server

Accessing ENVI Server from ENVI

Other ways to use ENVI Server

Use Cases and Time Savings



Save Time and Speed Up Image Processing and Analysis With ENVI® Server

7/23/2020

Watch this webinar for an in-depth overview of ENVI Server and how it can be used to manage and run processing for on-premises and enterprise applications.

[Read More >](#)

Check out the ENVI Server webinar for a demo and more detailed use cases

ENVI Server in 60 Seconds

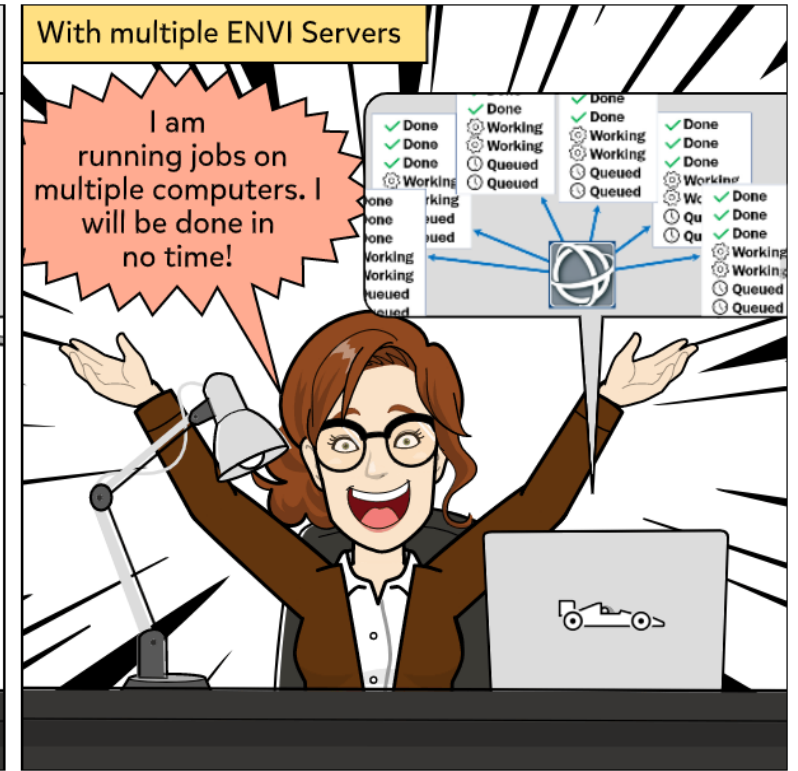
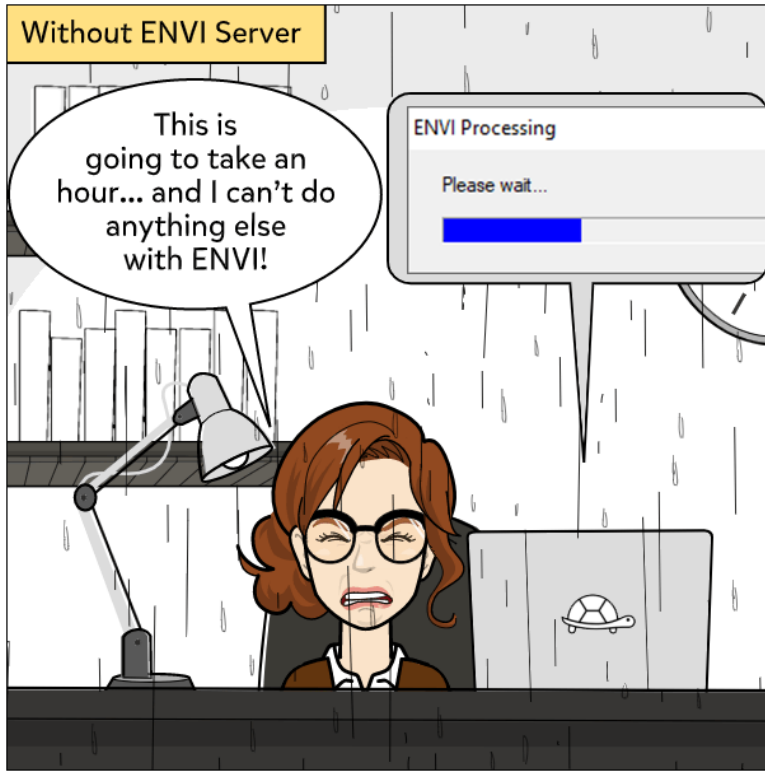


