

Getting Started

Starting BOSS VM

Starting BOSS

Starting BOSS: ASDL

Starting BOSS: PuTTY

Starting BOSS: OPC Scada Viewer

Starting BOSS: Checking Data

BOSS Data

Data Record Formats

Data Inspection

Saving and Restoring

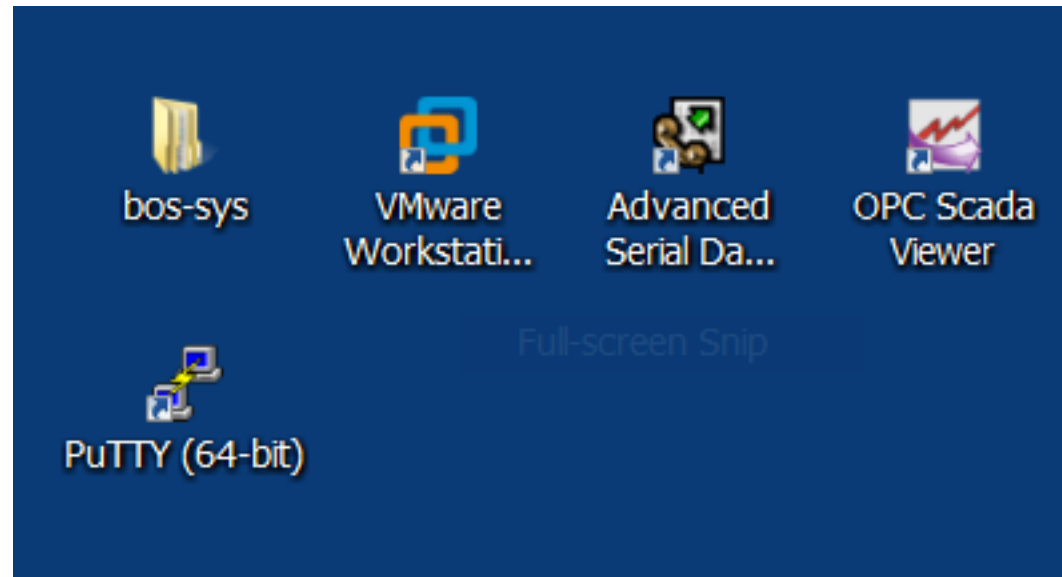
Stopping BOSS

Restore BOSS

VM Maintenance

Troubleshooting

Software block diagram



BOSS : Getting Started

Everything you need to run BOSS is on the desktop of the project laptop.
The BOSS laptop may be virtual machine.

login: .\bosadmin: bosadmin

Required

bos-sys folder

BOSS configuration, documentation and data

Advanced Serial Data Logger (ASDL)

Data logging application

PuTTY

Terminal application used for BOSS annotation and general purpose serial IO debugging

Recommended

OPC Scada Viewer

Real-time BOSS data display (heading, depth, altitude, turns count)

Optional

Open Office

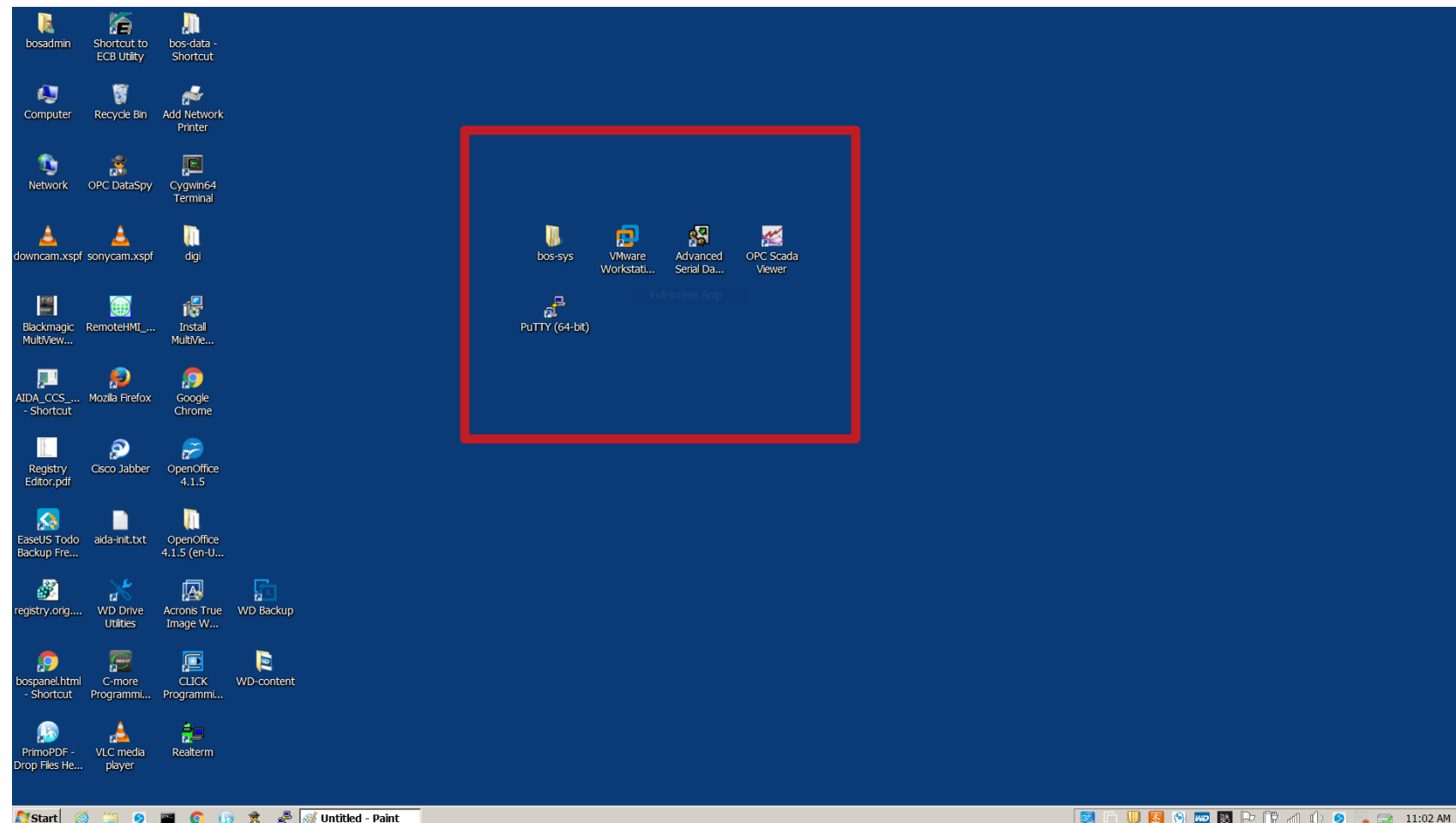
Database/spreadsheet may be used to manage BOSS data

Cygwin (not shown)

Linux like shell and utilities enable shell scripts to help with data base import

OPC Data Spy

Utility for OPC debugging



1

Start the BOSS platform
The sensors, ethernet switches and terminal servers must all be on before starting BOSS software.

2

Start the BOSS laptop (VM Host)

