Lenovo
ThinkStation

ThinkStation PX

Immersive Digital Twin Experience

Instructions & Hardware Requirements

NVIDIA

Lenovo

The Digital Twin Experience

Overview

The Digital Twin Experience is a fully immersive photo-realistic virtual representation of the powerful ThinkStation PX. Featuring real-time ray traced graphics, lighting, effects and reflections, it was created as part of a design collaboration between Lenovo and Aston Martin to improve the overall efficiency of the design process.

The goals in creating this digital twin were to enable better collaboration between global design teams during the pandemic, reduce the need for costly prototypes, expensive shipping and logistics and ultimately to create a fully interactive sales & disclosure tool that Lenovo employees can leverage as part of Lenovo's ongoing sustainability efforts.

The project started in 2020 and took shape in late 2022 as the team began the final stages of the ThinkStation PX product development. It involved collaboration between Lenovo's design & engineering teams in the US & China and Aston Martin's product design team in the UK.

The project used new collaborative tools from NVIDIA with Omniverse Enterprise and included design and simulation software from PTC Creo (for CAD files), Autodesk 3dsmax Max (for materials & 3D) and Epic Unreal Engine 5 (for rendering). The complete project leveraged NVIDIA Omniverse (connectors), Nucleus, Creator & Review to deliver a seamless collaborative experience between dispersed teams.

NVIDIA OMNIVERSE ENTERPRISE

3ds Max Maya UNREAL ENGINE ptc

Desktop Experience

The go-to unreal engine application can be easily demonstrated to a wide variety of end users. Perfect for informal meetings, partner training sessions of customer gatherings where you need to walk through the extensive features of the ThinkStation PX.

Download the 3D Desktop App

VR Experience

Available in both a standard quality (for generic VR HMDs) and an extreme high-fidelity version (for Varjo HMDs) this VR experience is compatible with SteamVR hand controller's and offers a truly immersive tear down experience of the ThinkStation PX.

Download the VR Experience – Standard Version
Download the VR Experience – Varjo Version – COMING SOON

Hardware Requirements:

A true photo realistic immersive digital twin that runs inside the Unreal Engine 5 engine requires an NVIDIA GPU to operate, and varying amounts of GPU horsepower in order to operate well.

As a result, this digital twin experience will not operate on non workstation hardware (integrated graphics). Recommended hardware requirements to successfully demonstrate this experience can be found below:

3D Desktop App

Minimum

System:	ThinkPad P15v / ThinkStation P3xx Tiny
CPU:	Intel Core i5, 3.5GHz
Memory:	8GB+
GPU:	NVIDIA T1000 Graphics Card
SSD:	256GB+

Recommended

System:	ThinkPad P16 / ThinkStation P3xx Ultra
CPU:	Intel Core i5, 3.5GHz or Greater
Memory:	8GB+
GPU:	NVIDIA RTX A2000 Graphics Card or Greater
SSD:	256GB+

Virtual Reality

Standard Edition (VR)

System:	ThinkPad P16 Gen1
CPU:	Intel Core i7, 3.5GHz or Greater
Memory:	16GB+
GPU:	NVIDIA RTX A4500 or Greater
SSD:	256GB+
HMD:	Standard SteamVR Compatible HMDs (or better)

Varjo Edition (VR)

System:	ThinkStation P620 or Above
CPU:	AMD Threadripper Pro 39xx
Memory:	16GB+
GPU:	NVIDIA RTX A6000 Ada or Greater
SSD:	256GB+
HMD:	Varjo Aero or Better

Note: *For both 3D Desktop and VR Application, when running on mobile workstations, please make sure that Ultra Performance Mode is Enabled*

Instructions - Desktop

Upon launching the Digital Twin application, users are presented with two choices.

1: Guided Tour takes users on a tour of all the features of ThinkStation PX.

2: Explore lets users discover the full capabilities of ThinkStation at their own pace.

