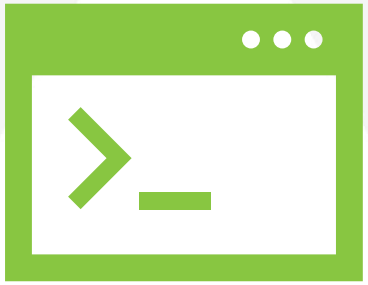
ZOAU (Z Open Automation Utilities) from the Ground Up



Steven Perva – Sr Mainframe Innovation Engineer – Ensono

@SteveMPerva

LinkedIn.com/in/stevenperva

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Hi! My Name Is!

- Hobbyist Developer (video games, productivity tooling, etc.)
- Sr. Mainframe *Innovation* Engineer at Ensono
- IBM Champion for IBM Z ‘22-’23
- Mainframe Evangelist, Advocate, Never-Shutter-Upper
- z/OS System Admin. (Systems Programmer)

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Ensono is an ally for better outcomes

230+
clients

$1B–$25B
in size

2,800+
experts

$800M+
global revenue

Managing and modernizing today's systems, creating tomorrow's cloud advantage.

We make better happen faster.

Our portfolio of services:

Global advisory and consulting

Hybrid and multi-cloud

Mainframe and distributed systems

Cloud native applications

Offered in our clearly defined service model:

Design

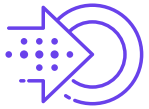
Build

Migrate

Run

Secure

Powered by a platform that provides governance and a hybrid service experience:



Ensono Envision®

ensono

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A Quick Level Set

- There's nothing wrong with 3270
- Every platform has its origin access method
  - Linux has Shell
  - Windows has Command Prompt (and PowerShell)
  - Mac has … whatever Mac's original access method is
- I still use TSO/ISPF for certain things
- 3270 access will likely be the most ubiquitous
- If you're a z/OS professional, you should learn *some* 3270
- Find an access method that makes you happy

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What a Time to be Alive!

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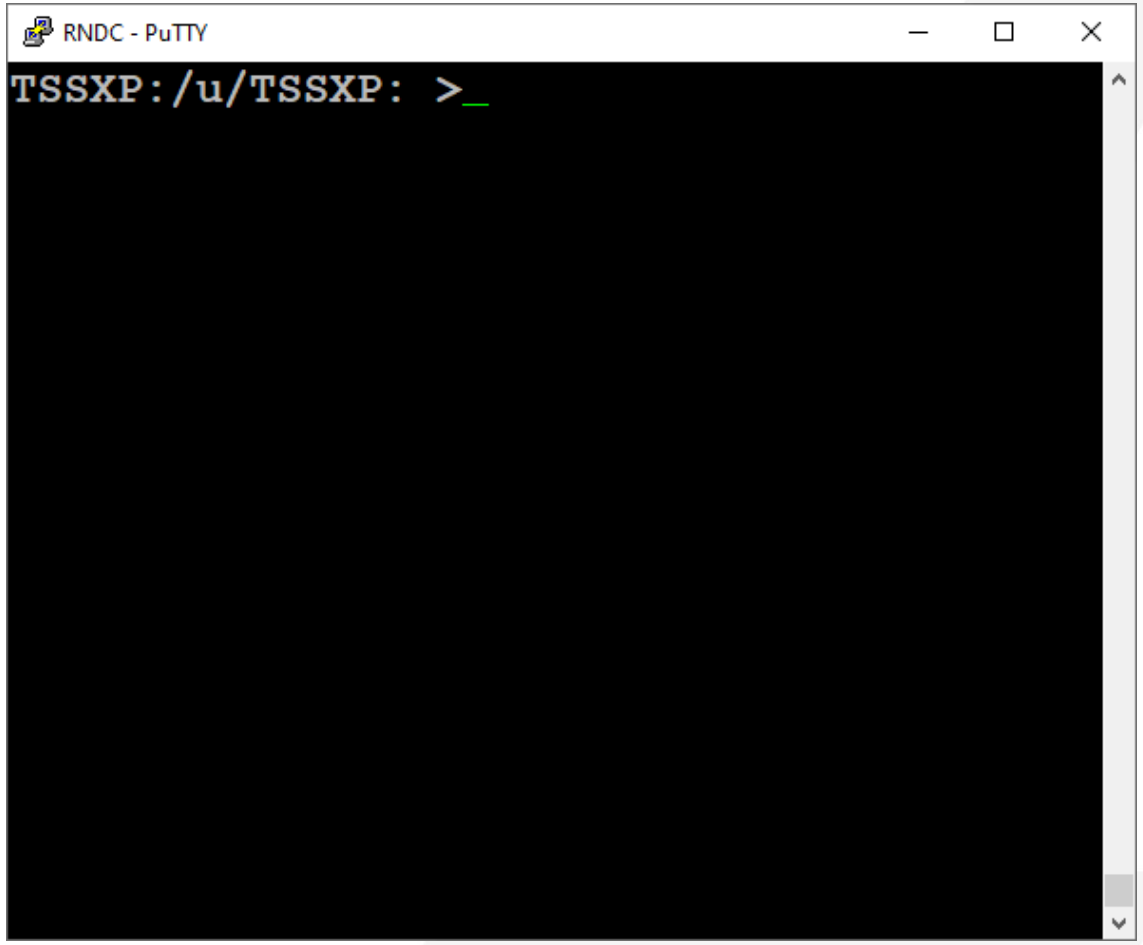
man ssh