3

Log into the BOSS laptop as bosadmin

4

Start VMWare using the desktop icon

5

Open and start BOSS VM

6

Log into the BOSS VM as bosadmin

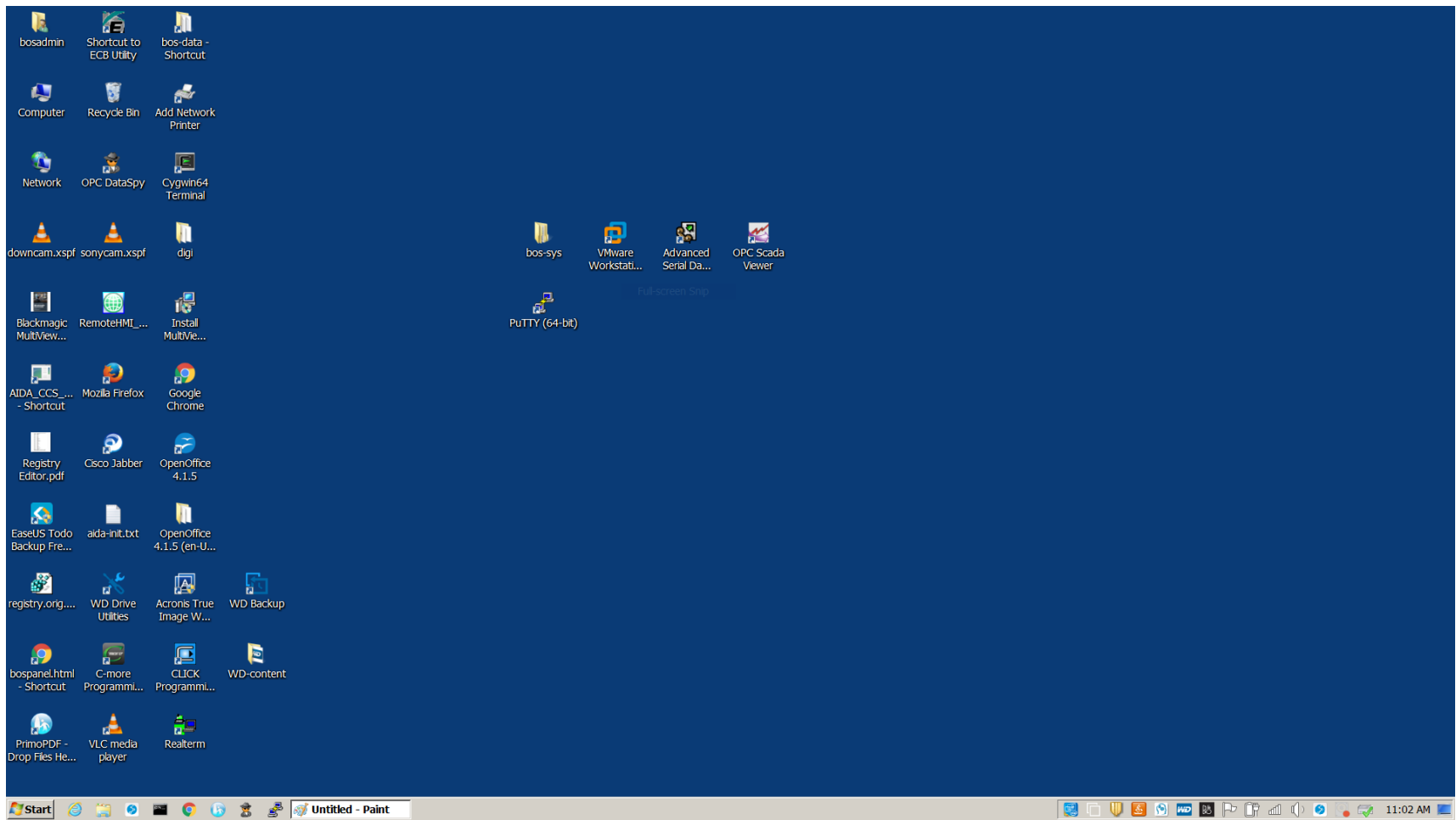
Starting BOSS: Laptop

2

Start the BOSS laptop (VM Host)

3

Log into the BOSS laptop as bosadmin



Starting BOSS: Start VM

2

Start the BOSS laptop (VM Host)

3

Log into the BOSS laptop as bosadmin

4

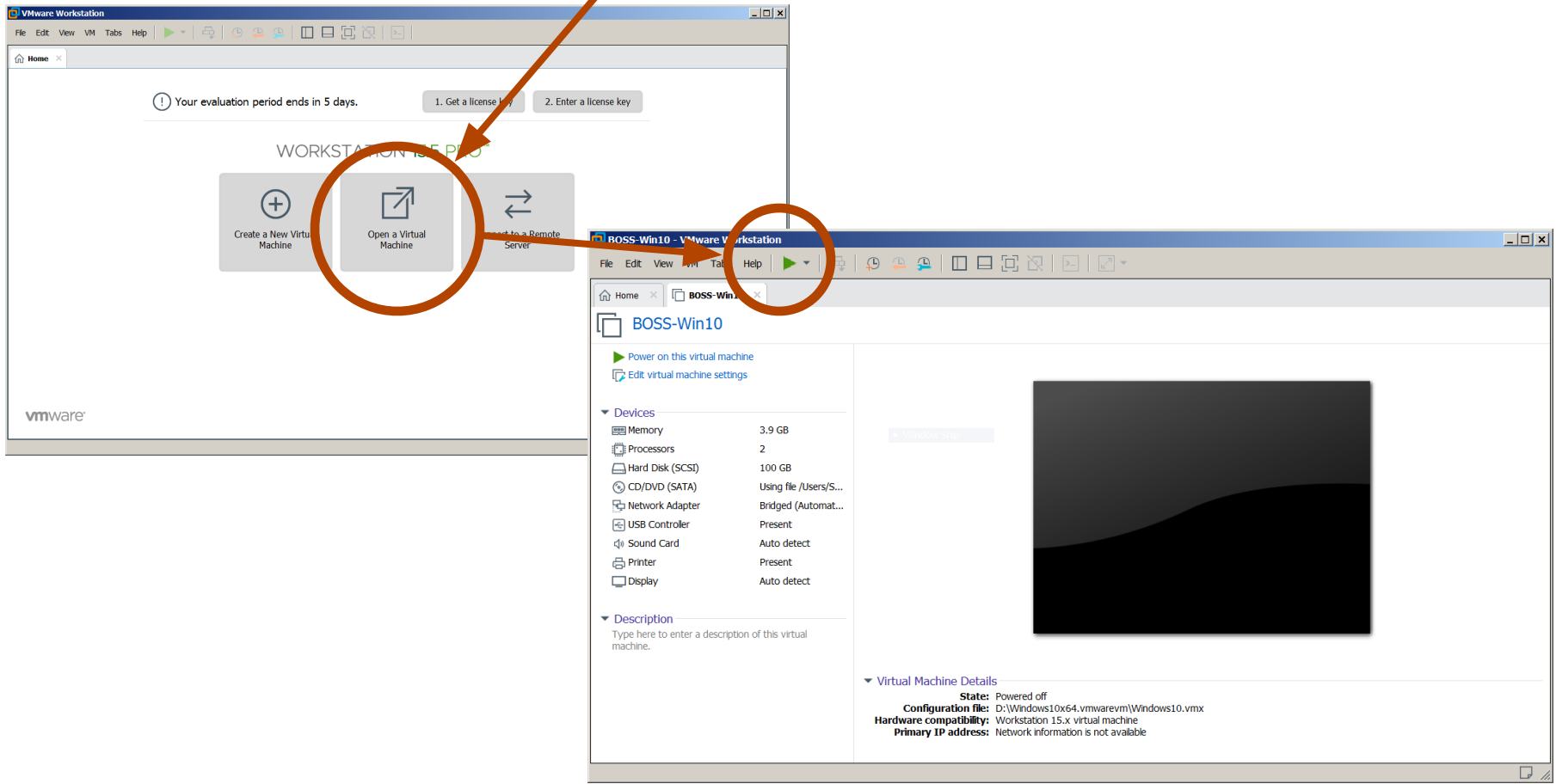
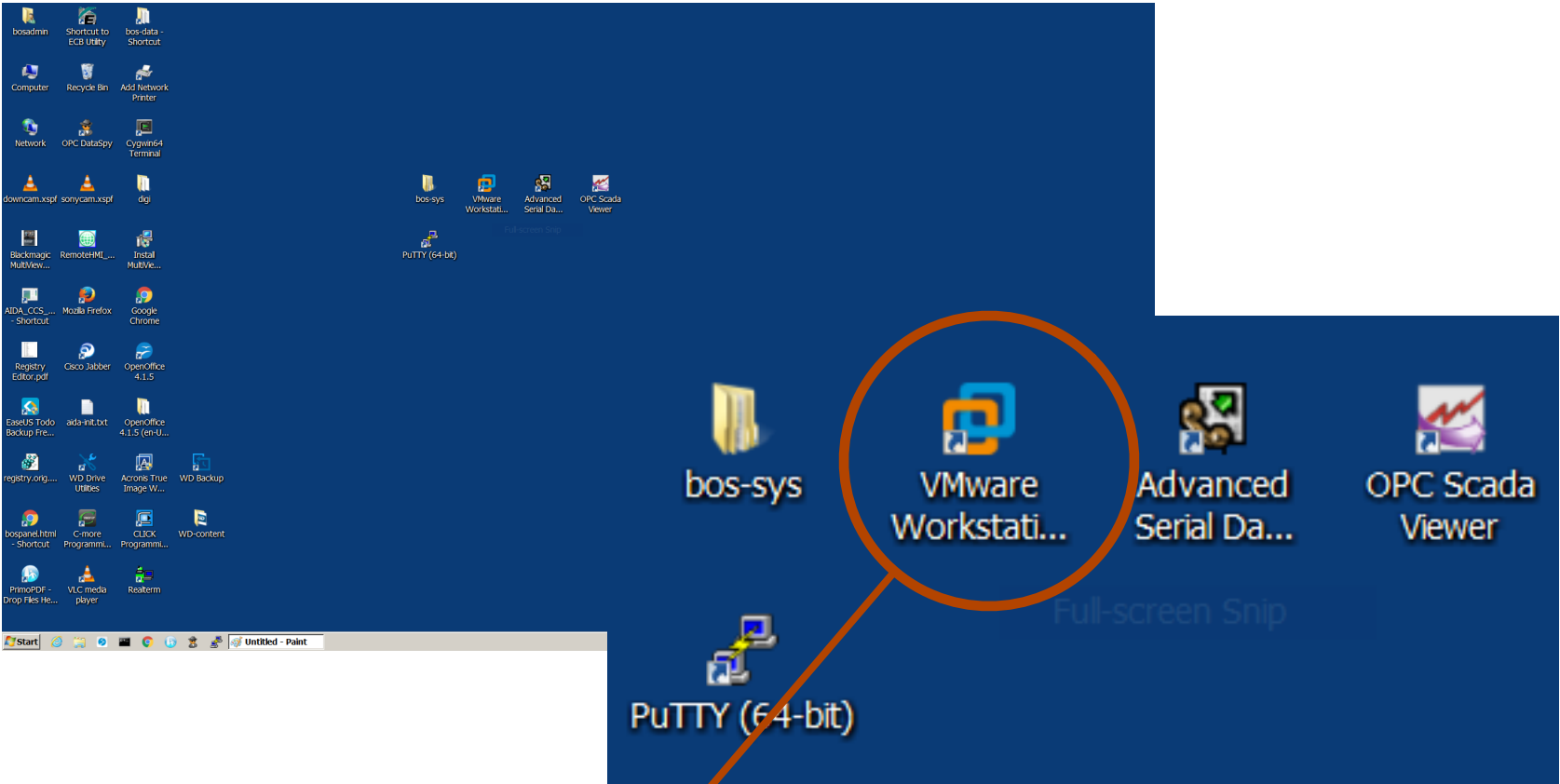
Start VMWare using the desktop icon

5

Open and start BOSS VM

6

Log into the BOSS VM as bosadmin



VM Menu

VM Controls

VM Settings

The screenshot displays the VMware Workstation interface. The top menu bar includes File, Edit, View, VM, and Help. The 'VM' menu is circled in orange, with a label 'VM Menu' pointing to it. The 'Power on this virtual machine' button, represented by a green play icon, is also circled in orange, with a label 'VM Controls' pointing to it. On the left, the 'BOSS-Win10' settings pane is visible, with a label 'VM Settings' pointing to it. This pane contains sections for 'Devices' (Memory: 3.9 GB, Processors: 2, Hard Disk (SCSI): 100 GB, CD/DVD (SATA): Using file /Users/S..., Network Adapter: Bridged (Automat..., USB Controller: Present, Sound Card: Auto detect, Printer: Present, Display: Auto detect) and 'Description'. The main area shows a 'Window Snip' button and a large black rectangle representing the VM's display. At the bottom right, a small icon indicates the VM is running, with a label 'VM Settings shown here when running' pointing to it. The 'Virtual Machine Details' section at the bottom right shows: State: Powered off, Configuration file: D:\Windows10x64.vmx, Hardware compatibility: Workstation 15.x virtual machine, and Primary IP address: Network information is not available.