Guided Tour Mode

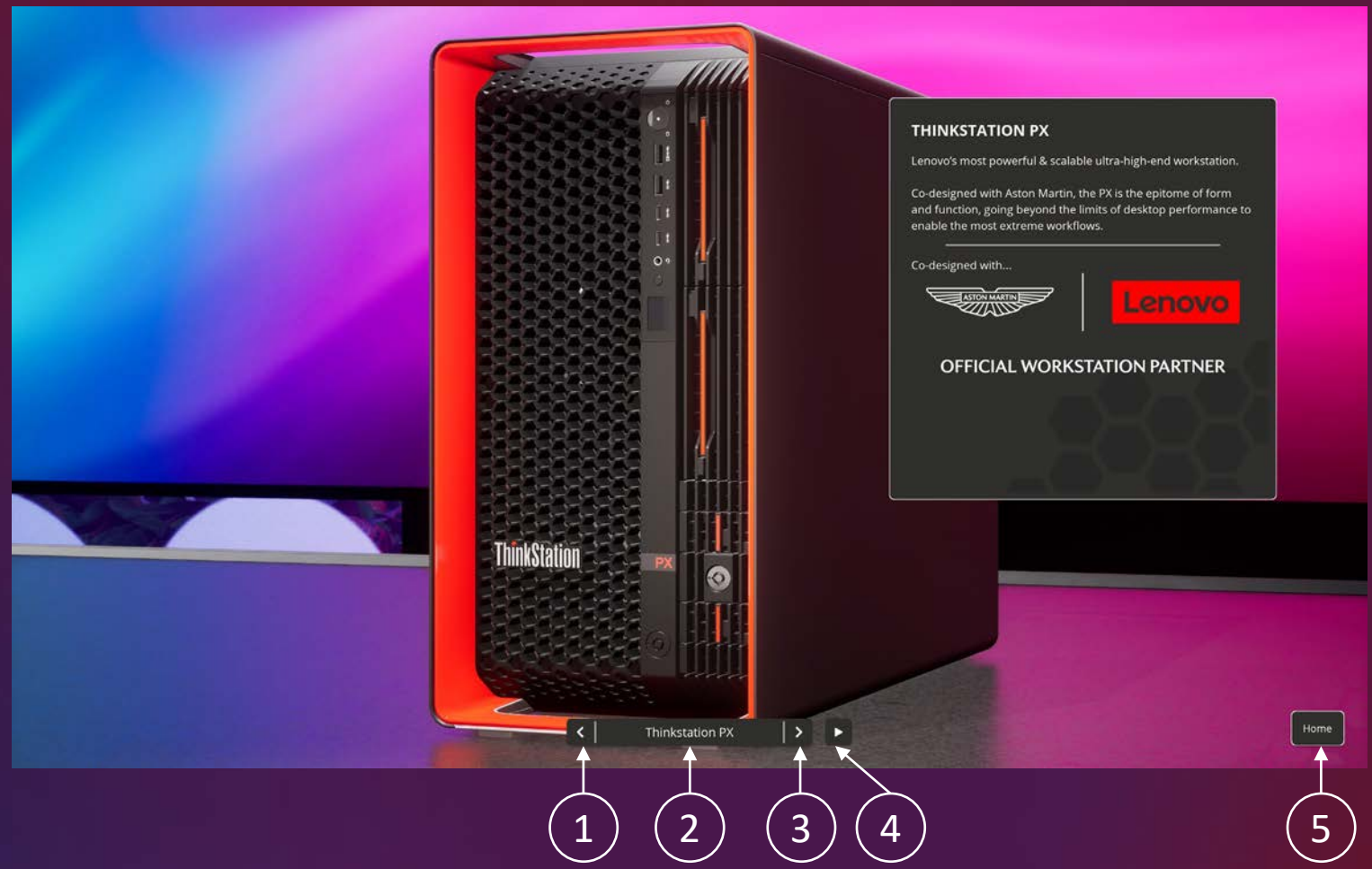
1: Back button
Use the back button to return to the last feature.

2: Title
Shows which feature is currently highlighted.

3: Forward
Use the forward button to move to the next feature.

4: Play
Press the play button and you will automatically move through all the features with a short pause for each feature.

5: Home
Press the home button to return to the first feature of the guided tour.