- Stands for Secure Shell
- Part of Comm Server
- Requires some enablement
- Typically operates over port 22
- Use an SSH Client (like PuTTY)
- Can use key-based authentication
- Takes you directly to Unix System Services
- Familiar territory for our Linux-y friends

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USS Out of the Box

- Not at all terribly exciting
- Can issue TSO commands
  `tsocmd`
- Can submit jobs
  `submit myjob.jcl`
- You can look at datasets with a funky notation
  `cat "//'help.me(please)'"`
- DSFS changes the game up with z/OS V2R5.
- Store your JCL here, it's more fun and drives people crazy
- Can get bash shell working

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A Challenger ApproacheZ(OAU)

- IBM Z Open Automation Utilities
- Runtime for executing z/OS tasks via shell commands (and APIs)
- Automate tasks that access z/OS resources
- Natural to off-platform folks
- Can eliminate the need for JCL
- Scriptable *true* Unix commands
- Synergizes well with other open-source tools
- *Current Version 1.2.2*

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Install ZOAU in Mere Moments!

- Download the ZOAU pax file
- Create a filesystem that's 200 CYLS (200 Mebibytes-ish)
- Create a mountpoint (`/usr/lpp/IBM/zoautil`)
- Mount filesystem to mountpoint
- Copy pax to filesystem (binary mode)
- Unpax file (`pax -p e -rf <filename>`)
- Update your profile

```
export _BPXK_AUTOCVT=ON
export ZOAU_HOME=/usr/lpp/IBM/zoautil
export PATH=${ZOAU_HOME}/bin:$PATH
export MANPATH=${ZOAU_HOME}/docs/%L:$MANPATH
export LIBPATH=${ZOAU_HOME}/lib:$LIBPATH
```