Memory	3.9 GB
Processors	2
Hard Disk (SCSI)	100 GB
CD/DVD (SATA)	Using file /Users/S...
Network Adapter	Bridged (Automat...
USB Controller	Present
Sound Card	Auto detect
Printer	Present
Display	Auto detect

Virtual Machine Details

State:	Powered off
Configuration file:	D:\Windows10x64.vmx
Hardware compatibility:	Workstation 15.x virtual machine
Primary IP address:	Network information is not available

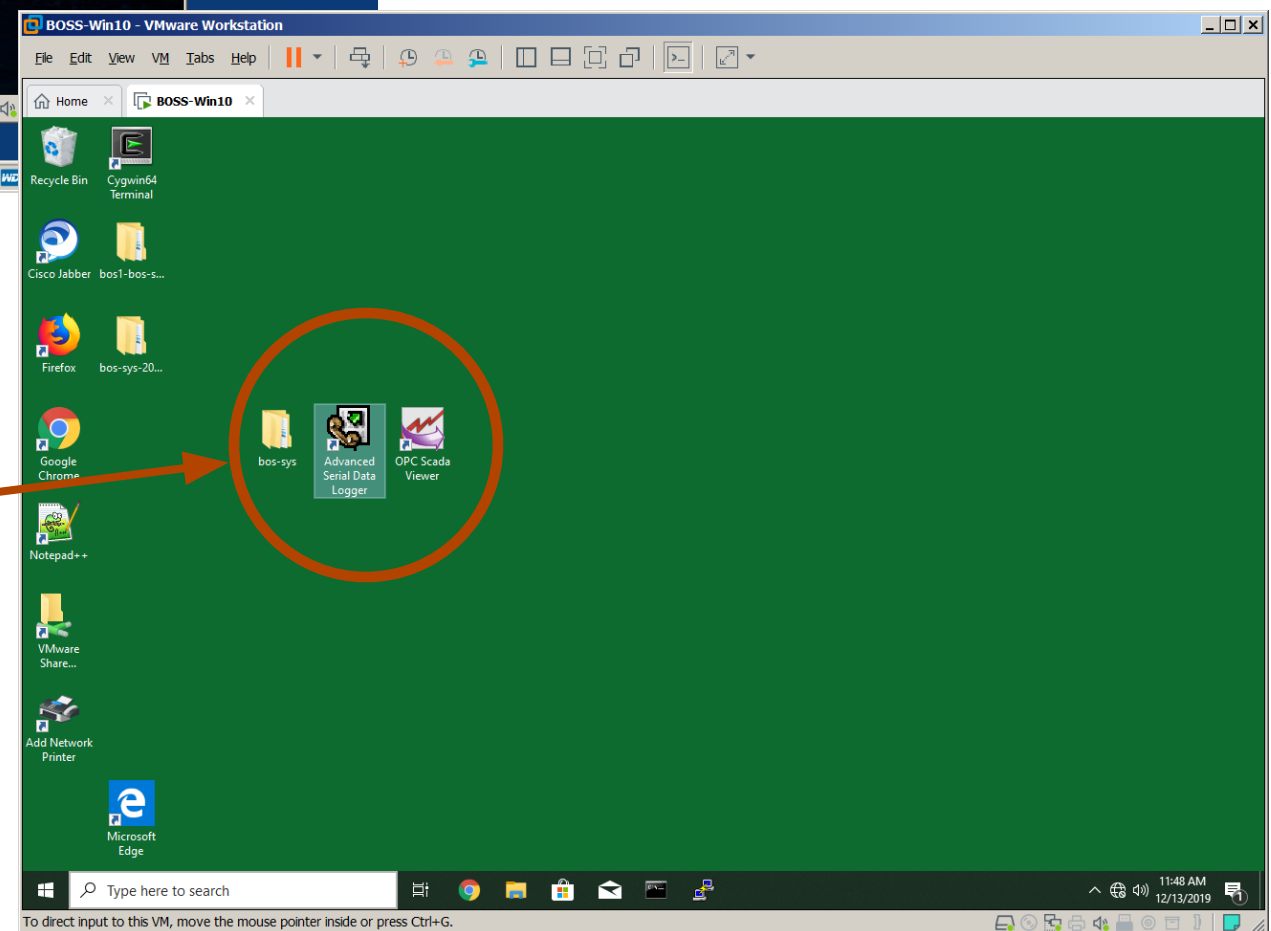
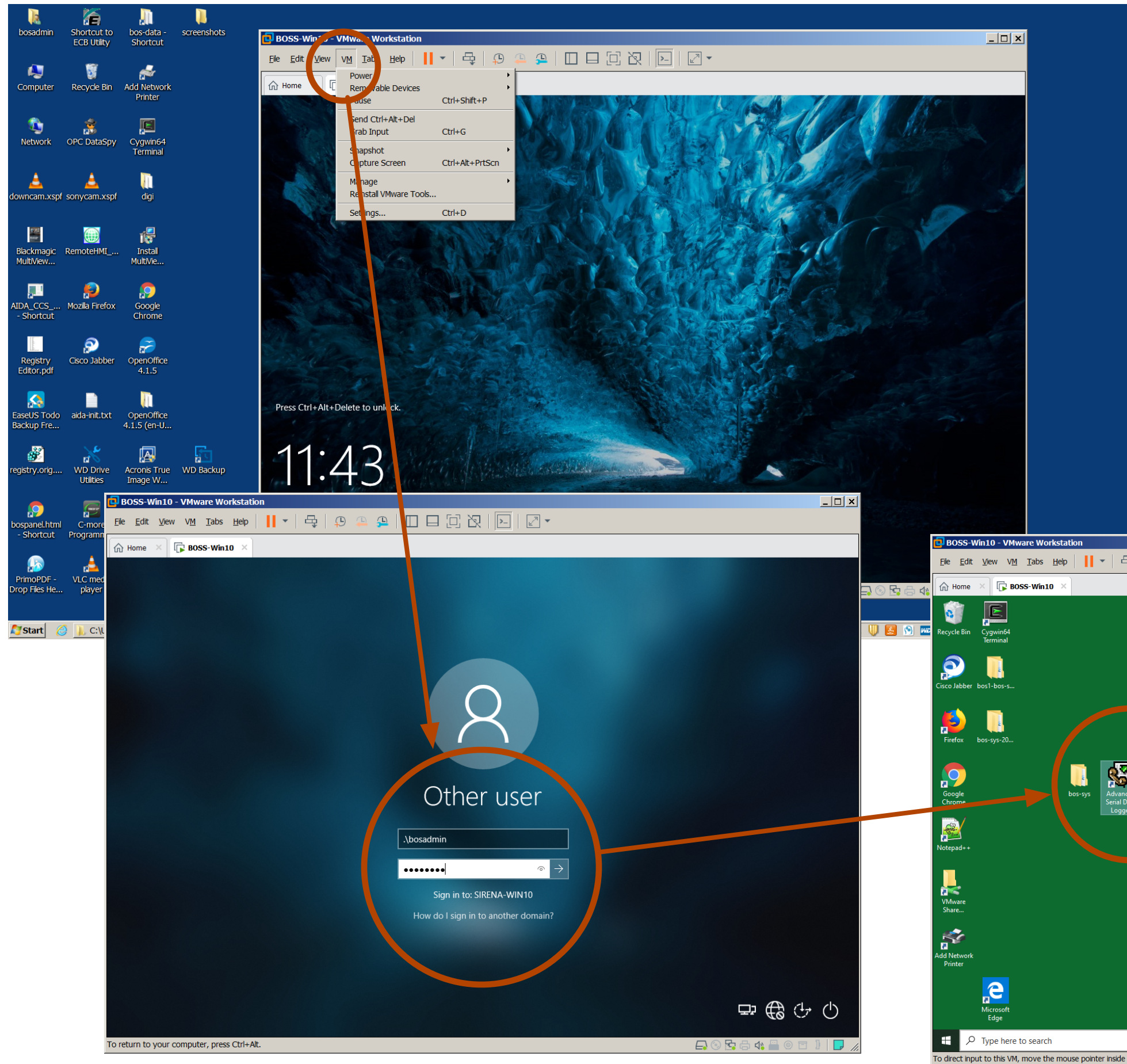
Starting BOSS: VM login

6

Log into the BOSS VM as bosadmin

Use the VM menu item to send CTRL-ALT-DEL to the virtual machine to get the login screen

The VM desktop is like the BOSS laptop



Starting BOSS

Sensors, ethernet switches and terminal servers must all be on before starting BOSS software.