Take advantage of modern hardware

Save time by running processes in parallel

Run processes in the background in ENVI

Distribute processing to local servers with common data access

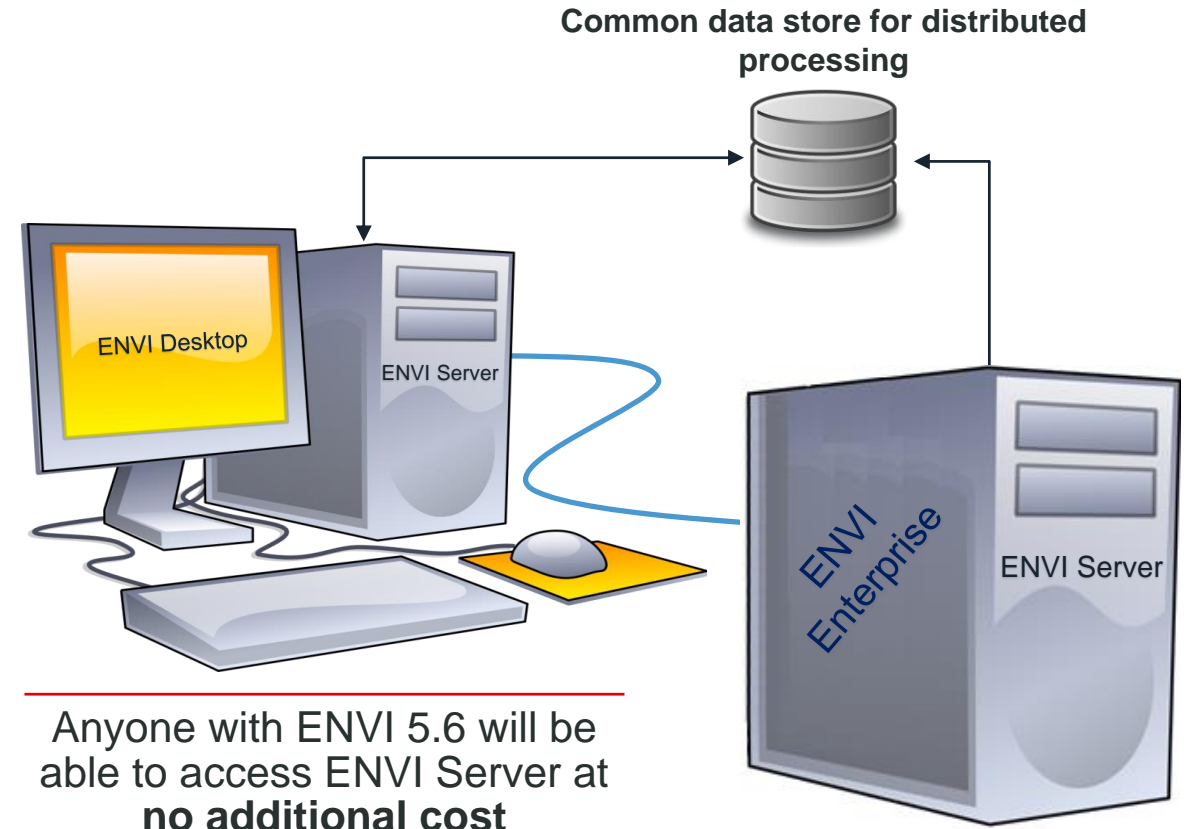


What is ENVI Server?



Key Benefits:

- Save time by running processes in parallel
- Run processes in the background in ENVI
- Take advantage of beefy machines and modern hardware
- Easily distribute processing to local servers with common data access
- No programming required!



Anyone with ENVI 5.6 will be able to access ENVI Server at no additional cost

ENVI is a client for ENVI Server, meaning we can connect to machines used for dedicated processing