- Update BPXPRMxx
- Define and protect `OPERCMDS` profile `MVS.MCSOPER.ZOAU`

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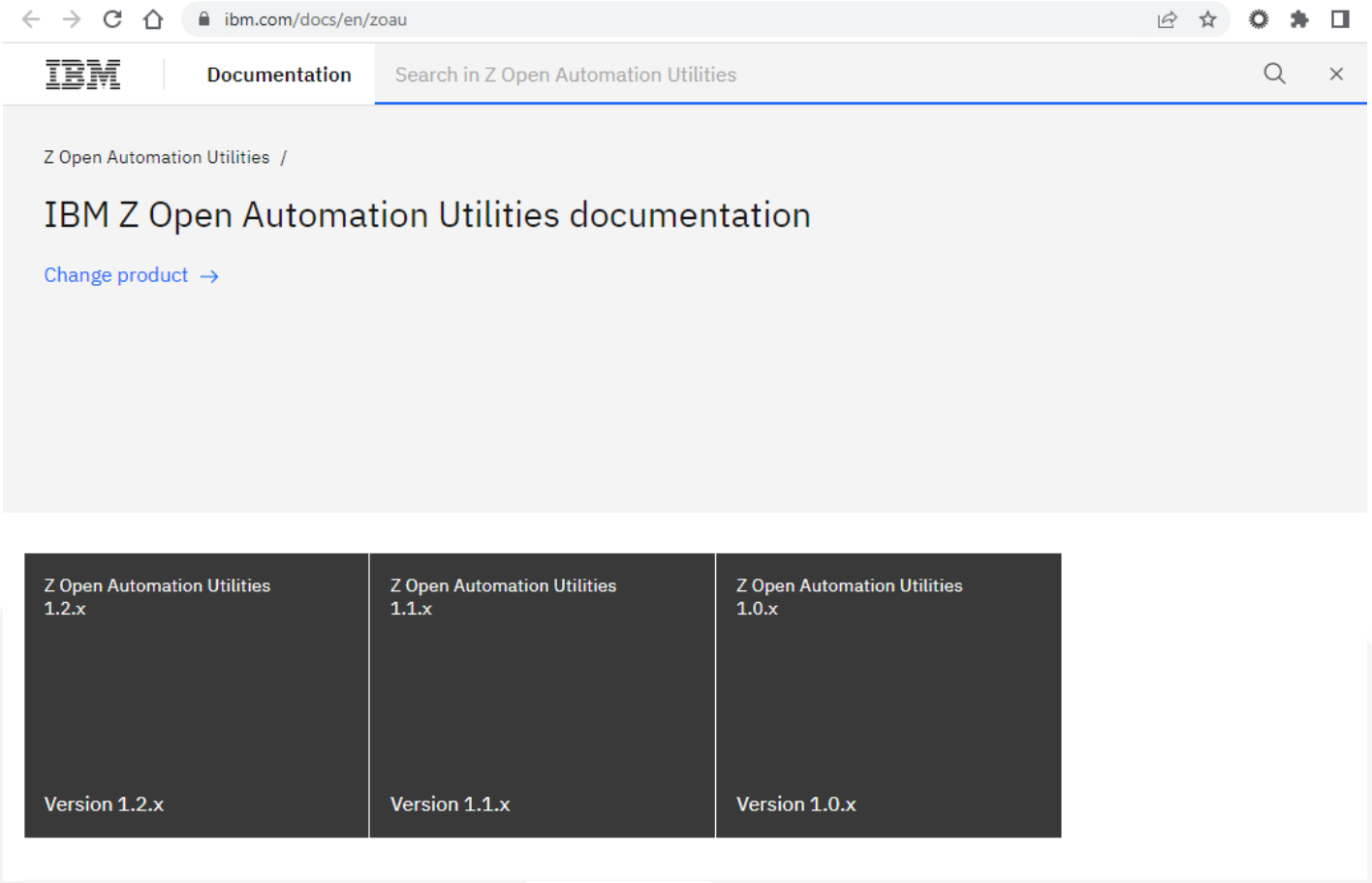
Some Helpful Commands

- Read the Manual at https://www.ibm.com/docs/en/zoau (click your version)



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Job Control

Command	Description
jsub (or submit)	Submit a job
jls	List jobs
jcan	Cancel/Purge a job
ddls	List job DD names
pjdd	Print a job DD card(s)

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Data Set Manipulation

Command	Description
dcp	Copy datasets and files
decho	Echo text to PDS or SEQ datasets
dls	List non-VSAM datasets
dmv	Move (rename) PDS or SEQ Datasets
drm	Remove VSAM or non-VSAM datasets
dtouch	Create an empty dataset
mls	List PDS members
mmv	Move (rename) PDS members
mrm	Remove partitioned dataset members

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Data Set Manipulation (cont.)

Command	Description
dcat	Print out a non-VSAM dataset
dhead	Print head of a non-VSAM dataset.
dtail	Print tail of a non-VSAM dataset.