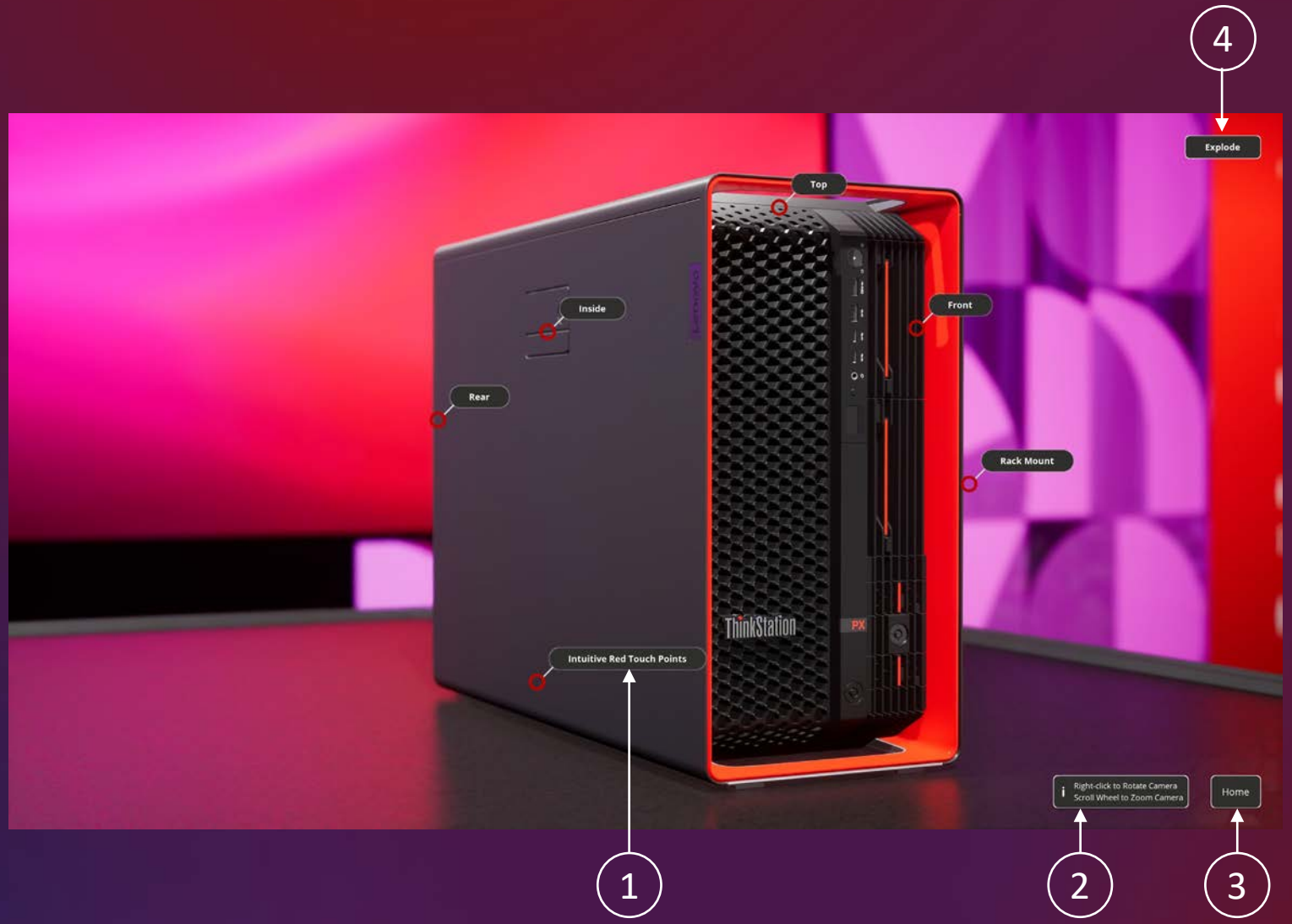
Explore Mode

1: Features Headings
Click on any of the headings to explore that feature. More features may become available as you explore. Once inside a feature, a back button will appear to the bottom left of the screen.

2: Rotation
Right click and drag anywhere on the screen to rotate the scene.

3: Home
Click on the home button to return to the start of explore mode.

4: Explode
Click on the Explode button to fully explode the ThinkStation PX and unlock 360-degree rotation.