1

Start ASDL
Toggle HMR mode (hdg, turns)

Always start ASDL before OPC Scada Viewer

2

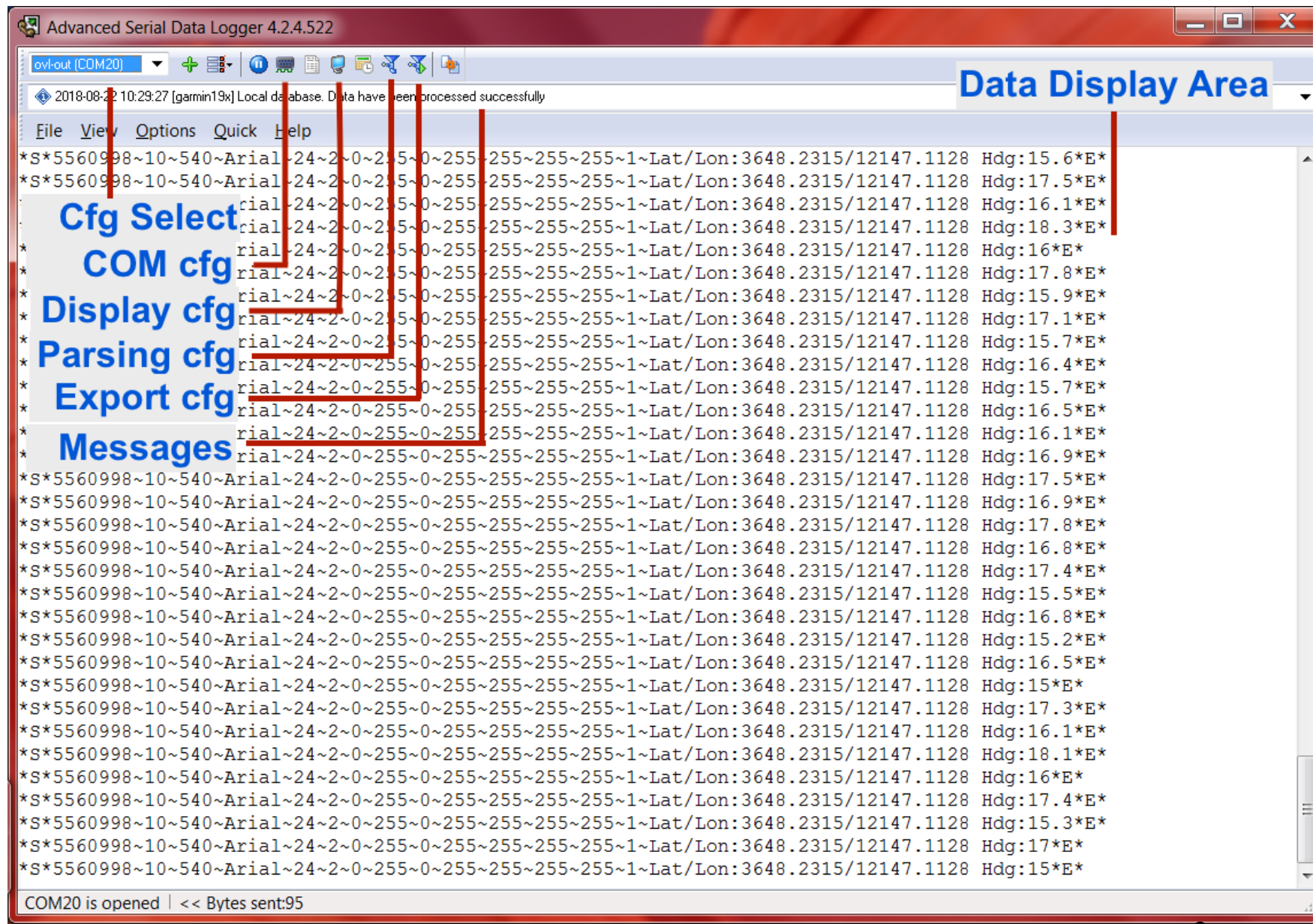
Open PuTTY annotation session

3

Start OPC Scada Viewer
Init turns counter
Set turns counter run mode

4

Check data logging



Starting BOSS: ASDL

1

Start ASDL
Toggle HMR mode (hdg, turns)



Double click the desktop icon to start

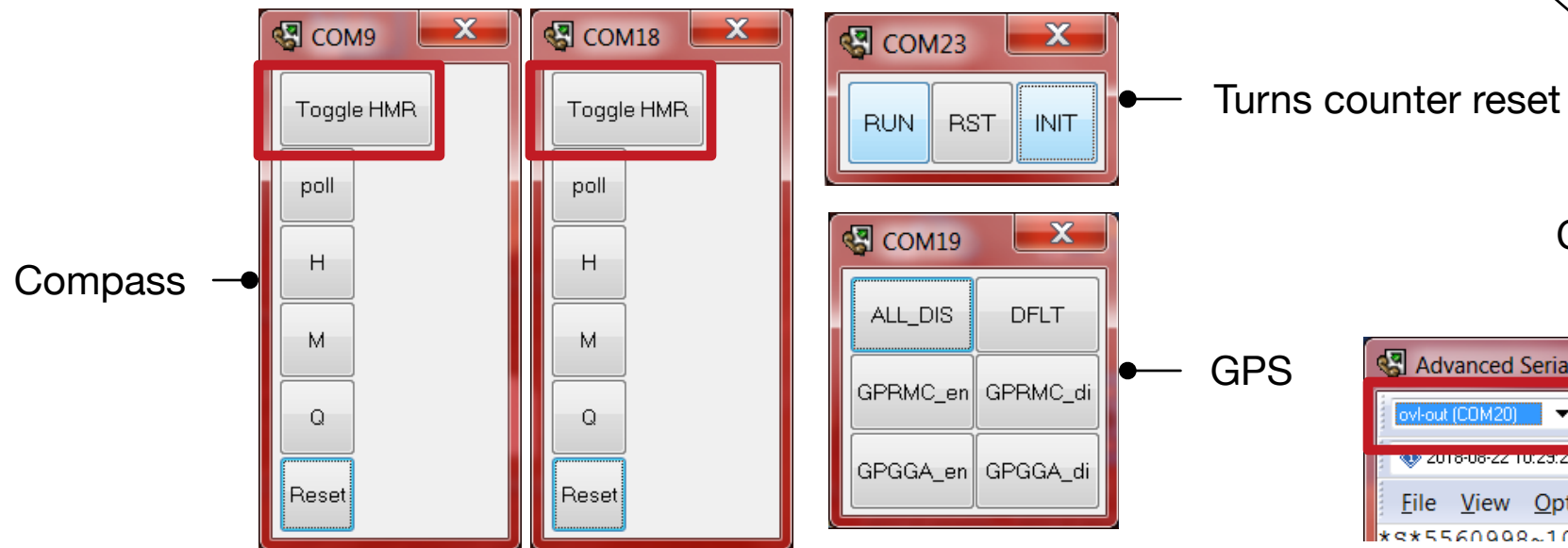
Starting ASDL opens five windows:

- Config/Display window
- 4 control windows, with buttons that control channel-specific functions
 - 2 compass (heading, turns)
 - Turns counter reset
 - GPS

Once ASDL has started, click the two compass "Toggle HMR" buttons to put the compasses into polled mode.

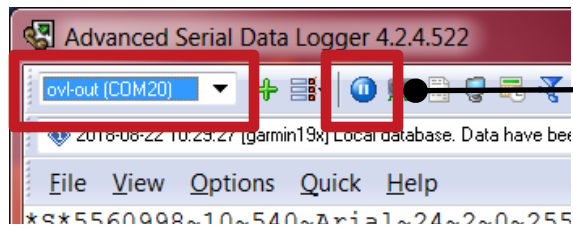
By default, the compasses stream at a higher rate than necessary.

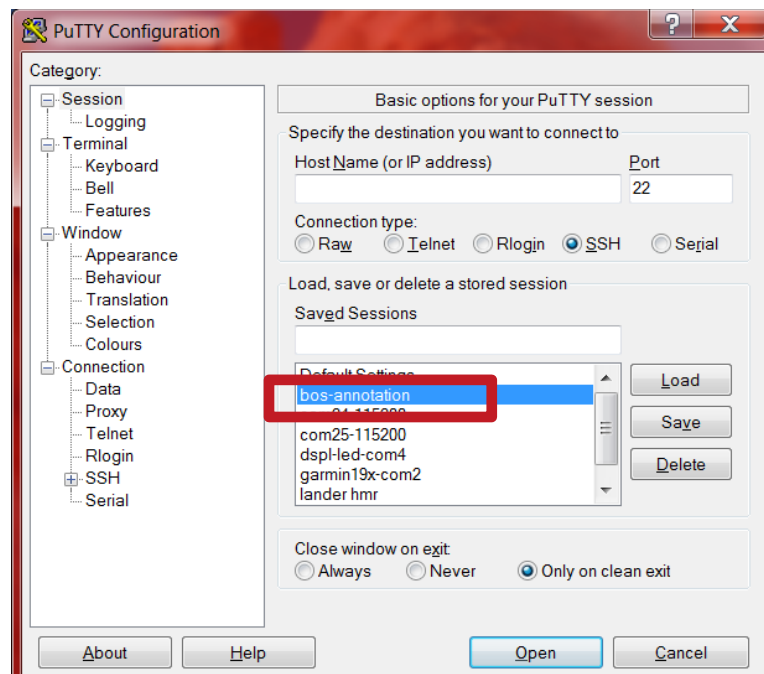
If sensors are powered down while ASDL is running, first try stopping and restarting the serial stream by selecting the channel configuration, and clicking the channel run/pause button; If that doesn't work, it may be necessary to stop and restart ASDL. Check data output after restarting a channel.