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Utility Commands

Command	Description
tsocmd	Run a TSO/E command from the shell
opercmd	Run operator command from the shell
mvscmd	Run unauthorized MVS program
mvscmdauth	Run authorized MVS program
pparm	Show the dynamic PARMLIB
parmwhence	Find a dataset in the PARMLIB
parmgrep	Find a string in the PARMLIB
pproc	Show the PROCLIB concatenation
procwhence	Find a dataset in the PROCLIB

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Utility Commands (cont.)

Command	Description
procgrep	Find a string in the PROCLIB
pcon	Print the operator console
zoaversion	Display ZOAU’s version

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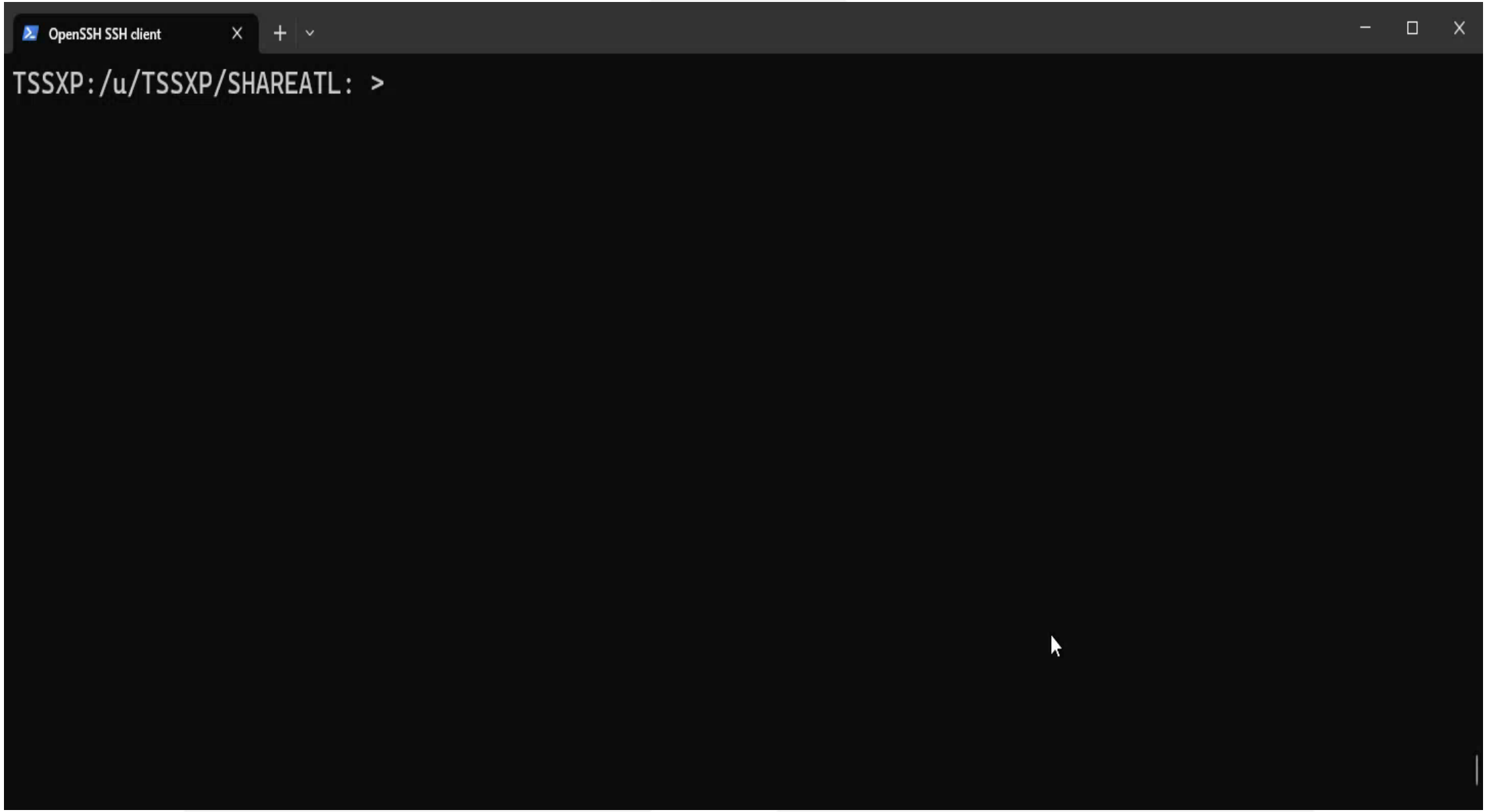