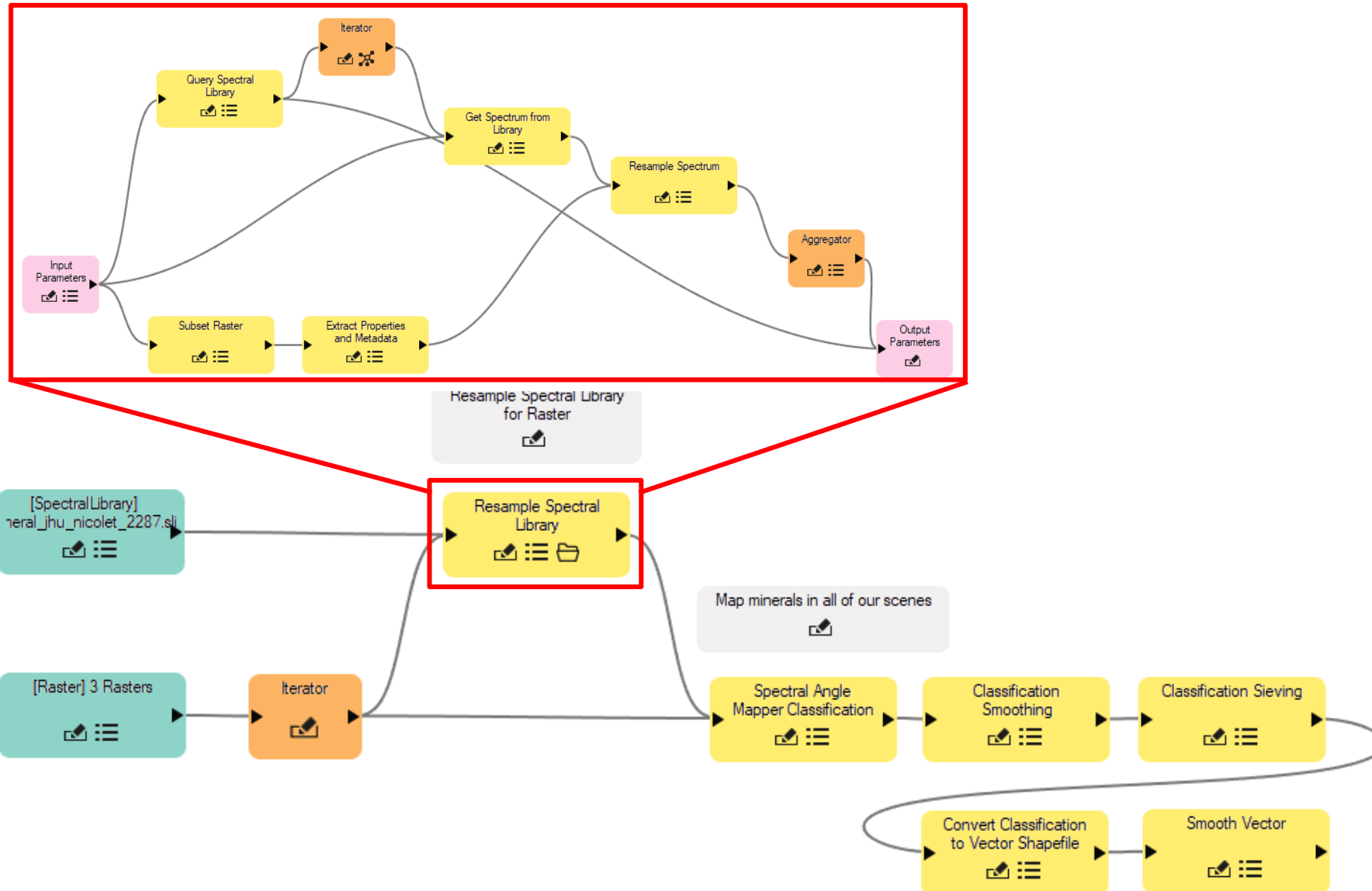
The Path to ENVI Server: The Old

The old way:

1. Open your image
2. Open Endmember Collection
3. Select your image
4. Open spectral library
5. Select targets
6. Process image
7. Cleanup results
8. Vectorize
9. Cleanup vector
10. Repeat

