



# Using SUSE Harvester for your home lab

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# Agenda:

1. Introduction
2. What is SUSE Harvester?
3. What is a Home Lab?
4. Why SUSE Harvester?
5. Demo
6. Tips and Tricks
7. Useful Resources

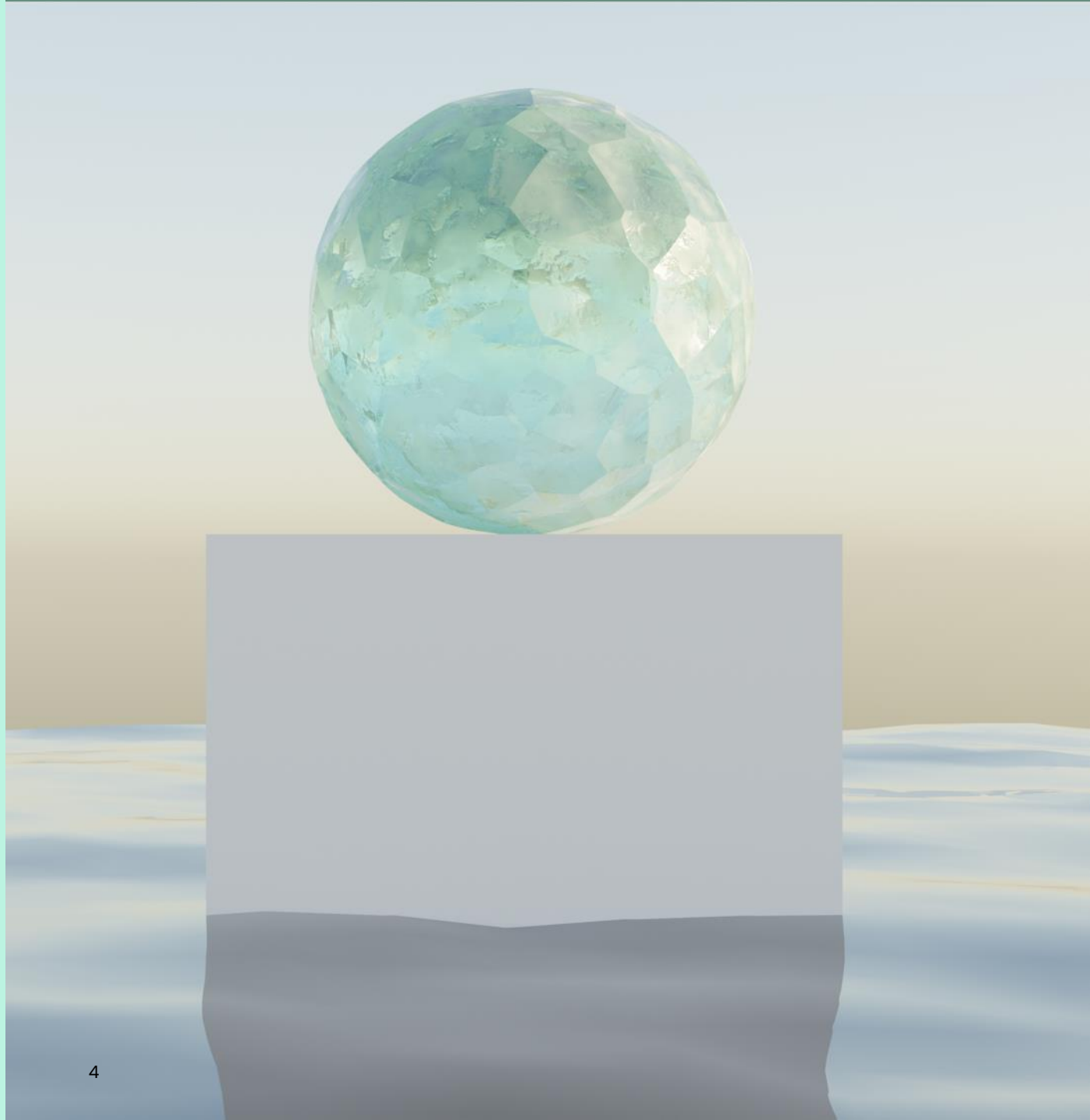
# Introducing the speaker



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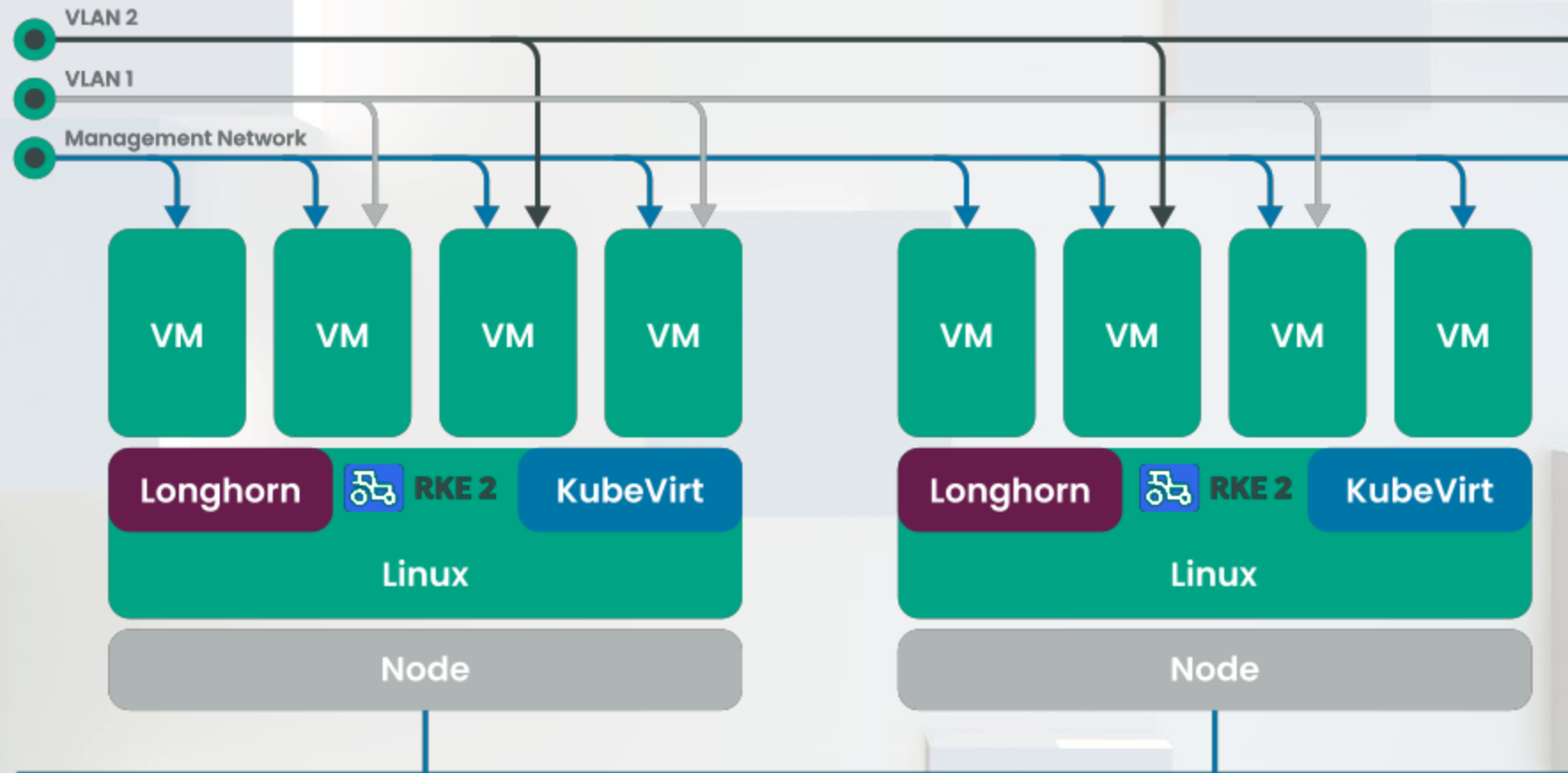
# What is SUSE Harvester?