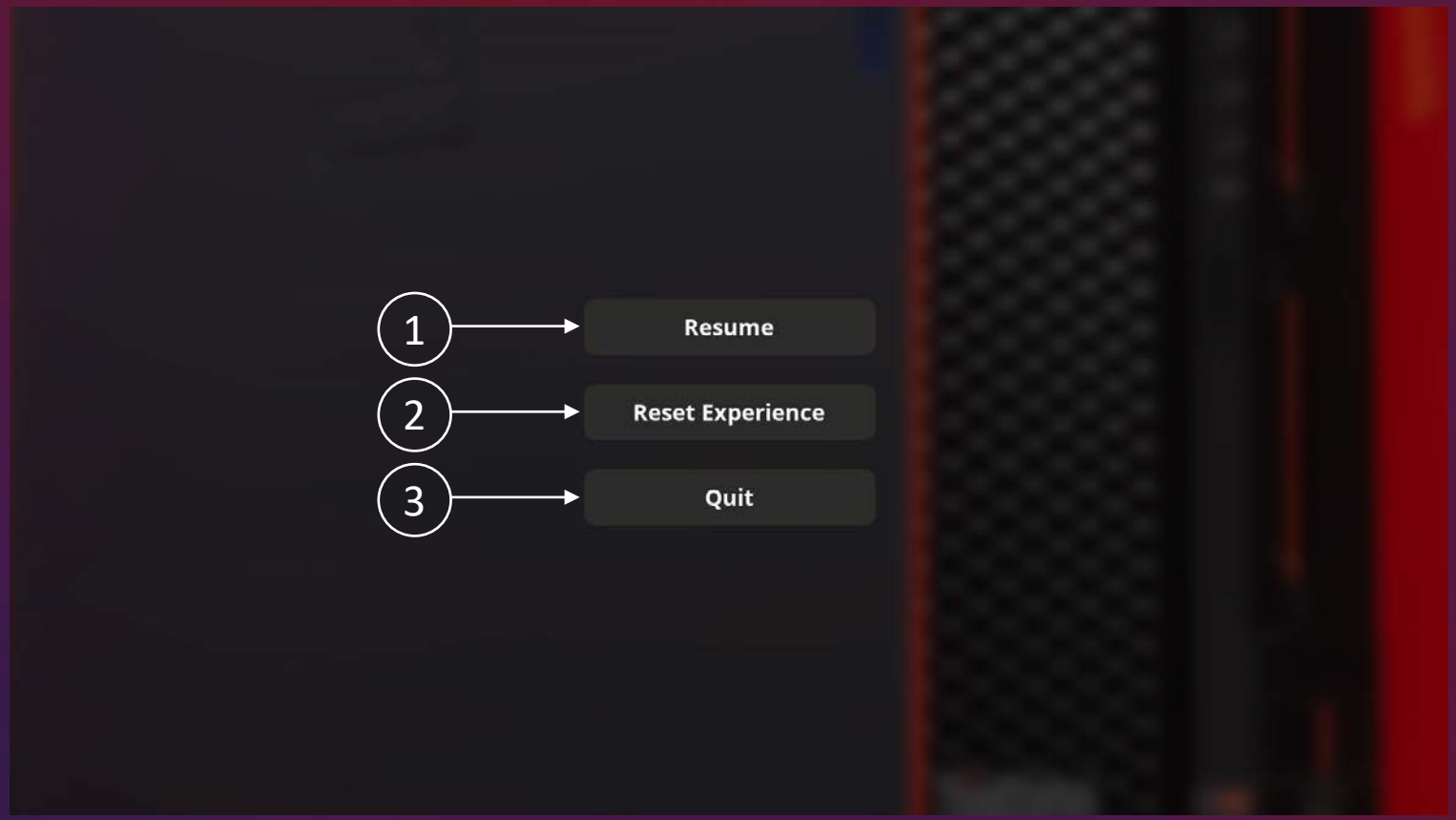
Esc Key

Press the escape key at any point during the demo and you will see this menu with three options:

