

INDIGO Virtual Router

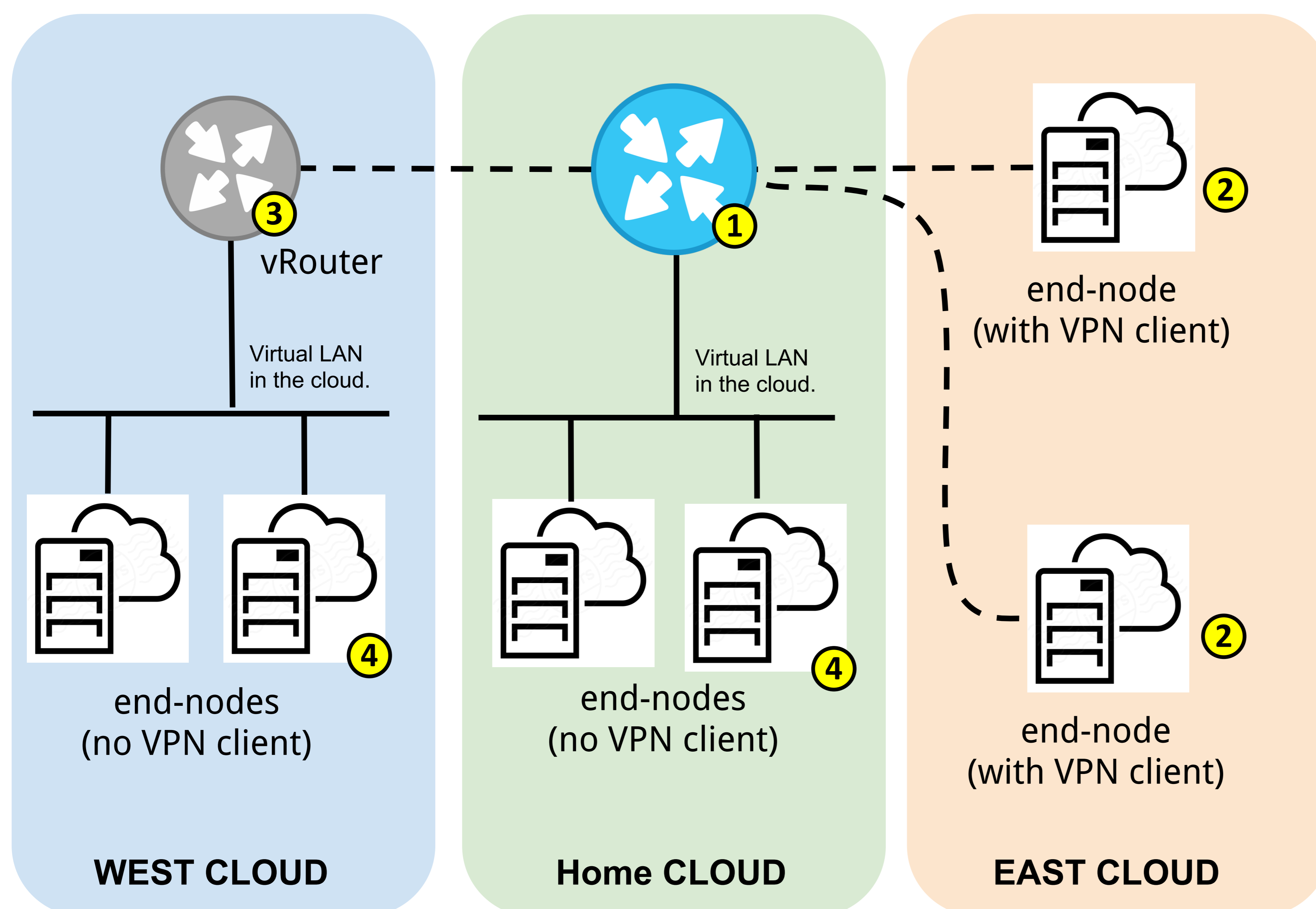
The INDIGO Virtual Router is a platform-agnostic appliance intended to set up an overlay network and provide routing between isolated islands of a platform deployed across multiple cloud sites. The Virtual Router is designed for simple programmatic installation, so that it can be deployed in each target island by automated platform management tools. The concept of the Virtual Router is modular. The current version uses Ansible for installation and configuration, and OpenVPN as the primary routing and virtual networking technology.

Stand-Alone Nodes

Some resource providers do not provide virtual private networks as a service, precluding the use of custom virtual router in their sites.

This has led to the INDIGO-VR concept being extended with support for connecting stand-alone nodes (shown as ② in the main figure) instantiated in sites with limited network provisioning capability.

Both approaches (i.e., purely subnet-based, or consisting only of stand-alone nodes) have been tested separately in INDIGO-DataCloud. The DEEP project now brings them together to provide a comprehensive overall solution for virtual networks.



- ① Central Point, VPN concentrator interconnecting all nodes and vRouters in the overlay network infrastructure.
- ② Standalone End-node is directly connected to the virtual overlay network. VPN client must be installed and configured.
- ③ vRouter connects a local VLAN to the virtual overlay network. The connection is implemented via the standard VPN client.
- ④ End-node is connected to VLAN in the cloud-site. This End-node does not need a VPN client. The traffic is routed to a vRouter, which ensures connection to the overlay network.

Future Work

Resilience – The INDIGO-VR concept is designed to support redundancy. While the contemporary use cases only employ simple star topologies, it is ready for setting up redundant stars or even full mesh topologies. That would improve the reliability and accessibility across platform deployments.