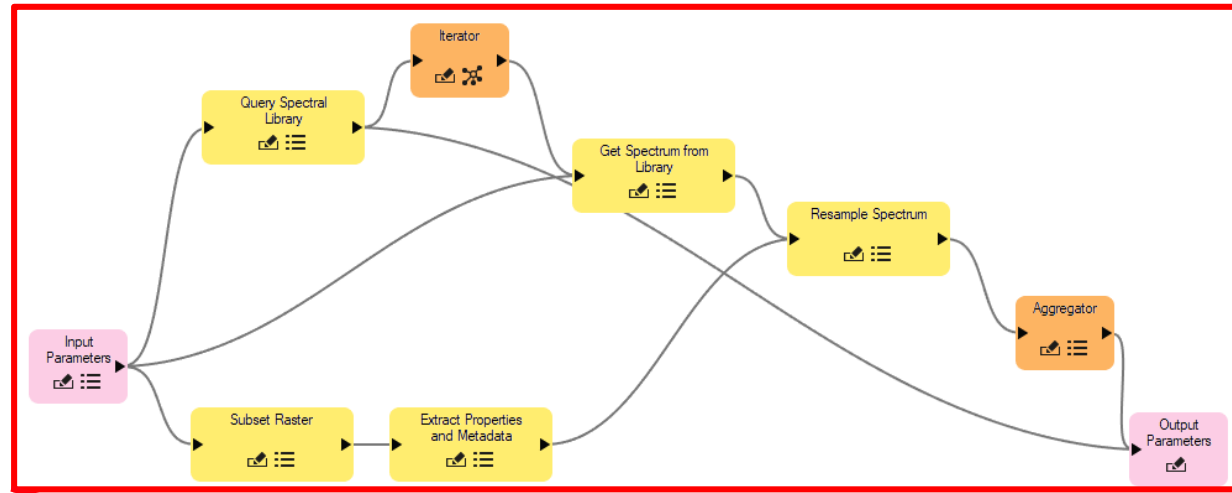


The Path to ENVI Server: The Recent

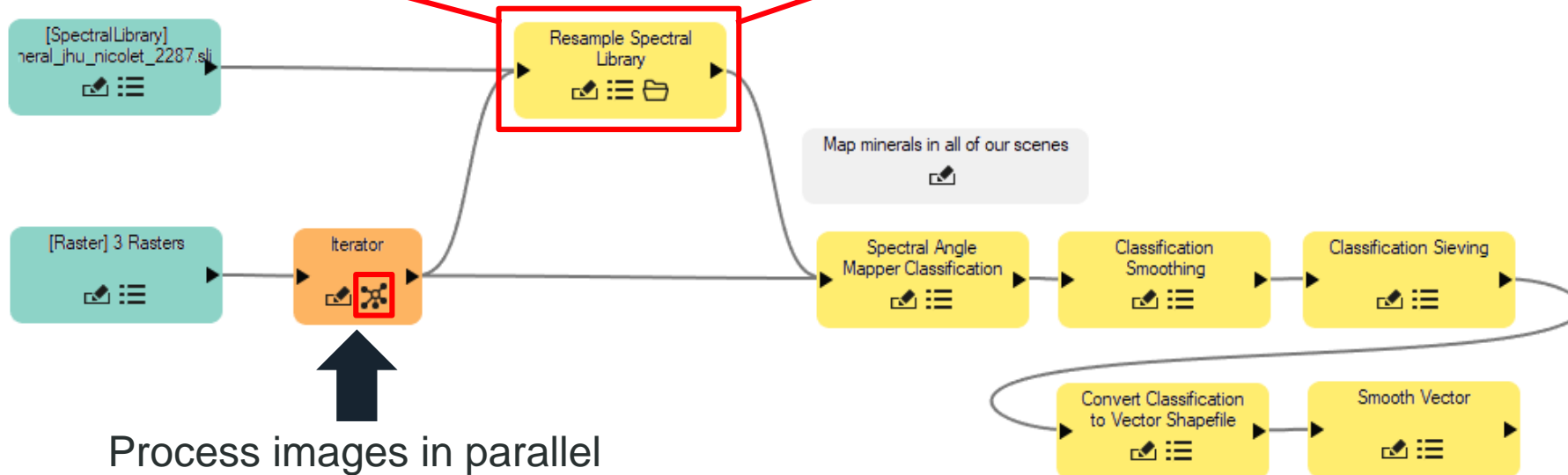




The Path to ENVI Server: Today



Resample Spectral Library for Raster



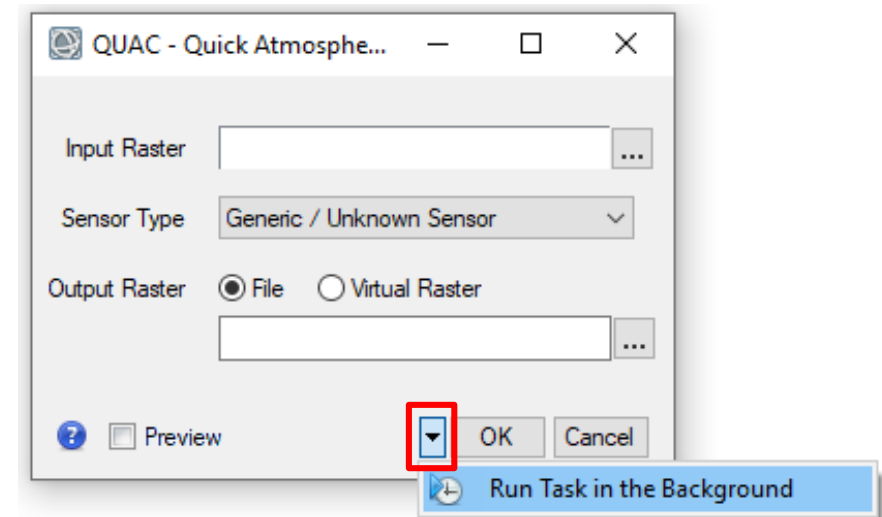
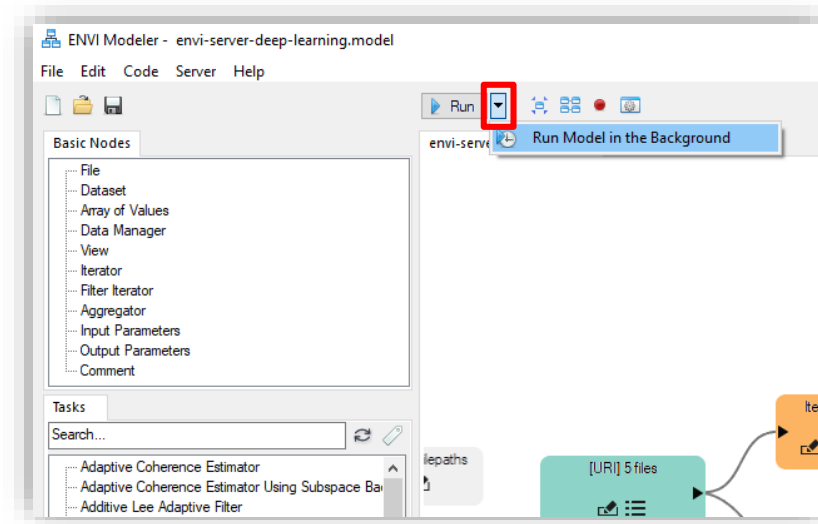
Process images in parallel

