

# Physical observation

Using physical checks to perform problem determination actions on systems

Lenovo

## Light path

Light path diagnostics uses a system of LEDs that are connected to different components. When an error occurs on a component, warning LEDs will be lit on the front operator panel and on the failed component.

Light path diagnostics LEDs can be found in the three following locations:

- The front operator information panel
- The rear of the server (this location includes power supply LEDs)
- On the system board

## Light path descriptions

A description of each system's light path can be found in the following documents:

- Downloadable PDF – Maintenance Manual on the [Lenovo Support](#) website
- Online resource – The server components section on the [ThinkSystem Documentation](#) website



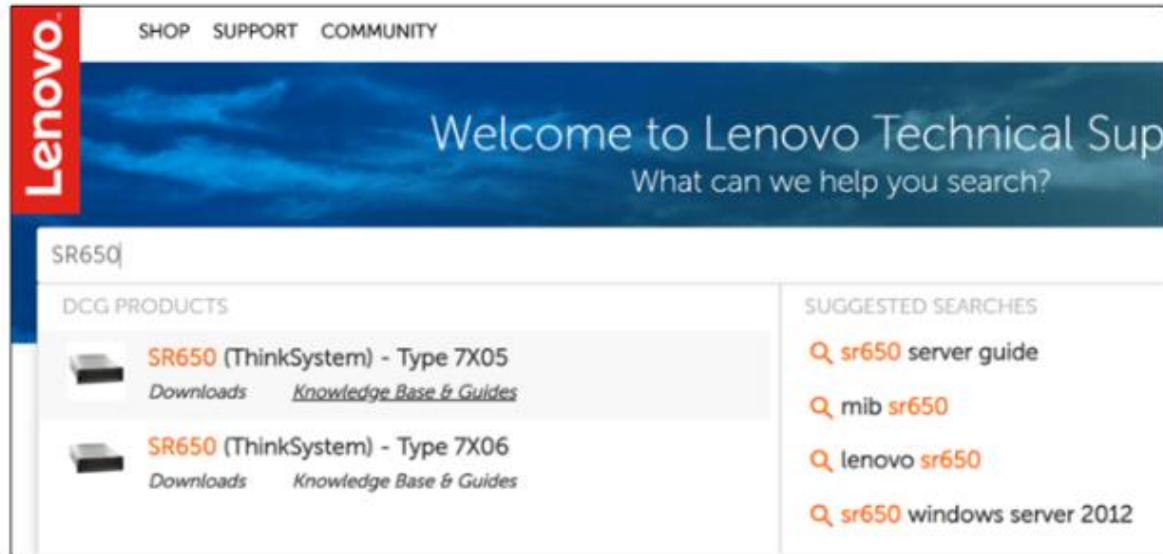
Click each number in turn to see more information.

Step



## Light path descriptions

To download the Maintenance Manual PDF, go to the [Lenovo Support](#) website and enter the system product name or machine type in the search bar. In the example shown here, the SR650 machine type 7X05 was searched for.