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Stick to the Script

- A Unix users JCL
- Mix and match ZOAU and USS commands
- Find and contribute some handy scripts on GitHub

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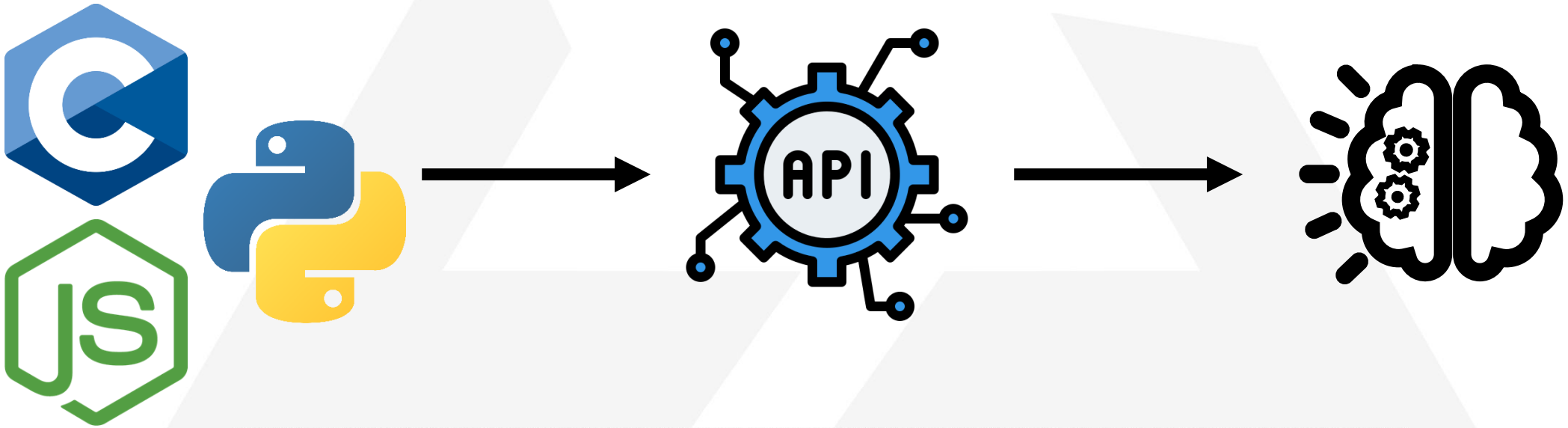
It’s API Time!

- ZOAU Exposes C and Python APIs
- Extremely useful for intelligent process automation
- Node.js package for ZOAU



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Ansible Synergy

- ZOAU is a requirement for IBM z/OS Core Collection
- See some of Ensono's presentations about Ansible on z/OS for further information
- Automation and Infrastructure as Code at scale!