# Harvester

- ‘Open, Interoperable Hyperconverged Infrastructure Solution’
  - 100% Open-Source
  - No Licensing & Hardware Fees
- Modern solution built on cloud-native technology
  - Kubernetes, Longhorn, KubeVirt
- Production-ready, turn-key conventional HCI experience
- Implements HCI on bare metal services
- Lightweight, software-driven
  - Doesn't require any additional hardware, external SANs
  - Reliable at the Edge
- Native Integration with SUSE Rancher for containerized workloads

# High-level architecture

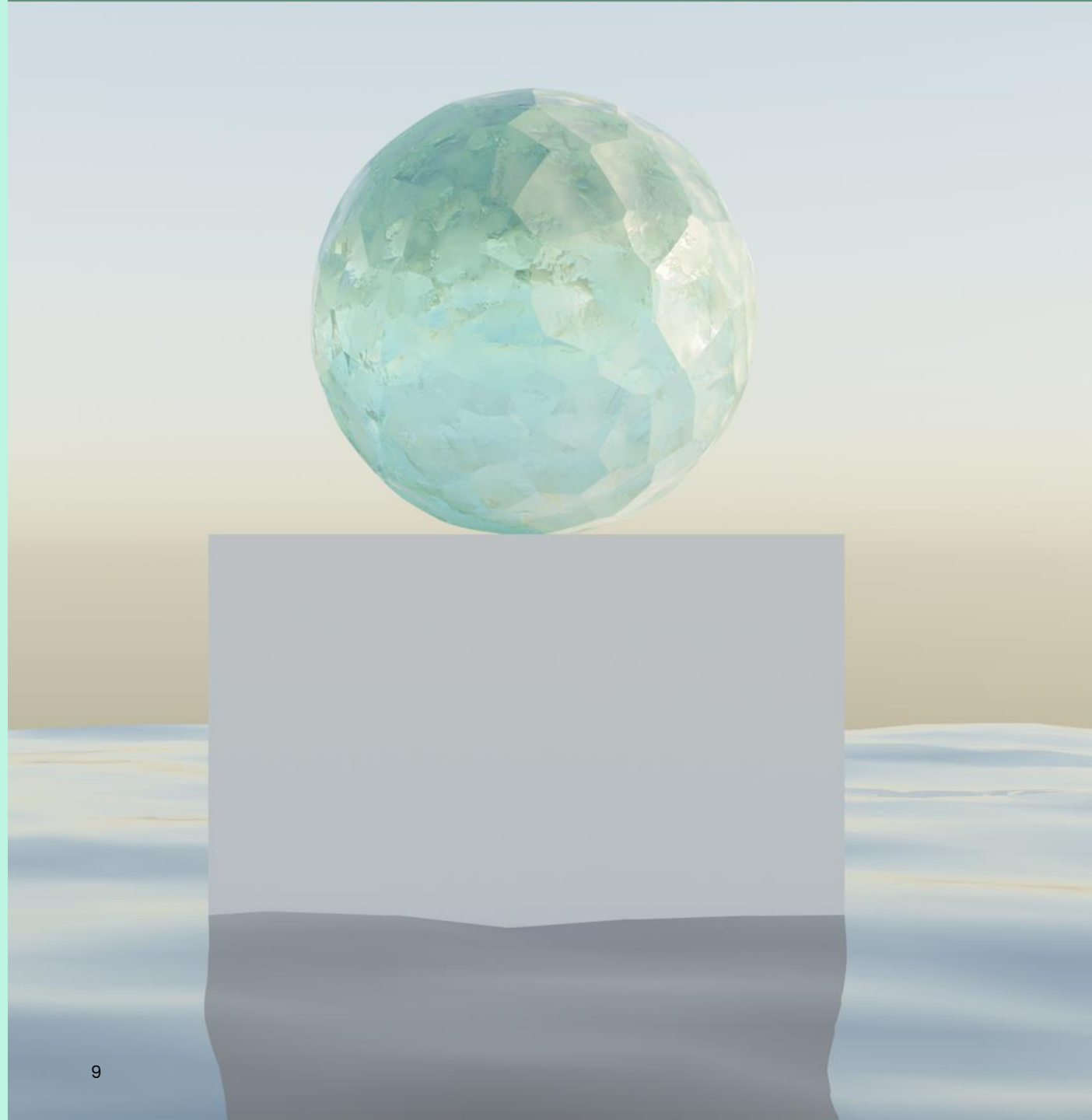


Source: <https://harvesterhci.io/> (modified by myself to include RKE2)