Accessing ENVI Server from ENVI



You can run processing on ENVI Server through the ENVI Modeler or any ENVI Task dialog

The red boxes on the right show you where to run processing on ENVI Server



Viewing Results



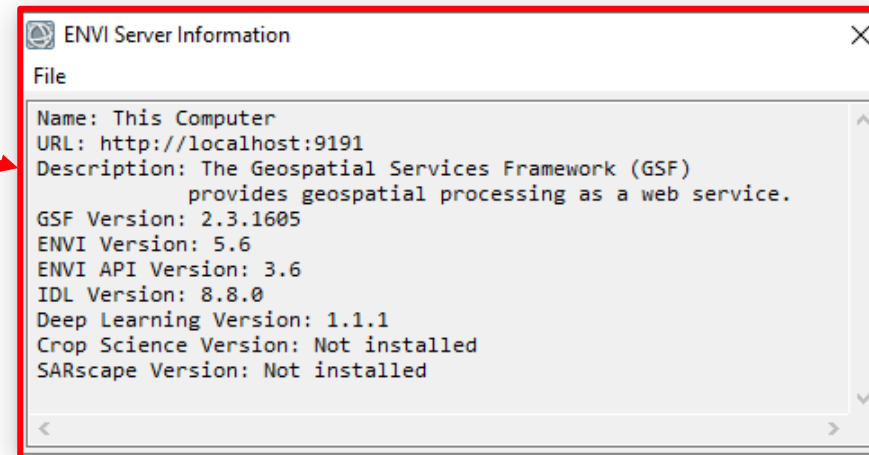
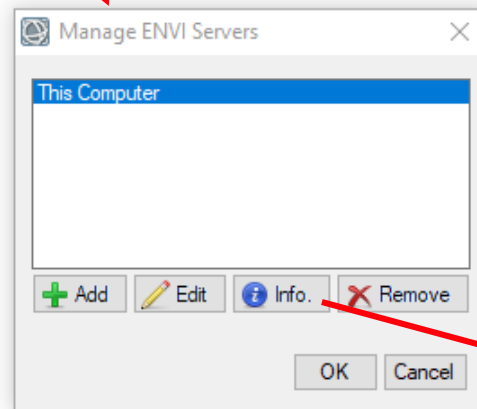
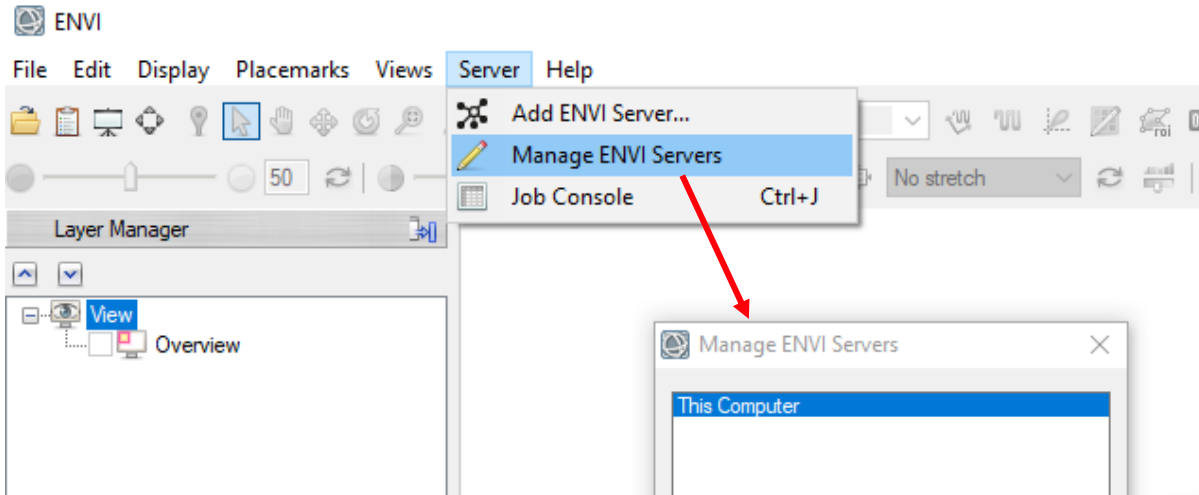
The screenshot shows the ENVI software interface. The 'Server' menu is open, with 'Job Console' selected. The Job Console window displays a table of completed jobs. The 'Display results' link for the first job is highlighted in red.