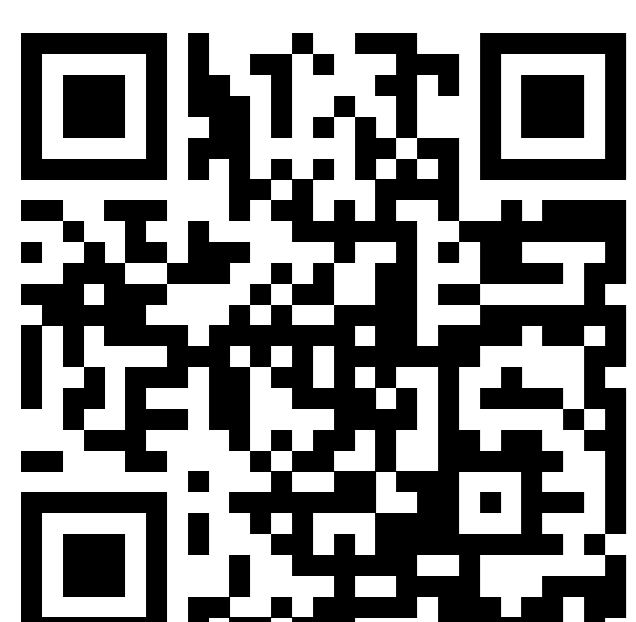
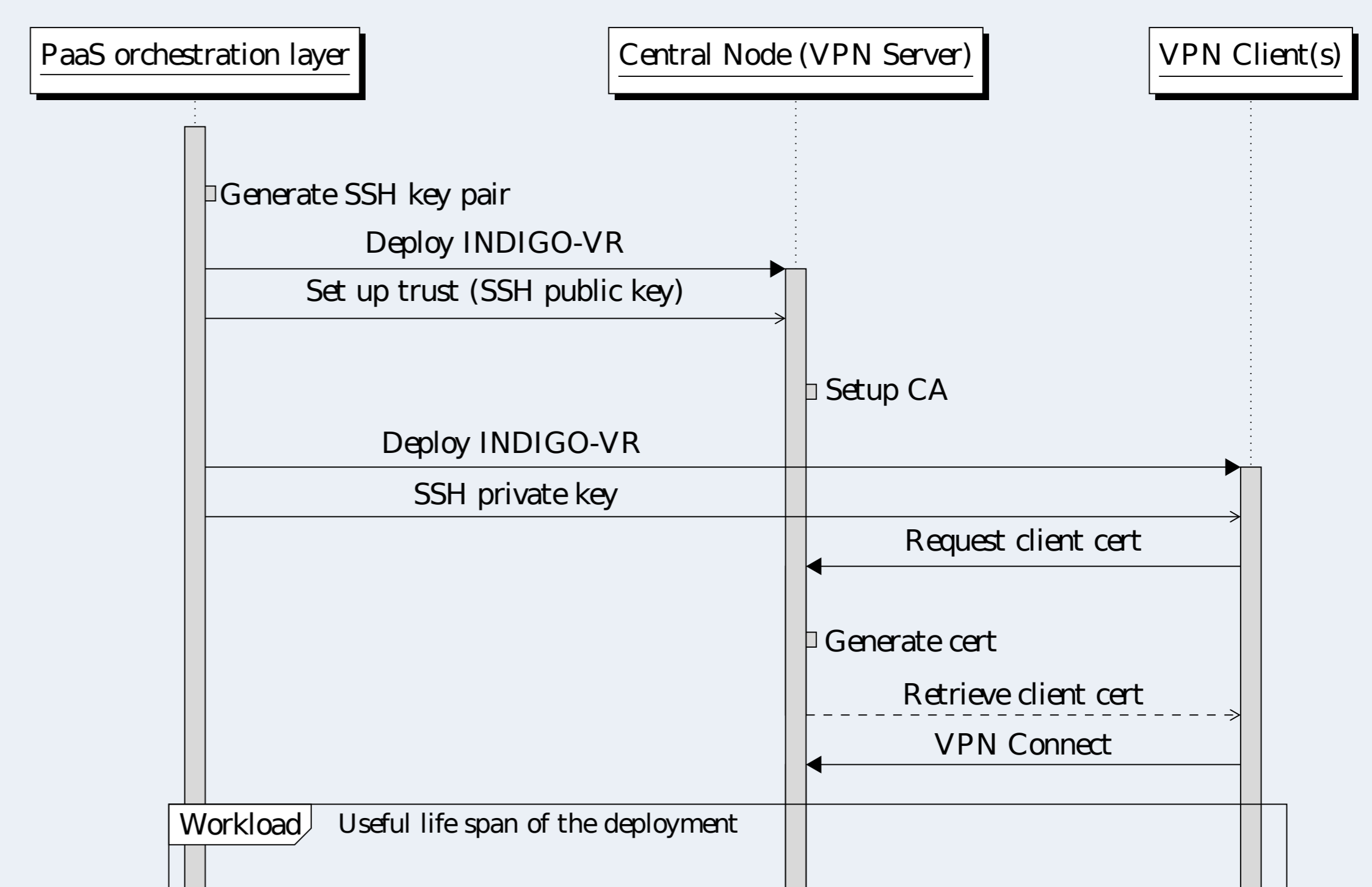
Preview Testbed – INDIGO-VR will be part of DEEP's hybrid clusters pilot. As such, tools for its automated deployment will become available and exploited for appliance setup in the preview testbed.

Router Appliance Compatibility – The possibilities to connect with other, native router appliances provided by cloud management frameworks will be explored to see if solutions by different vendors could be combined in a single topology.

Automated Orchestration

INDIGO-VR is designed to maximize simplicity of automated deployment. The main steps that need to be performed are:

1. Set up private virtual networks
2. Deploy the router nodes: first Central, then clients
3. Distribute certificates to establish trust



Where to Get It

INDIGO-VR consists mostly of Ansible Roles. See the current version and documentation on GitHub:

<https://github.com/indigo-dc/IndigoVR>