# Hardware requirements

- From <https://docs.harvesterhci.io/v1.0/#hardware-requirements>
- x86-64 with virtualisation (VT-x/AMD-V) enabled
- Minimum 8 cores, 16+ cores preferred
- Minimum 32GB memory, 64GB+ preferred
- Minimum 140GB storage, 500GB+ preferred
  - Absolute minimum 60GB storage
- Minimum 1Gbps Ethernet, 10Gbps Ethernet recommended
- Require IP address per node, plus an additional IP address per cluster
  - Not including Virtual Machines

# What is a Home Lab?





# Home Lab

- Not a full Data Center
- Made up of smaller machines
- Cheaper and lower powered
- Designed for the home enthusiasts
- Mostly a development and learning environment

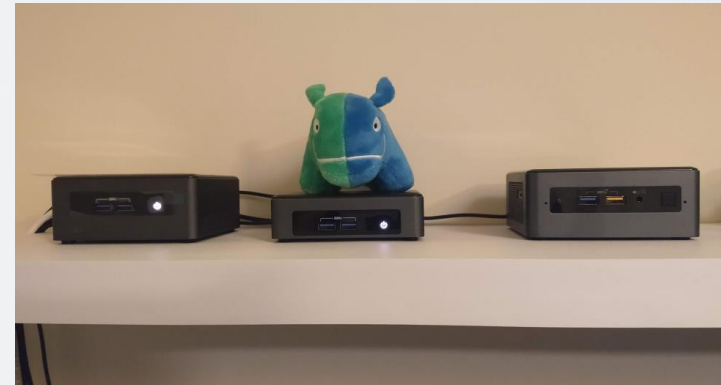
# Our Home Labs

## — Simon

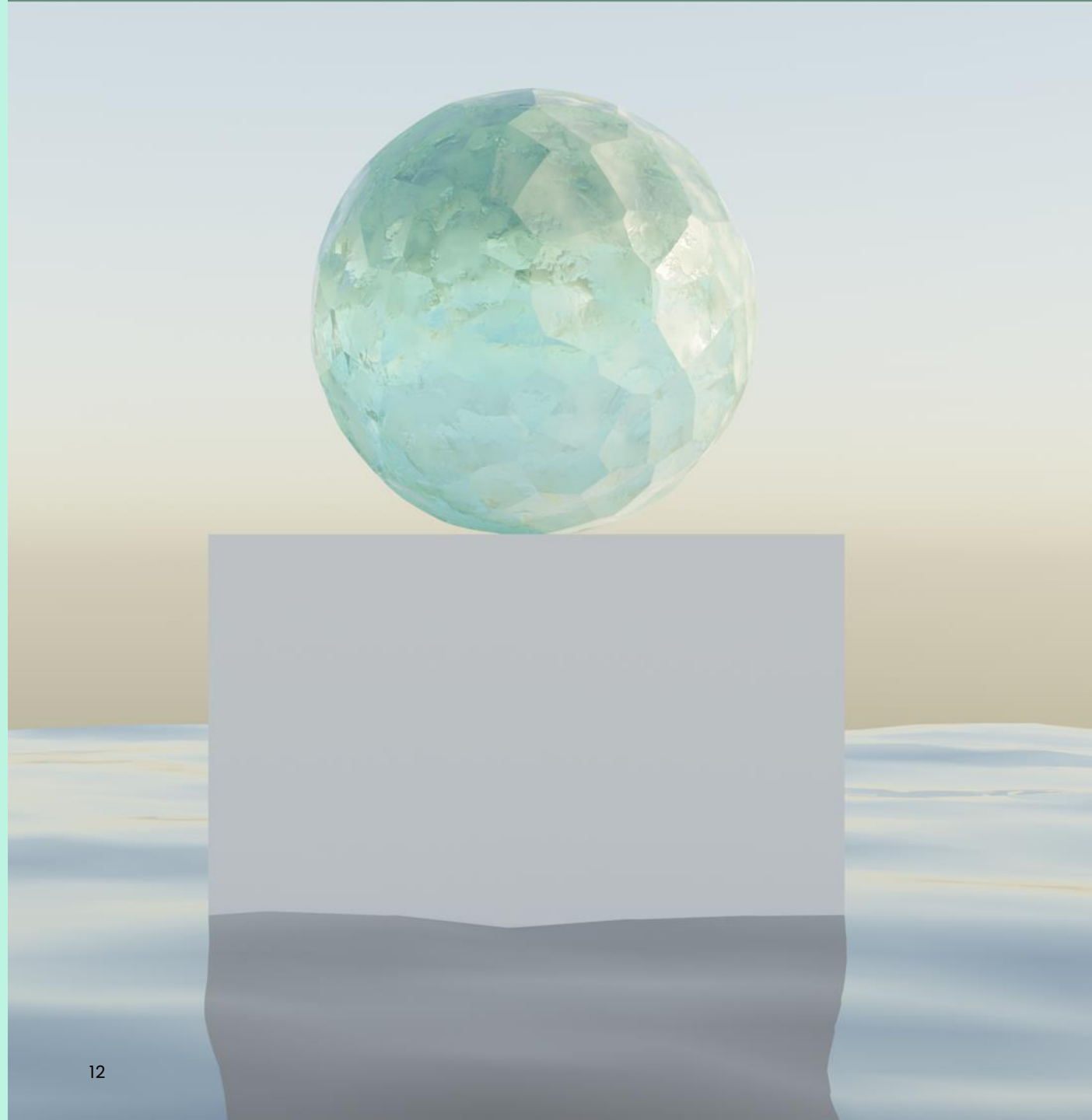
- Intel NUC7i7DNHE/NUC7i7DNKE
- Quad Core i7 (8 cores w/HT)
- 64GB (2x 32GB) RAM
- 1TB NVMe M.2 SSD