Config/Display

GPS





Open the PuTTY application

Select the BOSS-annotation session
Click Load
Click Open

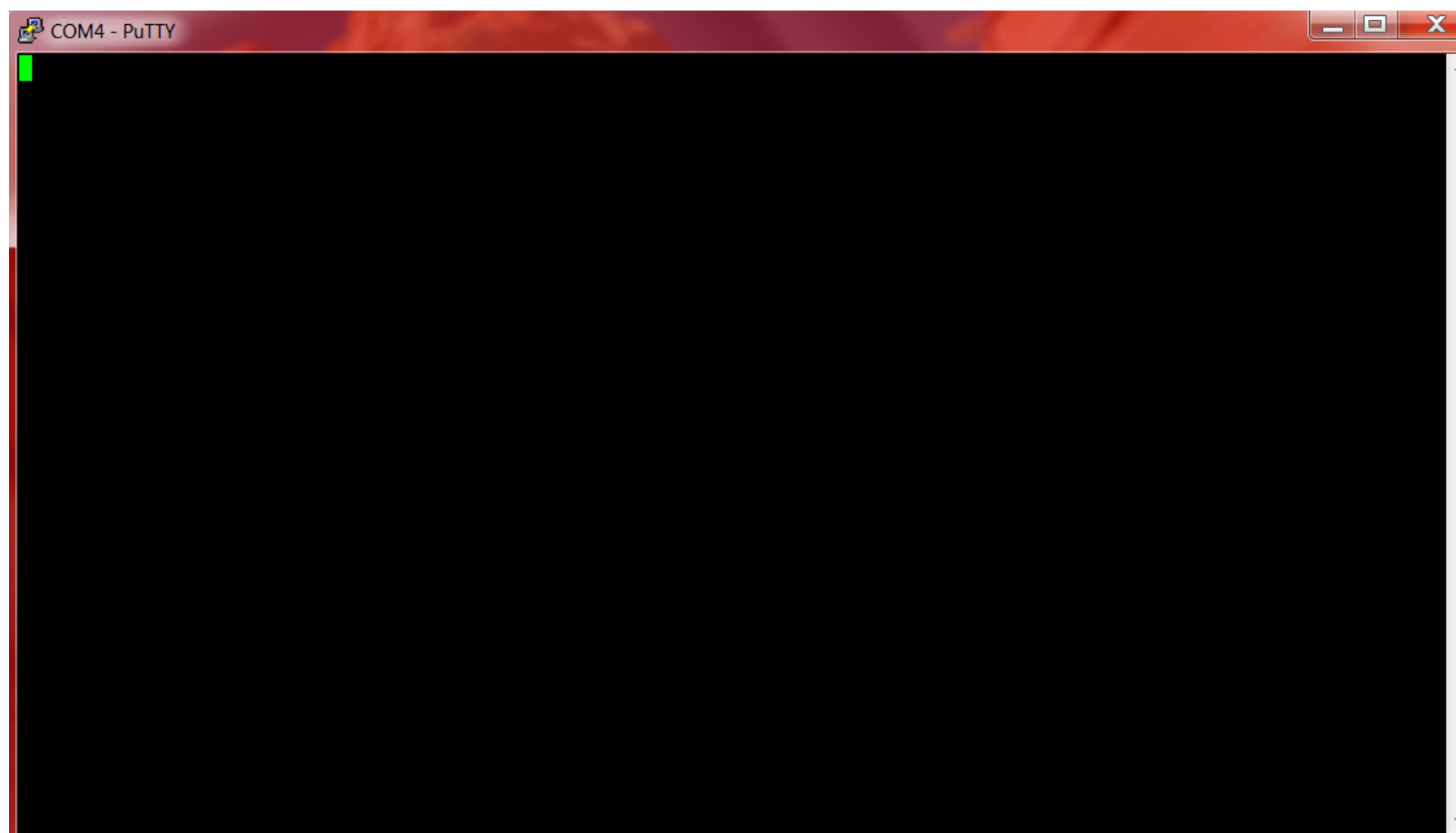
Starting BOSS: PuTTY

2

Open PuTTY annotation session



Double click the desktop icon to start



A terminal window will open.

The PuTTY window is used to enter timestamped annotations

Each time Enter is pressed in this window, a timestamp message will be logged on the BOSS data directory notes CSV file.

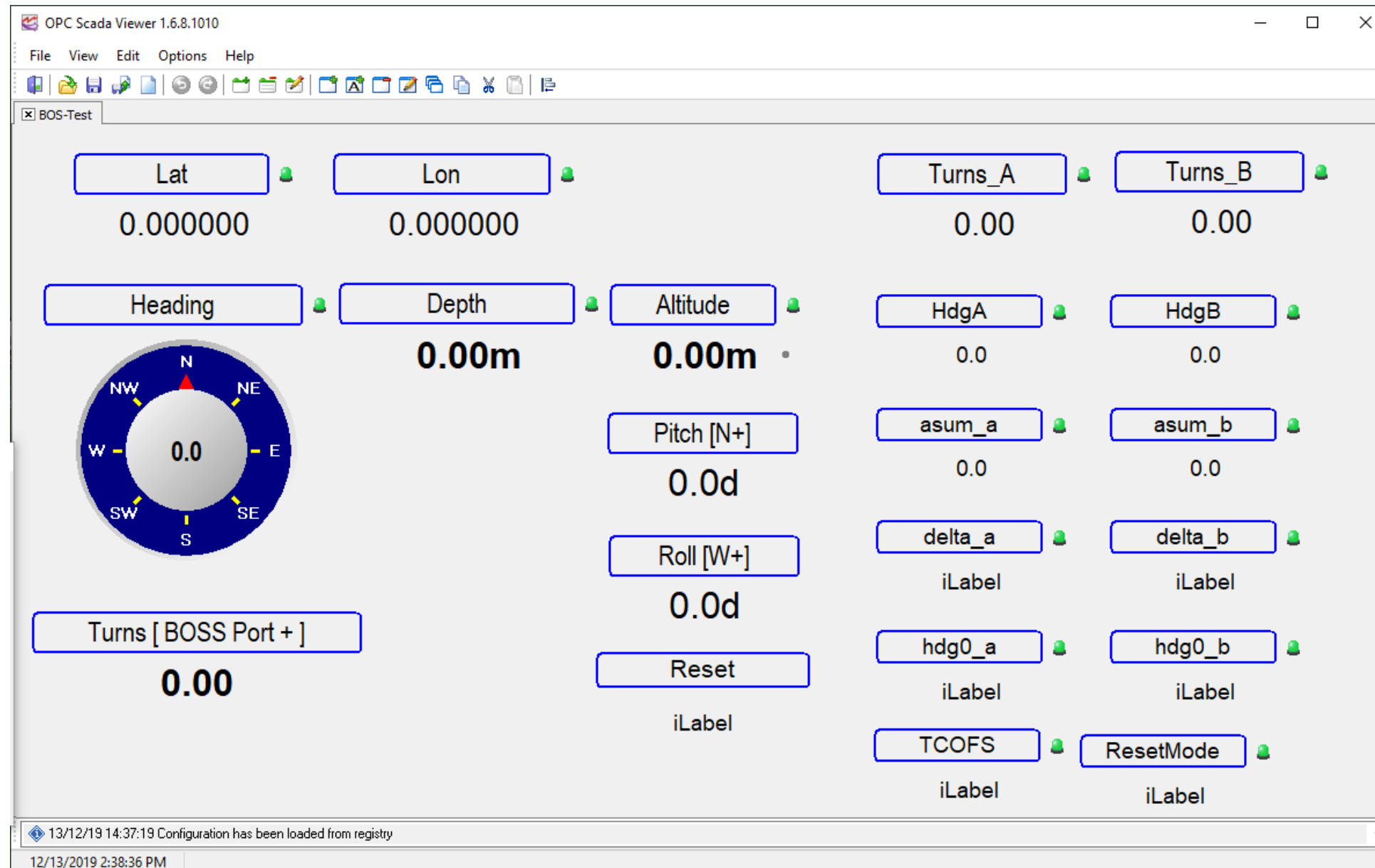
Starting BOSS: OPC Scada Viewer

3

Start OPC Scada Viewer
Init turns counter
Set turns counter run mode



Double click the desktop icon to start



After the OPC Scada view application starts, use the ASDL turns counter control buttons to initialize the turns counter and put it into run mode

Once the turns counter is initialized, clicking the RST button zeros the Turns Count and asum values

Display Units

Lat/Lon: degrees and decimal minutes
Lat: ddmm.mmmm Lon: dddmm.mmmm
Heading: degrees
Depth, Alt: meters
Turns: CW:+ CCW:- turns