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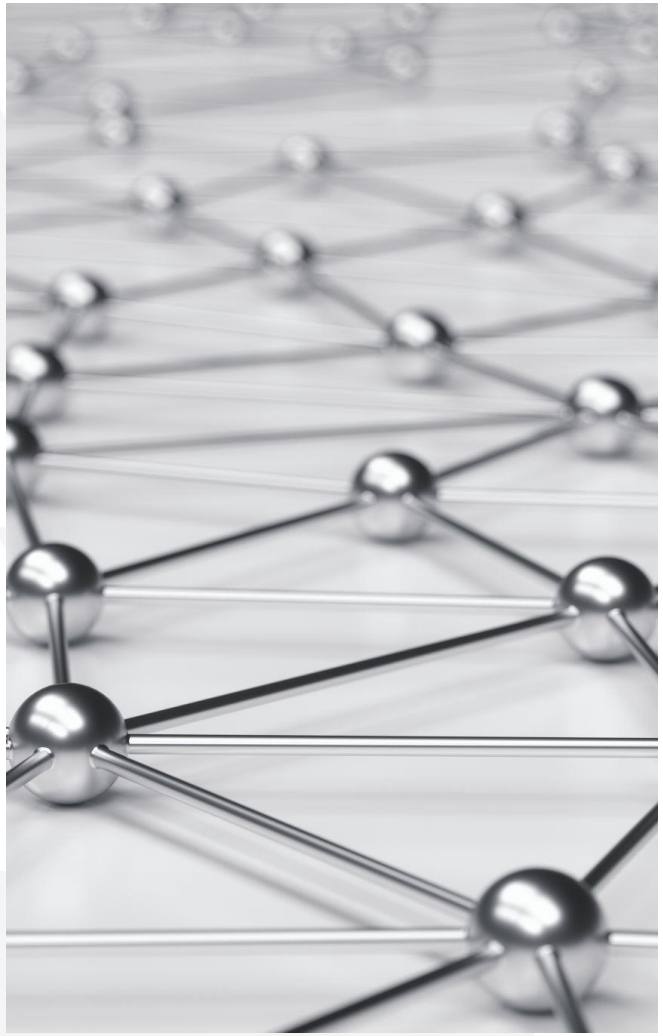
We Require More Resources

- ZOAU Documentation
  https://www.ibm.com/docs/en/zoau
- ZOAU GitHub Samples
  https://github.com/IBM/zoau-samples
- IBM z/OS Open-Source Guild
  https://github.com/ZOSOpenTools/meta/discussions
- ZOAU Node GitHub
  https://github.com/IBM/zoau-node



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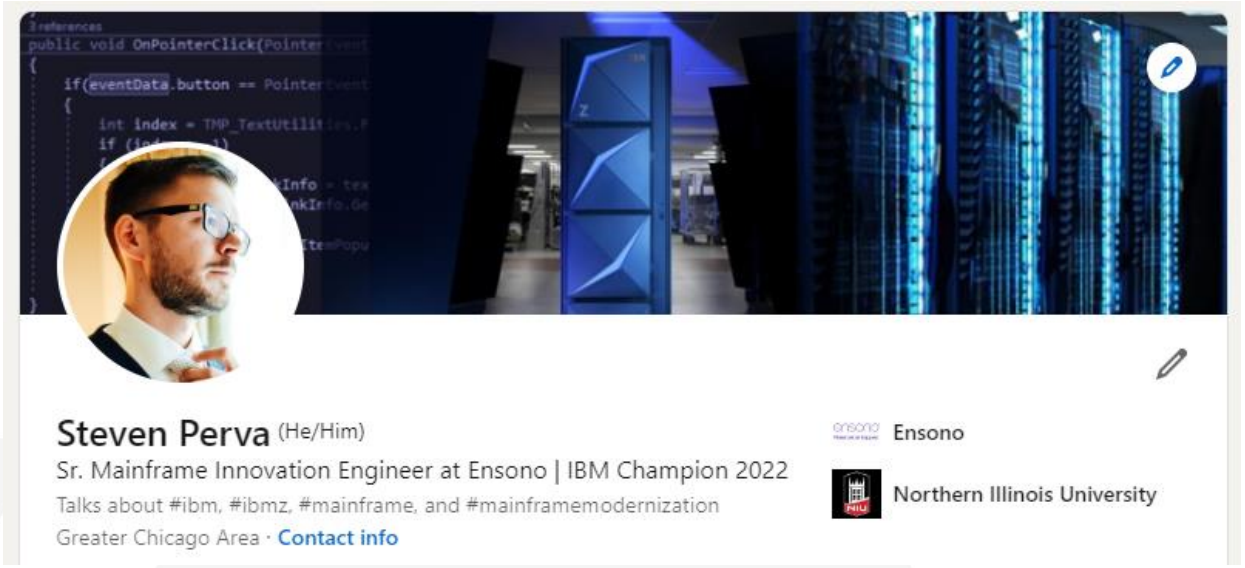
Let's Stay Connected