## — Robert

- 2x Intel NUC7i7BNH
- Dual Core i7 (4 cores w/HT)
- 64GB (2x 32GB) RAM
- 500GB NVME M.2 SSD



# Why SUSE Harvester?

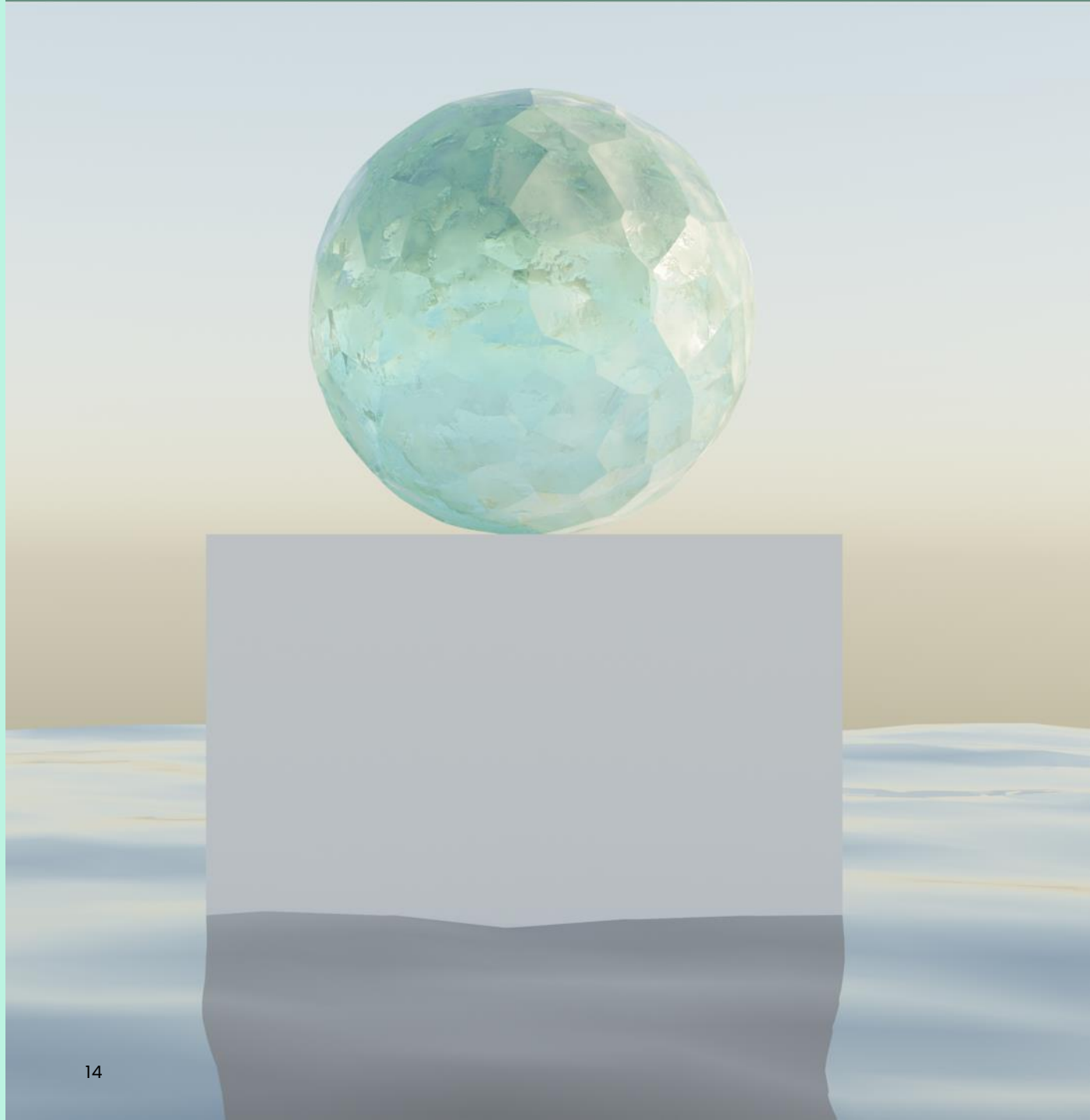


# Why use Harvester

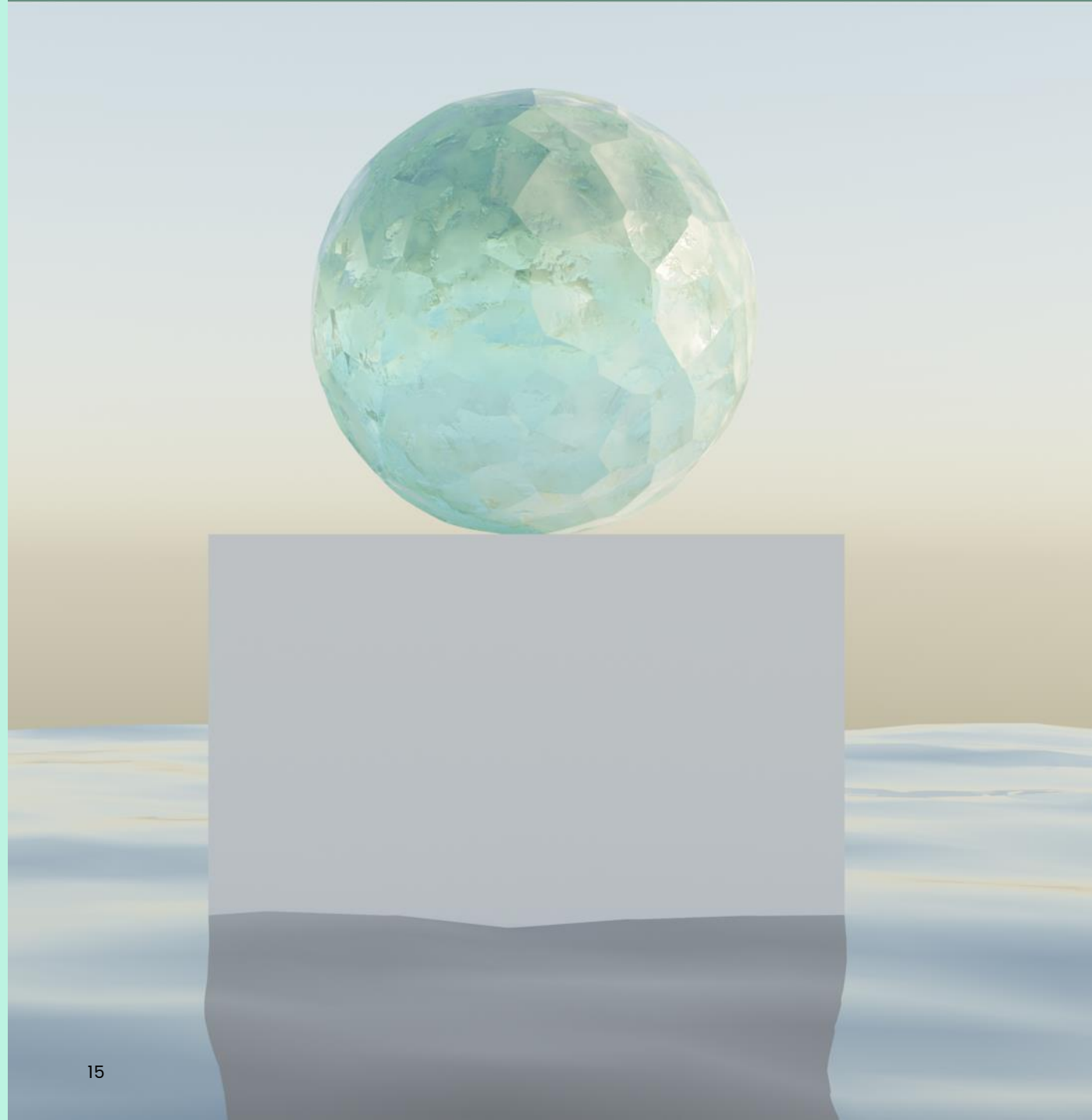


- Ease of use
  - SUSE Rancher Integration
- Open Source
- Community Driven
- Virtualization built on Kubernetes

# Demo



# Tips and Tricks



# Installation and Configuration

- Harvester needs CPU cores and RAM (and disk)
  - Default is to overcommit (CPU x16, RAM x1.5, storage x2)
    - Affects distribution of VMs
    - <https://harvesterhci.io/kb/vm-scheduling/>
- Enable hyper/multi-threading before installing Harvester
- Enable Default VLAN Network
- Copy your user's SSH public key to rancher user on Harvester node(s)
  - `$ ssh-copy-id rancher@<harvester_node_ip_address>`

# Disk Images

- Uploading images is slow and can time out
  - Download locally, verify checksum, upload locally via HTTP
    - `$ python3 -m http.server` # may need to disable local firewall
  - Upload one image at a time
- Use disk image files created for OpenStack