Job	Status	Name	Started	Duration	Display results
156	Completed	envi-server-example	July 15, 12:37	00:00:20	Display results
155	Completed	envi-server-example	July 15, 12:37	00:00:21	Display results
154	Completed	Untitled	June 17, 8:51	00:00:07	Display results
153	Completed	QUAC - Quick Atmospheric Correction	June 17, 8:48	00:00:07	Display results
152	Completed	QUAC - Quick Atmospheric Correction	June 16, 15:17	00:00:07	Display results
141	Completed	envi-server-deep-learning-classification	June 04, 8:16	00:00:51	Display results
140	Completed	envi-server-example	June 04, 8:14	00:00:07	Display results
139	Completed	envi-server-example	June 04, 8:14	00:00:07	Display results
138	Completed	envi-server-deep-learning-classification	June 04, 7:44	00:00:48	Display results
137	Completed	envi-server-deep-learning-classification	June 03, 16:08	00:00:48	Display results
126	Completed	envi-server-example	June 03, 14:34	00:00:08	Display results
125	Completed	envi-server-deep-learning	June 03, 14:24	00:10:56	Display results

Use the ENVI Server Job Console to display results from ENVI Tasks or the ENVI Modeler

Pro-tip: To use this with the ENVI Modeler, you need to use the “Output Parameters” node in your workflows