https://discord.gg/rFXEVKK7AH

Connect on LinkedIn

https://linkedin.com/in/stevenperva



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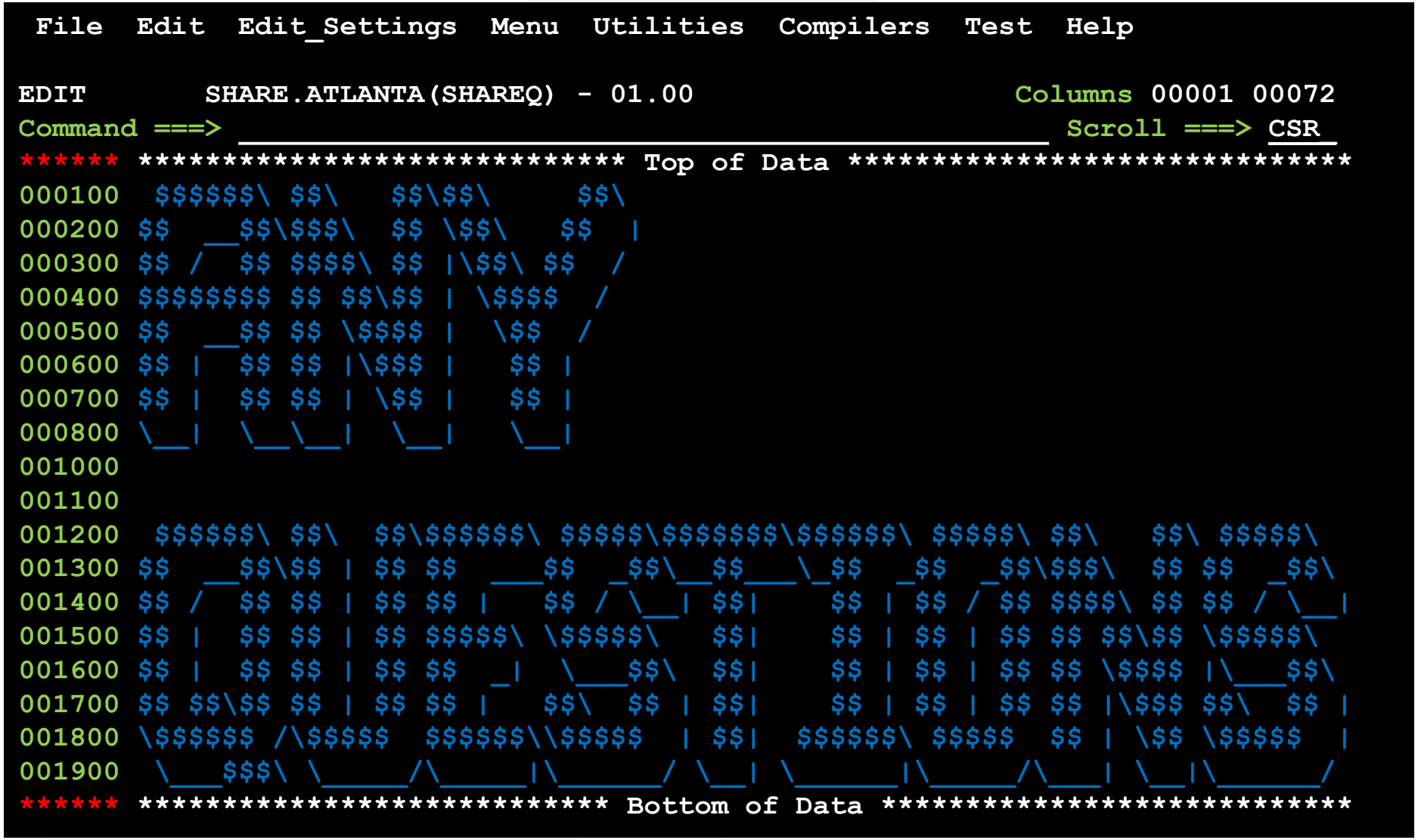
Questions / Comments / Sharing



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