When the RUN button is clicked, the Reset and Turns Count values should be 0

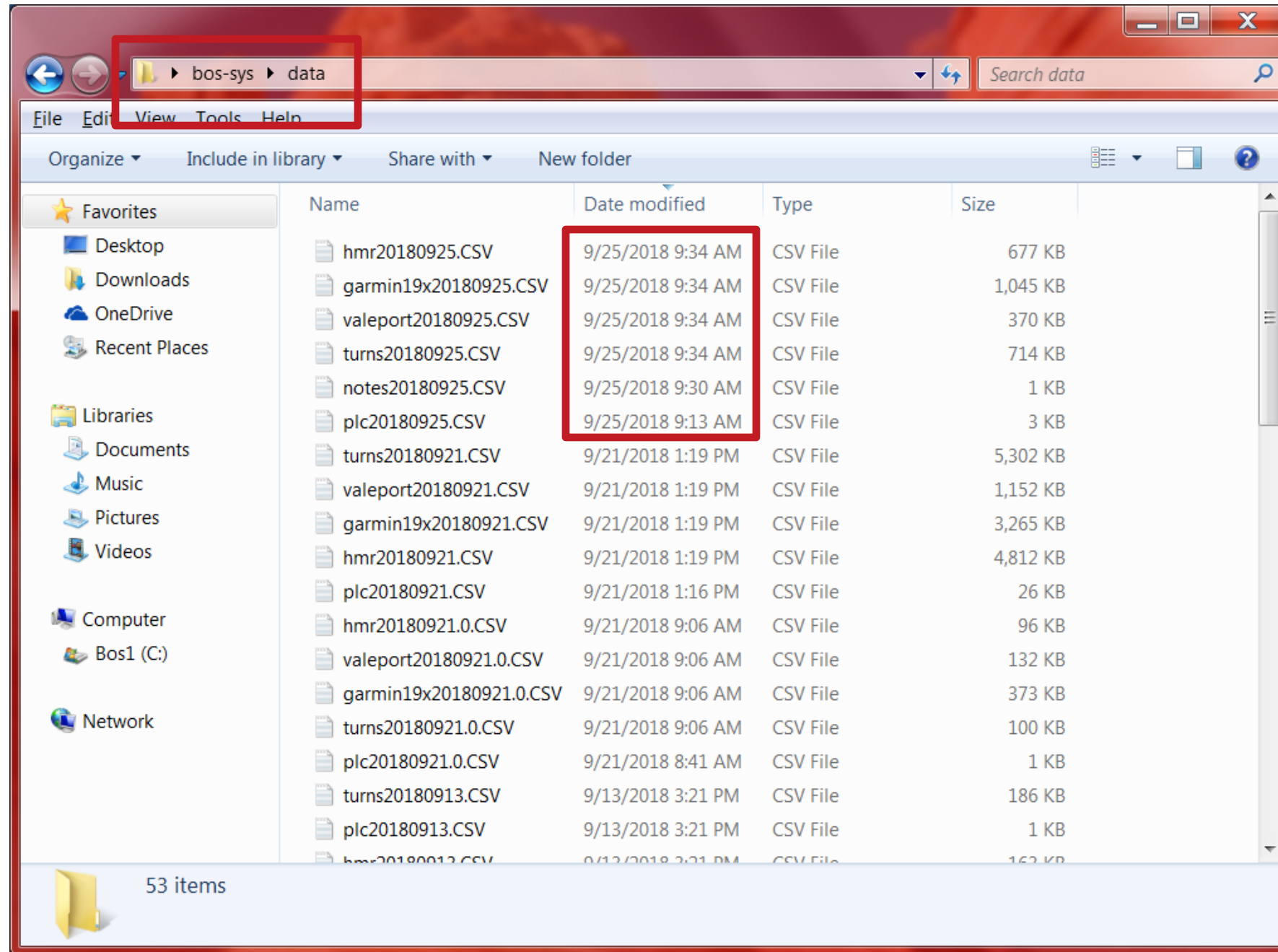


When the INIT button is clicked, the asum, delta and shx0 values should be 0

The Reset value should be 2

It may necessary to click the init button more than once

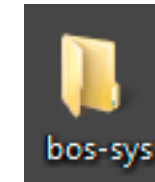
The Reset indicator (below Roll) indicates turns counter state (RUN/INIT/RESET)



Starting BOSS: Checking Data

4

Check data



Open the bos-sys folder on the desktop

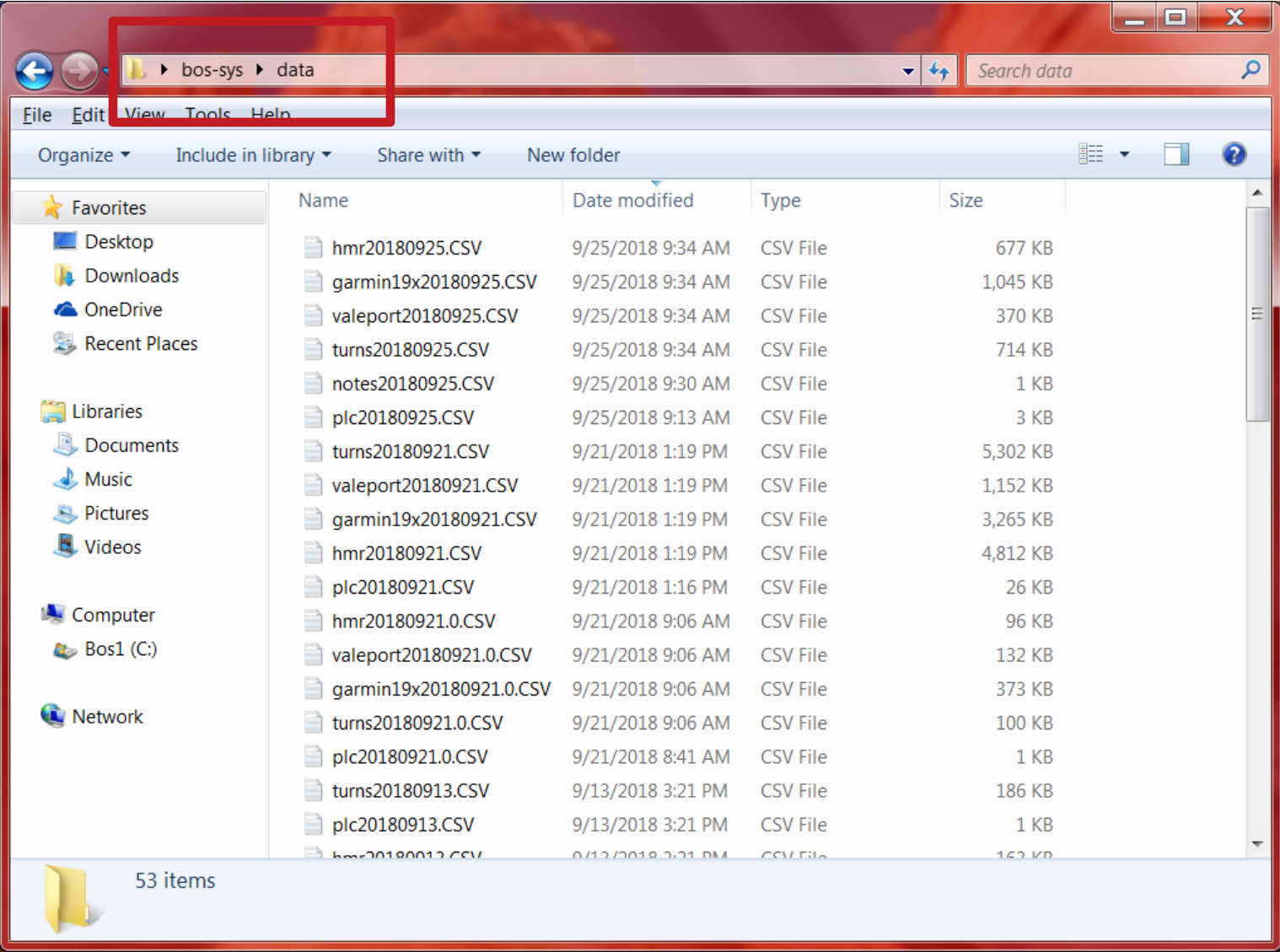
Open the data folder

`C:\Users\bosadmin\Desktop\bos-sys\data`

Verify that data files for each stream exist and have current dates.

The file dates should update as data is added.

Optionally, you may wish to open each file and examine the latest entries at the end of the file. You may also enter an annotation and verify that it is added to the annotation log.



BOSS Data

BOSS data is written to

C:\Users\bosadmin\Desktop\bos-sys\data

as comma separated value (CSV) ASCII files.

There is one data file for each ASDL channel (device); the files naming convention consists of channel name and date (YYYYMMDD) and CSV extension, e.g.

plc20180901.CSV

A new file is opened each time ASDL starts; if a file already exists, a number appended to the file name, e.g.

hmr20180921.0.CSV

If files are deleted while ASDL is running, a new one will be created.

Manuals for sensors may be found in

C:\Users\bosadmin\Desktop\bos-sys\doc

Data Channel	Description	File
hmr	Honeywell HMR3300 platform compass/heading sensor	hmrYYYYMMDD.CSV
valeport	Valeport VA500P platform depth/altimeter	valeportYYYYMMDD.CSV
gps	Garmin 19xHVS surface GPS	garmin19xYYYYMMDD.CSV
notes	annotations	notesYYYYMMDD.CSV
plc	surface control box PLC events	plcYYYYMMDD.CSV
turns	HMR3300 surface turns counter compass/heading sensor	turnsYYYYMMDD.CSV

BOSS data are stored in comma separated value (CSV) ASCII text format.