ENVI Server Need-to-know



Make sure that your local system matches any remote ENVI Servers that you use

This includes any ENVI Modules

ENVI Server for Programmers



You can use the ENVI Server API to run jobs and distribute processing

For example: I created a custom `ENVIserverCluster` object that split up processing between different instances of ENVI Server and managed moving the output rasters to my local machine

```
; start up ENVI
e = envi(/HEADLESS)

; make our cluster
cluster = ENVIserverCluster(['localhost', 'my-other-envi-server'])

; verify that our ENVI Servers have the same configuration as our local machine
; use STRICT to match module versions and verify the modules are the same
; on both machines
cluster.ValidateENVIservers, /STRICT

; open a Sentinel 2 raster
file = 'C:\Users\znorman\Desktop\speed-test\metadata.xml'
rasters = e.OpenRaster(file)

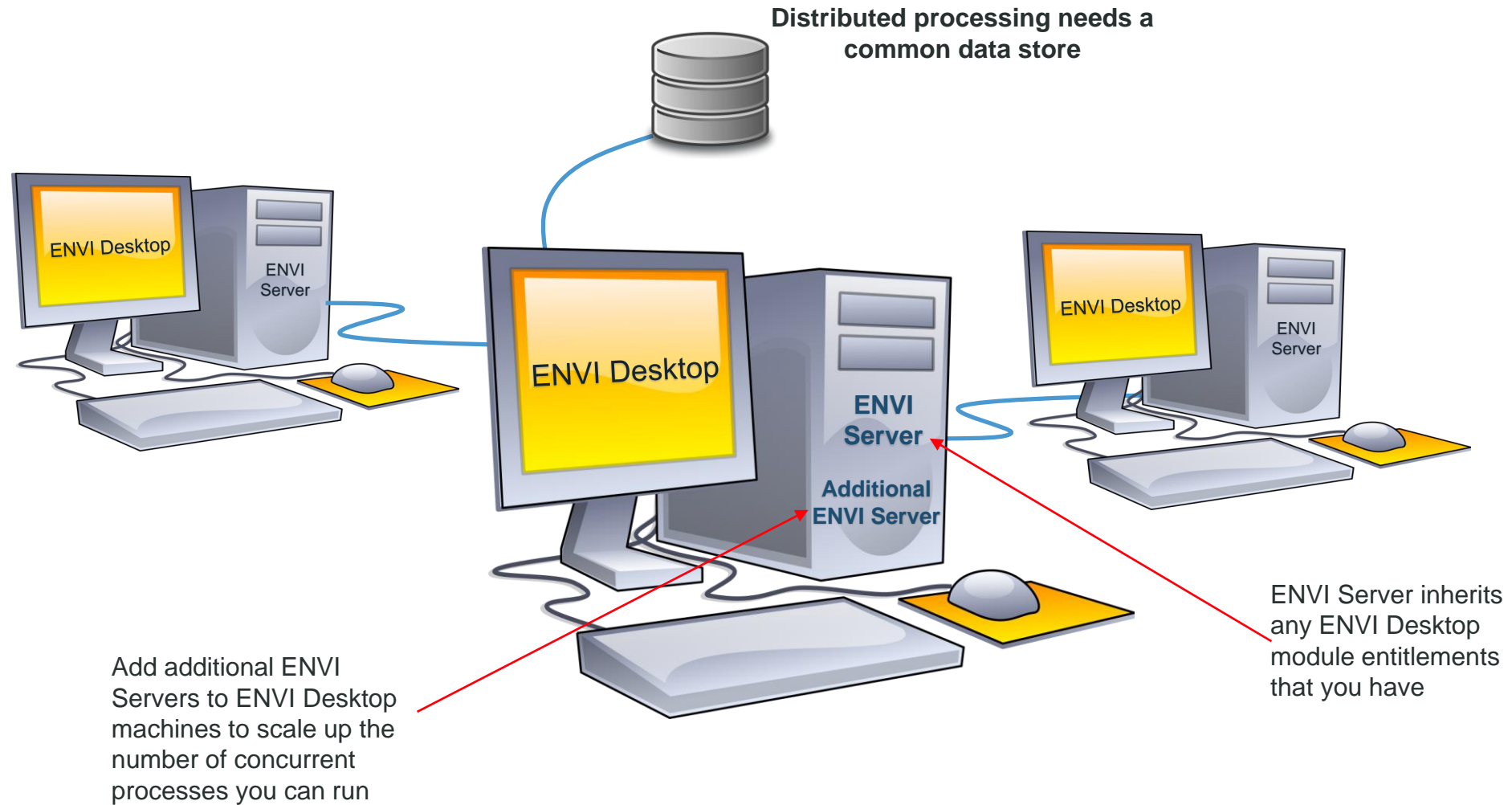
; specify the indices we want to calculate
indices = ['NDVI', 'GARI', 'GNVDI', 'NDWI']

; submit tasks - the "ID" returned is the job index for a lookup in
; the cluster
for i=0,n_elements(indices)-1 do begin
    ; create our task
    Task = ENVITask('SpectralIndices')
    Task.INPUT_RASTER = raster[0]
    task.INDEX = indices[i]

    ; submit our job
    id = cluster.SubmitTask(task)
endfor

; wait for our jobs to finish and download our results
cluster.WaitForJobs, /GET_RESULTS
```

How Can You Use ENVI Server?