1 Resume: continue the experience.

2 Reset Experience: this will take you back to the very start of the digital twin demo.

3 Quit: fully close the application.



Instructions – Virtual Reality

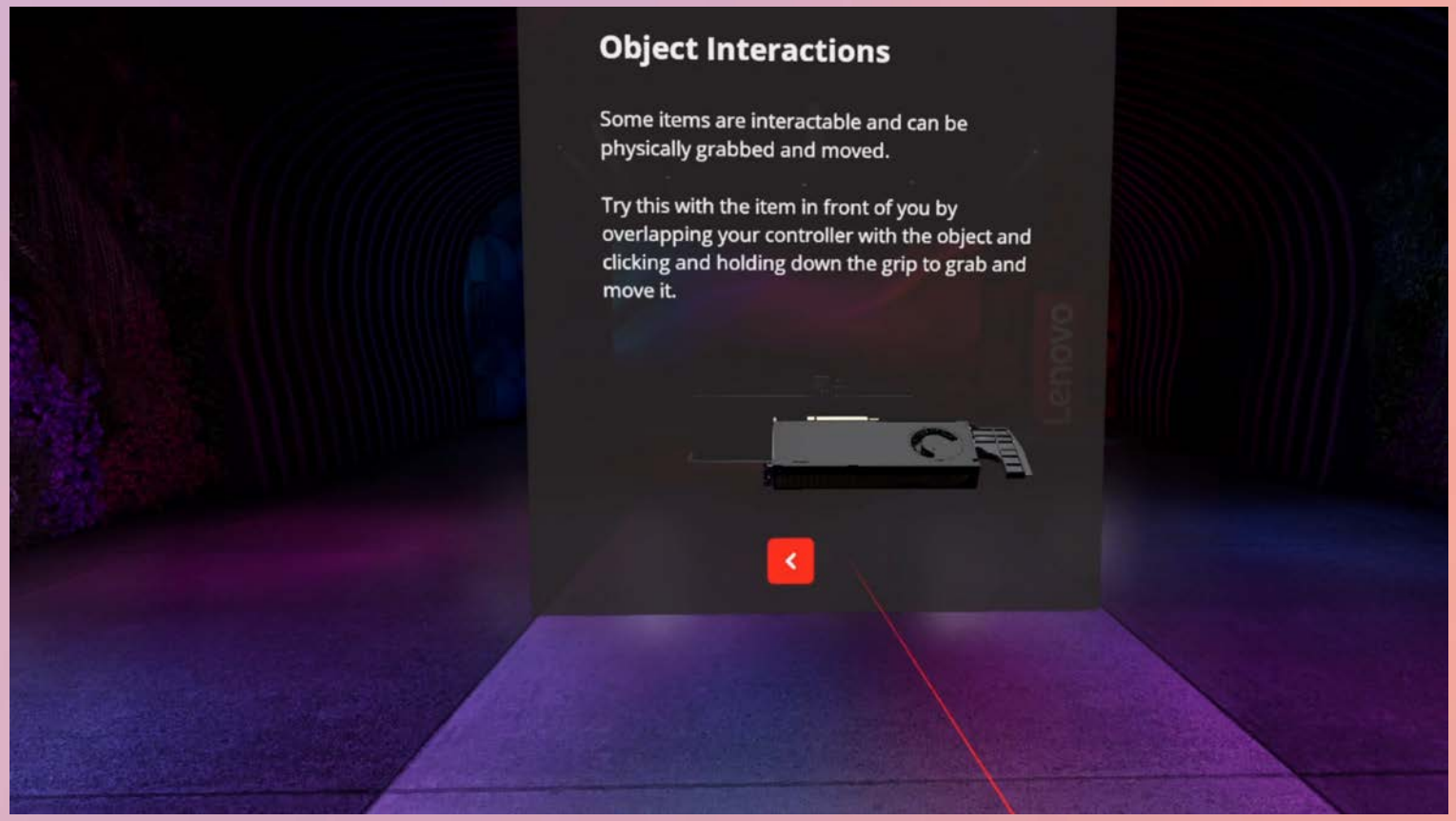
Upon launching the Digital Twin application, users are presented a short tutorial covering:

Controller Functionality
Learn how the VR hand controllers can be used to select and navigate through the VR environment.

Menu Interaction
Learn the experiences menu system for easy model interaction.

Object Interaction
Learn how to select and move objects from within the digital twin for a true immersive experience.

Waypoint/Navigation
Learn how to navigate and move around inside the VR experience.



ThinkStation PX Menu

After approaching the desk users can see the main ThinkStation PX Menu. By pointing and clicking the menu items users can explore the ThinkStation PX.

You can use the controller to grab the menu and place it in a more convenient location.

