The workbench desktop (noVNC)

> To launch the desktop, follow Lab 03, Parts 1–3. This page explains what those steps do. If the desktop page is blank or port 80 is taken, see Troubleshooting.

The workbench is a container started from IIC-OSIC-TOOLS, a toolchain image that IIC-JKU maintains. You start it with a script from the team's `workspace` repo, and **noVNC** shows the container's Linux desktop in your browser.

The workspace repo

You clone the `workspace` repo once, into a folder named `workspace`, and keep that clone for every later course. These are the parts IC101 uses:

Path in `workspace`	Purpose
`scripts/start_vnc.sh` / `.bat`	Launches IIC-OSIC-TOOLS with noVNC
`scripts/smoke_test.sh`	Checks that the tools inside the container work
`common/.designinit`	Sets up the environment and SKY130
`modules/ic101_setup/`	Scratch space for this course
`pdk/`	`volare.lock`, which records the PDK version the team uses. The PDK itself ships inside the image, at `/foss/pdks/sky130A`.

Later courses add their own folders under `modules/` with `mod add <course>`, a command described in What the smoke test checks.

What `start_vnc` does

`start_vnc.sh` (macOS and Linux) and `start_vnc.bat` (Windows) do the same three things:

1. Pull the image `hpretl/iic-osic-tools:2026.08`. The first run downloads several GB, which can take several minutes, and later runs reuse the copy already on your computer.
2. Run the container, named `asic-edu-osic`, with your `workspace` folder mounted at `/foss/designs`. Anything you save under `/foss/designs` is a file in your `workspace` folder on your laptop, so it survives when the container is stopped or removed.
3. Expose the desktop at http://localhost/, on port 80 by default.

Running `docker rm -f asic-edu-osic` on your laptop stops and removes the container, and running `start_vnc` again brings it back. You'll try both in Lab 03, Part 5.

Settings you can change

The script reads the environment variables below. You won't need any of them in Lab 03 unless something else on your laptop is already using port 80.

Variable	Default	What it changes
`HOST_PORT`	`80`	The port on your laptop. With `HOST_PORT=8080` the desktop is at `http://localhost:8080/`. Use it when something else is already using port 80.
`VNC_PW`	`abc123`	The desktop password
`VNC_RESOLUTION`	`1280x800`	The desktop size, for example `1920x1080`
`DOCKER_TAG`	`2026.08`	Which image tag to pull

On macOS and Linux you set them by putting them in front of the command, for example `VNC_PW='your-password' HOST_PORT=8080 ./scripts/start_vnc.sh`.

The desktop in your browser

noVNC serves a full Linux desktop in Chrome, Firefox or Edge, and the password is `abc123` unless you set `VNC_PW`. Terminals, XSchem, Magic and the rest of the tools all open from that desktop, and they run inside the container rather than on your laptop.

Plain `Ctrl+V` doesn't paste text from your laptop into the desktop. To paste there, press **Ctrl+Shift+V**, or use the clipboard icon in the noVNC sidebar.

X11 instead of noVNC

On Linux, or on macOS with XQuartz, `./scripts/start_x.sh` shows the tools in windows on your own desktop over X11, which can be faster than streaming a whole desktop to the browser. We use noVNC in IC101 so that everyone sees the same interface.

Next: What the smoke test checks.