  - <https://docs.openstack.org/image-guide/obtain-images.html>
    - Note default login account name (and password)
- (Re)Name uploaded images so grouped together



# Virtual Machines

- If VM doesn't boot from disk image check partition sizes (default is 10GB)
  - `$ qemu-img convert -f qcow2 -O raw filename.qcow2 tempfile.raw`
  - `$ sudo fdisk -l tempfile.raw`
- Add your user's SSH public key and assign to VMs
  - That way you can always log in!
  - `$ ssh -J rancher@<harvester_vip_address> <image_username>@<vm_ip_address>`
- ... and/or add "password: <initial\_password>" to Cloud Config User Data section
  - Will need to change on first login (Web VNC or SSH)
- If you can't later change VM config in Harvester interface - Edit YAML
  - For example, change from management network to VLAN
    - <https://github.com/harvester/harvester/issues/1914>

# Rancher integration

- Could install SUSE Rancher with Docker on VM within Harvester
  - Okay for home lab (if multiple Harvester nodes) but don't do this in production!
  - Be careful not to chop off branch you're standing on
- Only disk images are used when creating Kubernetes clusters via SUSE Rancher

# Useful Resources

- Web site <https://harvesterhci.io>
- Documentation <https://docs.harvesterhci.io>
- Knowledge Base <https://harvesterhci.io/kb>
- GitHub <https://github.com/harvester/harvester>
- Issues <https://github.com/harvester/harvester/issues>
- Join Rancher Users on Slack <https://slack.rancher.io>
  - #harvester channel
- Rancher Forum <https://forums.rancher.com/c/harvester/21>
- SUSE & Rancher Community <https://community.suse.com>

# Harvester sessions @ SUSECON Digital 2022

- POV-1179 Introduction to Harvester
  - Includes roadmap
- DEMO-1362 An Introduction to Harvester
  
- TUT-1043 Using Harvester for your home lab [this session]
- TUT-1165 Run Windows Server VMs on Harvester HCI
- BP-1186 From OpenStack to Harvester: A window into Hyperconverged Infrastructure
- BP-1187 Kicking the Tires: Journey to building a Harvester test automation framework
  
- Register free at <https://www.susecon.com>
  - Content now available on-demand

# Thank you



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