1 Main Menu

2 Menu Items

3 Home Button

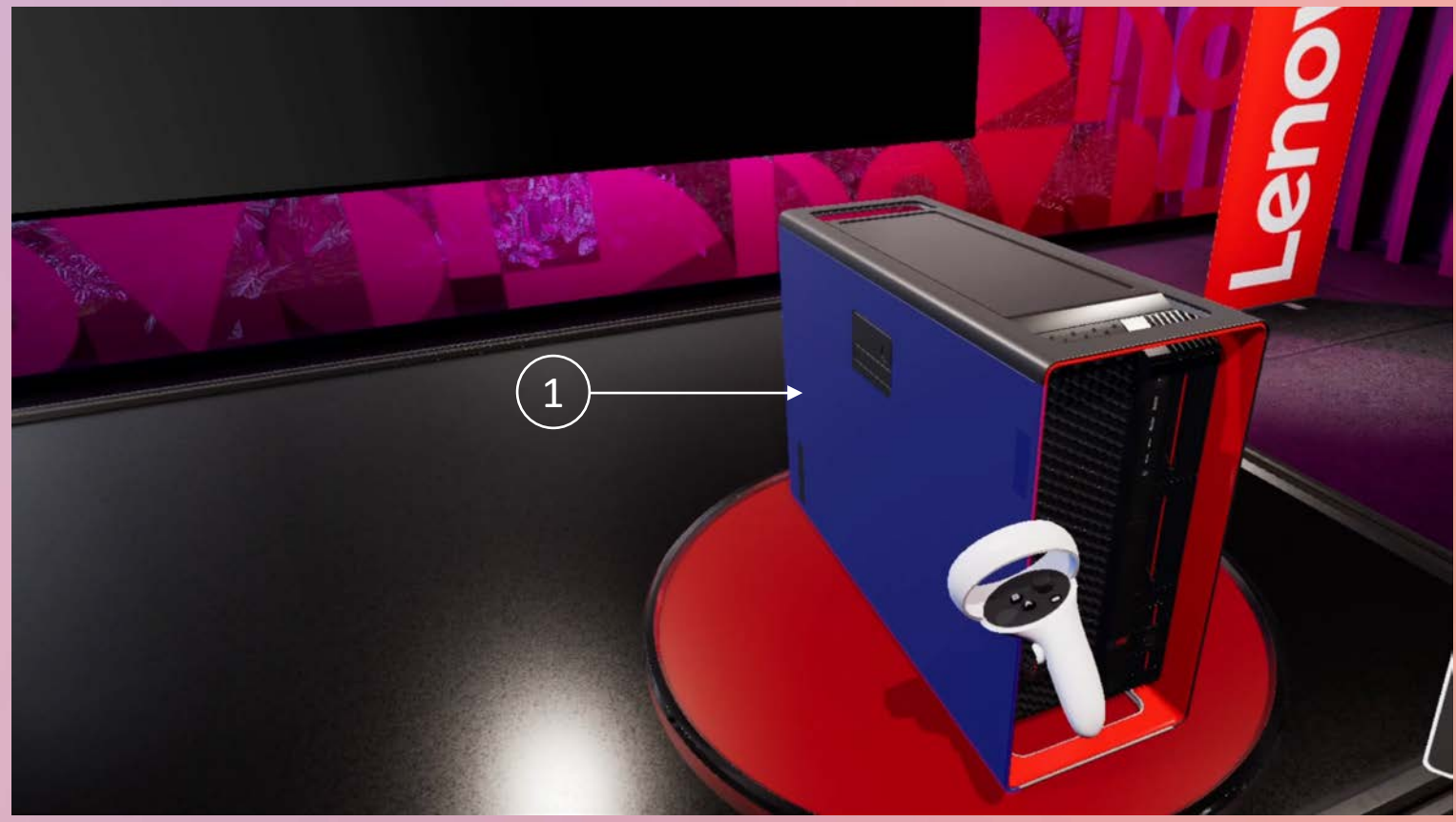
4 Grab Instructions

Grabbing

When you point at objects that are interactable they will be highlighted blue. Move the controller close to the object and you will be able to use the grab button on the controller to pickup the object and move it.

Let go of the controller grab button and the object will return to the workstation.

1 Interactable Object: Highlighted blue



Inside the workstation

Use the menu button “All Parts” to break apart the workstation. The key components of the workstation will be laid out above the desk. You will also be able to see deeper inside the workstation and interact with motherboard components.

Click “All Parts” again or the “Home” button to collapse the workstation back to its original state.

Air Flow

Click the “Air Flow” menu item to see the Air Flow of the ThinkStation PX. You can further choose to show or hide the Air Baffle.

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