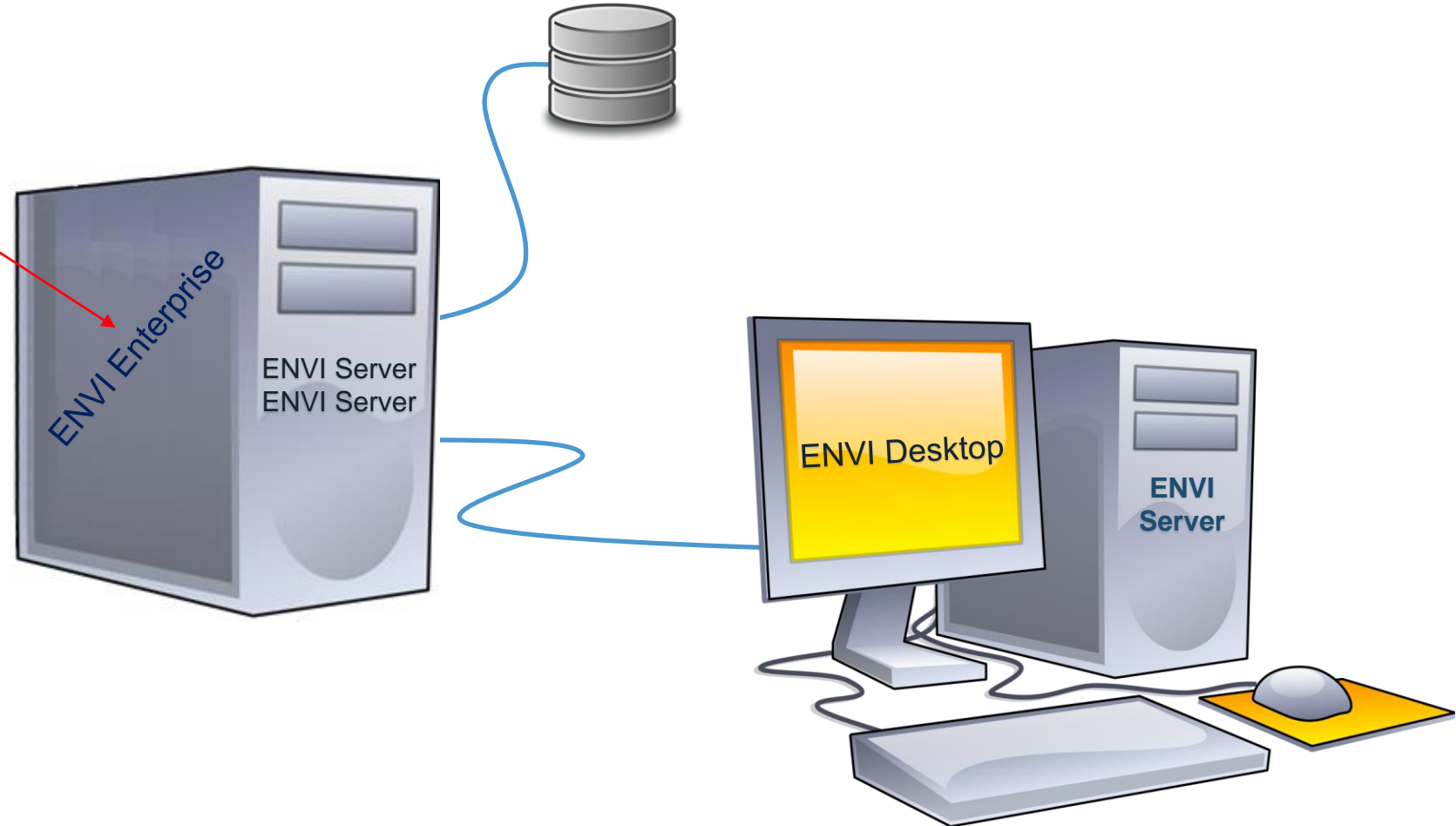
How Can You Use ENVI Server?



Distributed processing needs a common data store

ENVI Enterprise comes with two ENVI Servers and includes:

- Atmospheric Correction
- Deep Learning
- Feature Extraction
- DEM Extraction
- NITF
- Crop Science



ENVI Server Use Cases



Here are a few scenarios where ENVI Server can be used

ENVI MULTITASKER

Do you want to do more than one thing at a time with ENVI?

- ENVI Server allows you to seamlessly run processing in the background while still interacting with the ENVI interface

MANY, LARGE DATASETS

Do you have lots of data to process in ENVI?

- ENVI Server lets you run multiple jobs in parallel to get through large volumes of data faster. This allows you to take advantage of modern hardware with many CPUs and Solid State Drives (SSDs)

ENVI PROGRAMMER

Do you use IDL and the ENVI API to do your processing?

- Easily access ENVI Server through the ENVI API in IDL. This requires minor changes to existing programs using ENVI Tasks.
- Run processing in the background with minimal code changes to existing IDL routines

DEEP LEARNING DATA PREPARATION

Do you have a lot of data that you need to prepare for deep learning?

- Create customized data preprocessing pipelines for ENVI Deep Learning to spend less time preparing data and more time training classifiers

Why ENVI Server?



MANY, LARGE DATASETS

Scenario:

- Calculate two spectral indices for 10 Sentinel 2 scenes

ENVI Server Setup:

- Four concurrent processes
- 12 CPUs
- SSD

Process	No ES (s)	With ES (s)	Time Saved (%)
Overall	2980	1060	65

DEEP LEARNING DATA PREPARATION

Scenario:

- Prepare 72 images for use with ENVI Deep Learning

ENVI Server Setup:

- Six concurrent processes
- 12 CPUs
- SSD

Process	No ES (s)	With ES (s)	Time Saved (%)
Overall	1780	700	61
Raster	550	290	47
Vector	1230	415	66

ES = ENVI Server, SSD = Solid State Drive

Release details: <https://www.l3harrisgeospatial.com/Support/Maintenance>

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