The data file format is defined as

<etime>, <itime>,<channel-specific fields>CRLF

Where

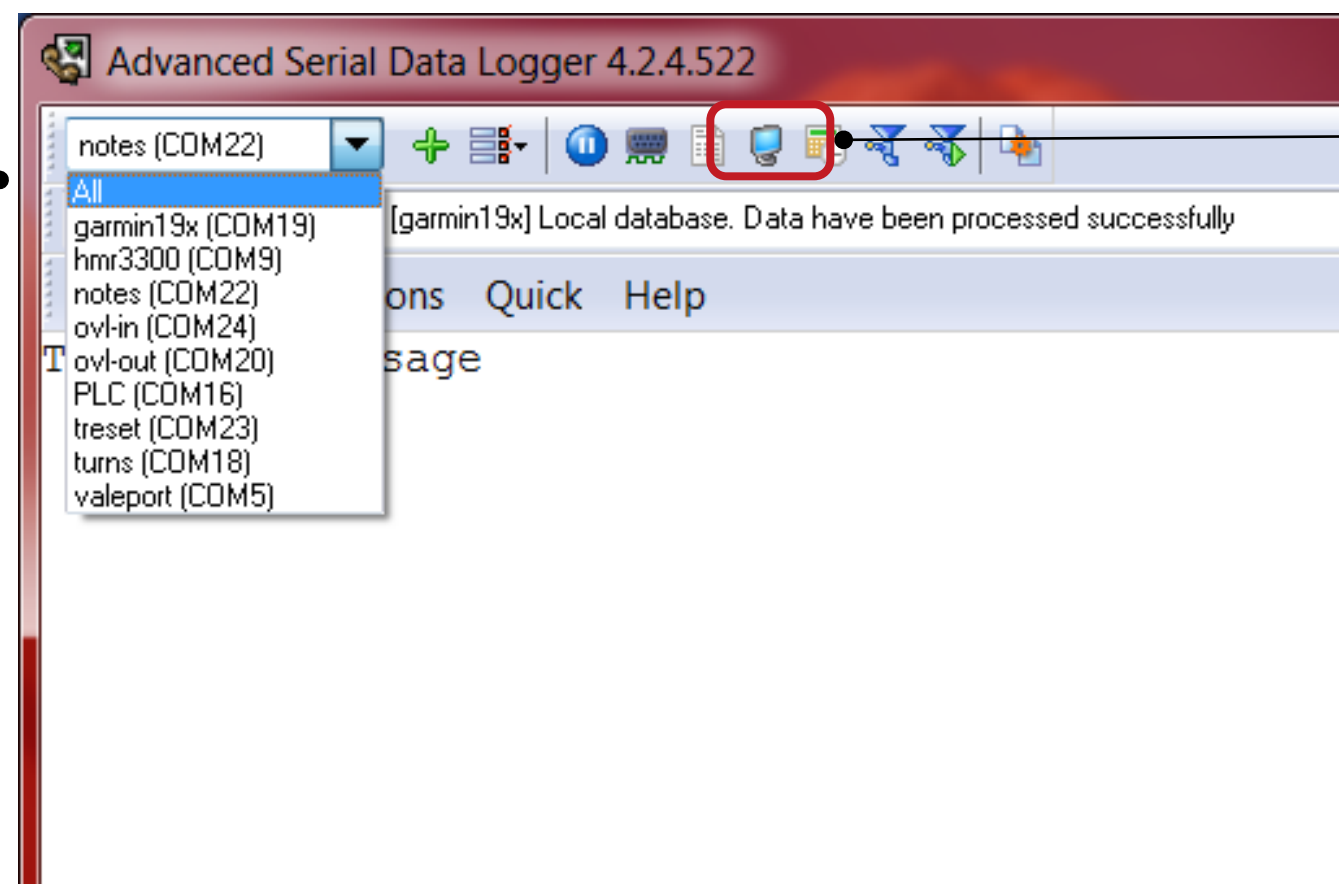
<etime> : epoch time, i.e. seconds since Jan 1 1970

<itime> : iso1806 date/time (UTC)

CRLF : carriage return, line feed (0x0D0x0A)

For channel-specific record format information, see

C:\Users\bosadmin\Desktop\bos-sys\doc\BOSS-record-formats-<version>.txt



Channel Selection

Display options

BOSS Data Inspection

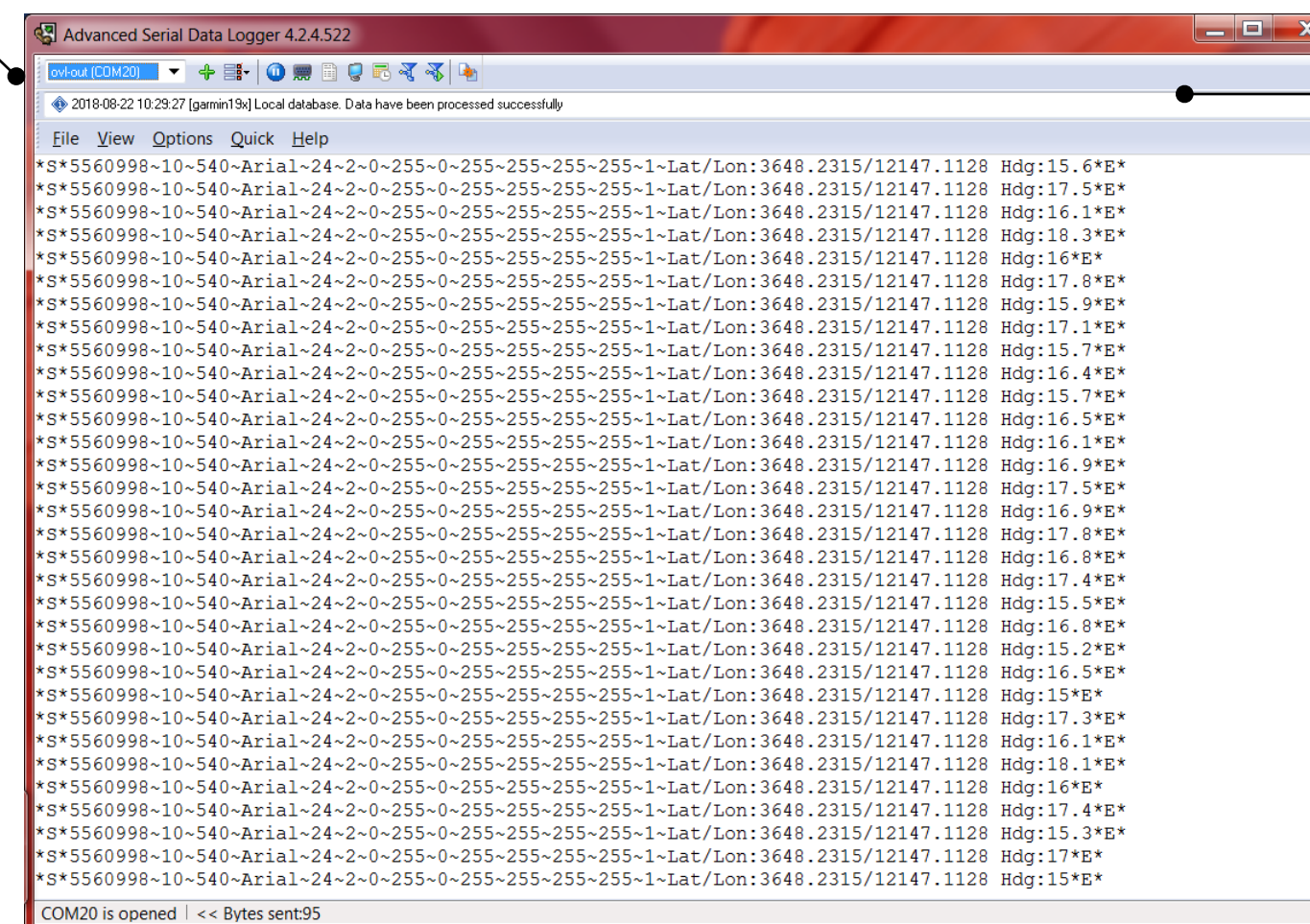
The ASDL window may be used to look at data values in real time.

Selecting a channel from the dropdown menu (upper left) will display (bi-directional) channel data in the data display area.

Selecting All will display all channels simultaneously.

Messages related to the selected channel will be displayed in the status bar

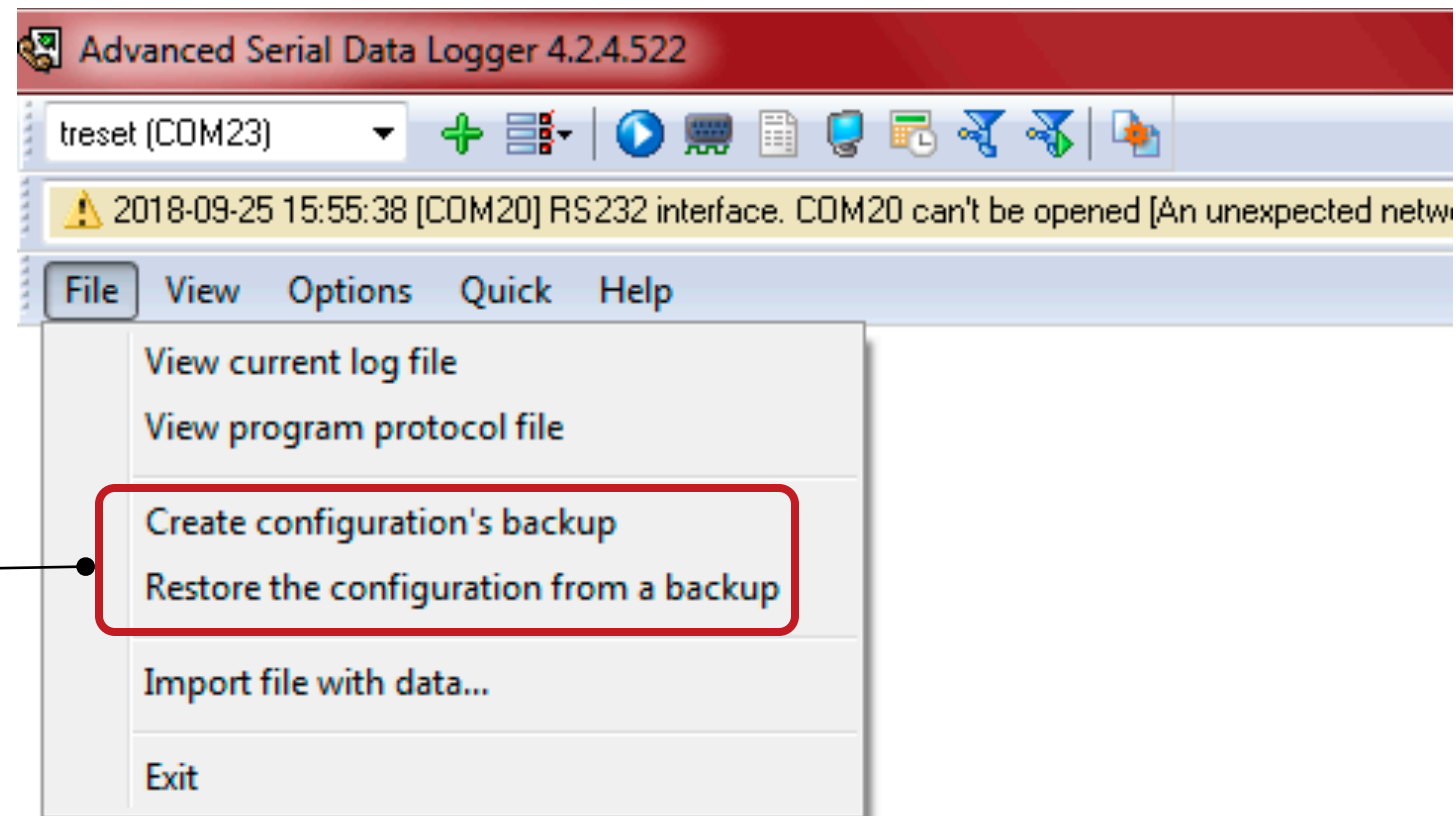
Some output options may be set using the display options button, e.g. output highlighting, parsed/unparsed data, etc.



Status bar

Data Display Area

BOSS Saving and Restoring



It's possible to save and restore ASDL and OPC Scada Viewer configurations to/from files.

From the file menu, choose to backup the current configuration or restore a previously saved one.

These are generally saved to

`C:\Users\bosadmin\Desktop\bos-sys\config`

Recommendations:

- Include a date/time in the backup file name, e.g. 08sep18-1430 to make it easy to differentiate and identify them.
- Create a backup before making configuration changes

Stopping BOSS

1

Stop OPC Scada Viewer

2

Stop ASDL

3

Close PuTTY annotation session

4

Power down platform, laptop

It is recommended to shutdown BOSS software before powering down the system or laptop, in the order shown

Restore BOSS

You'll need:

- a laptop or PC (Win7, Win10)
- backup drive with the BOSS VM and VMWare

1

Install VMWare

If the replacement laptop doesn't have VMWare, run the installer from the backup disk

2

Copy VM

You can run the VM from an external disk, but if there's room on the laptop, copy the Windows10x64.vmware folder from the backup disk to the new host machine

3

Configure VM

The host machine WIFI must be disconnected so that the VM can use the ethernet interface.

Start VMWare and open the VM

You may be prompted to answer whether the VM was copied or moved; use the copied option

If it's not already set, select Bridged networking in the VM network settings

Optionally, you may want to configure file sharing to be able to access host files from the guest (VM)

This would be a great time to backup your VM disk and update the VMWare installer

VM Maintenance

1

Periodically backup the VM

Be sure to do this if you change BOSS software configuration and documentation.
A large, rugged external drive is recommended.
VMWare can make snapshots of your VM, and/or you can just copy the VM

2

Keep up with updates

As with any other machine, keep it's OS, virus protection, and other software up to date

3

Shut down the VM after use

As with a hardware PC, always shut down the VM rather than suspending. This will help to prevent instability with the BOSS applications that rely on virtual serial ports and socket connections.

4

Follow laptop procedures

Observe the same practices you do when running BOSS software on a laptop - e.g. software startup order

I minimized the ASDL window...now where is it?

Tiny system tray icon, lower right of desktop

Where is/are...

Data logs

Desktop/bos-sys/data

Saved configurations (ASDL, OPCSv and OOB, network)

Desktop/bos-sys/config/<deployment>

Network configuration info

Desktop/bos-sys/doc

Vendor Manuals

Desktop/bos-sys/doc/manuals

ASDL can't open port

Check virtual serial ports

Windows Control Panel >> Device Manager >> Ports (COM & LPT)

All Digi ports should be enumerated and working

Ping IP addresses to make sure all the network devices are connected

Digi : subsurface TS4, surface TS4, surface TS1 (in BOSS control box)

PLC : surface, subsurface

Router

Check router, network and serial connections

Do serial loopback test (e.g. using PuTTY)

Use Digi device discovery (Desktop/digi) to find devices on network

Stop and restart ASDL

Troubleshooting

Data not written to files

Check ASDL error messages (dropdown box, top center of ASDL window).

Check network and serial connections

Do serial loopback test (e.g. using PuTTY)

Use Digi device discovery (Desktop/digi) to find devices on network

The cursor is jumping around on the screen, may be clicking and selecting items

Sometimes serial devices (e.g. GPS) are enumerated as mice; this should only happen if laptop is rebooted while serial devices are transmitting data.

This has been addressed on BOSS1 laptop (via registry key)

Windows Control Panel >> Device Manager >> Mice and other pointing devices

Disable devices that should not be used as HID (mice); don't disable the trackpad

To disable serial mouse detection

Open regedit

Backup your registry

Navigate to key

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\sermouse

Change subkey start value from 3 to 4

OSV not updating

Shutdown, then restart OSV

If that fails, shut down OSV, then ASDL

Reload from the last saved configuration (bos-sys/config/OSV

Are some things updating?

Check the OPC data items, re-connect the data sources.

Check the status bar at the bottom of the window for error messages

Turns counter not updating

See “OSV Not Updating”

Check whether the scripts are corrupt; reinstall if needed

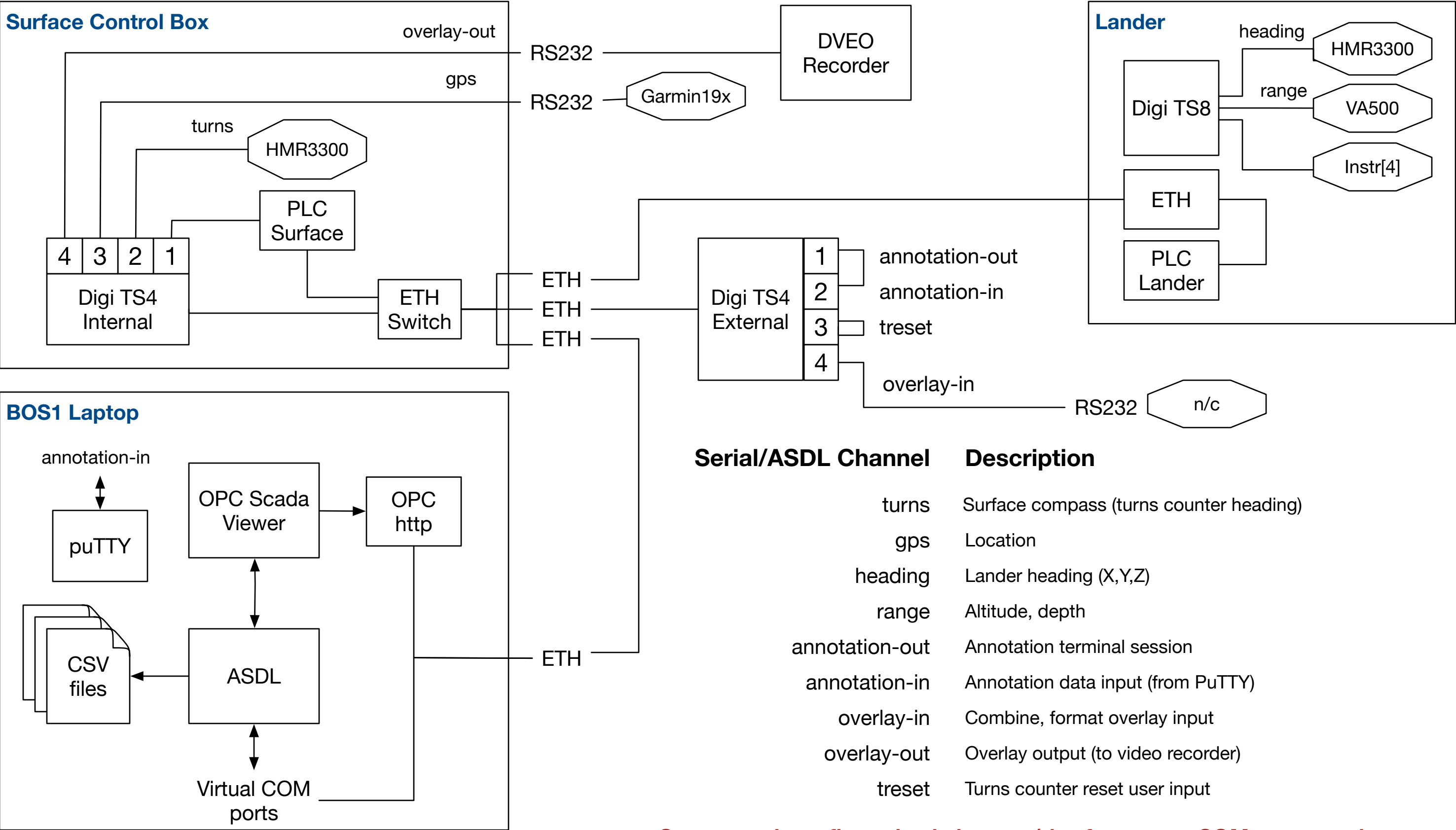
I shut down ASDL before OSV

Shutdown OSV, then ASDL; use task manager (Ctrl-Alt-Del) to force them to quit if needed

Restart Windows

Start ASDL, then OSV

BOSS Software Block Diagram



See network configuration in bos-sys/doc for current COM port mapping