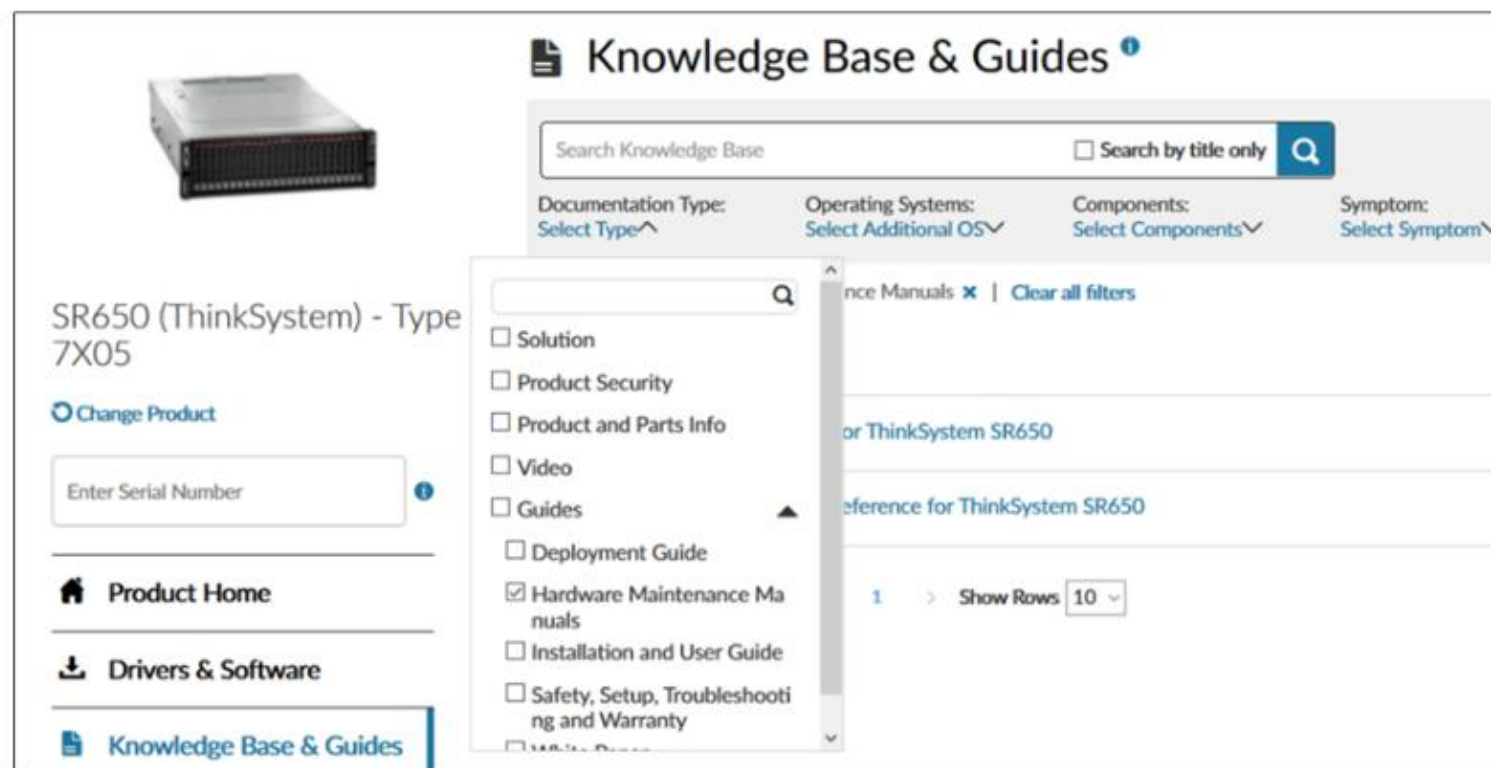


Step



## Light path descriptions

On the system download page, click **Knowledge Base & Guides** → **Documentation Type**, and select **Hardware Maintenance Manuals**.




Step




# Light path descriptions

Click **Maintenance Manual** to see the PDF.




SR650 (ThinkSystem) - Type 7X05

[Change Product](#)

Enter Serial Number 

## Knowledge Base & Guides

☐ Search by title only 

Documentation Type:  
[Select Type](#)▼



Operating Systems:  
[Select Additional OS](#)▼

Components:  
[Select Components](#)▼

Symptom:  
[Select Symptom](#)▼

Language:  
[Select Language](#)▼

Found 2 results: [Guides](#) ✕ | [Hardware Maintenance Manuals](#) ✕ | [Clear all filters](#)

Type	Title	Date
	<a href="#">Maintenance Manual for ThinkSystem SR650</a>	27 Oct 2017
	<a href="#">Messages and Codes reference for ThinkSystem SR650</a>	27 Oct 2017

Sort By [Newest](#) ▼

Step



# Light path descriptions

In the Maintenance Manual, refer to the LED sections in the **Server components** chapter.

Turn off the server . . . . .	17	Remove the front I/O assembly . . . . .	150
<b>Chapter 2. Server components . . . . .</b>	<b>19</b>	Install the front I/O assembly . . . . .	157
Front view . . . . .	19	Hot-swap drive replacement . . . . .	159
Front I/O assembly . . . . .	22	Remove a hot-swap drive . . . . .	159
Rear view . . . . .	24	Install a hot-swap drive . . . . .	161
Rear view LEDs . . . . .	27	Backplane replacement. . . . .	165
System board components . . . . .	29	Remove the 2.5-inch-drive backplane . . . . .	165
System board LEDs . . . . .	30	Install the 2.5-inch-drive backplane . . . . .	166
System board jumpers . . . . .	32	Remove the 3.5-inch-drive backplane . . . . .	168
Internal cable routing. . . . .	33	Install the 3.5-inch-drive backplane . . . . .	169
VGA connector . . . . .	34	memory module replacement . . . . .	171
Front I/O assembly. . . . .	35	Remove a memory module . . . . .	171
GPU . . . . .	37	Memory module installation rules . . . . .	173
Backplane . . . . .	41	Install a memory module . . . . .	186
Parts list. . . . .	122	RAID adapter replacement . . . . .	189
Power cords . . . . .	125	Remove the RAID adapter . . . . .	189
<b>Chapter 2. Hardware replacement</b>		Install the RAID adapter . . . . .	190
		CMOS battery replacement . . . . .	191

**Note:** In this example, **Front view LEDs** is not shown in the table of contents, but a description of the front LEDs is available in the **Front view** section.

Step

1

2

3

4

5

6

7

8

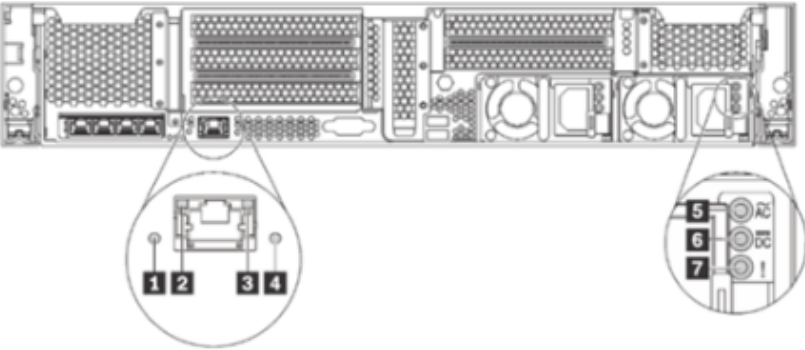
9

# Light path descriptions

A description of the rear LEDs in the SR650 Maintenance Manual

### Rear view LEDs

The illustration in this section shows the LEDs on the rear of the server.



### Ethernet status LEDs

The XClarity Controller network connector has two status LEDs.

Ethernet status LED	Color	Status	Description
2 Ethernet link LED	Green	On	Network link is established.
	None	Off	Network link is disconnected.
3 Ethernet activity LED	Green	Blinking	Network link is connected and active.
	None	Off	The server is disconnected from a LAN.

Figure 14. Rear view LEDs of the server

Table 5. LEDs on the rear of the server

Callout	Callout
1 System ID LED	2 Ethernet link LED
3 Ethernet activity LED	4 System error LED
5 Power input LED	6 Power output LED
7 Power supply error LED	



# Light path descriptions

For online documents, go to the [ThinkSystem Documentation](#) website.

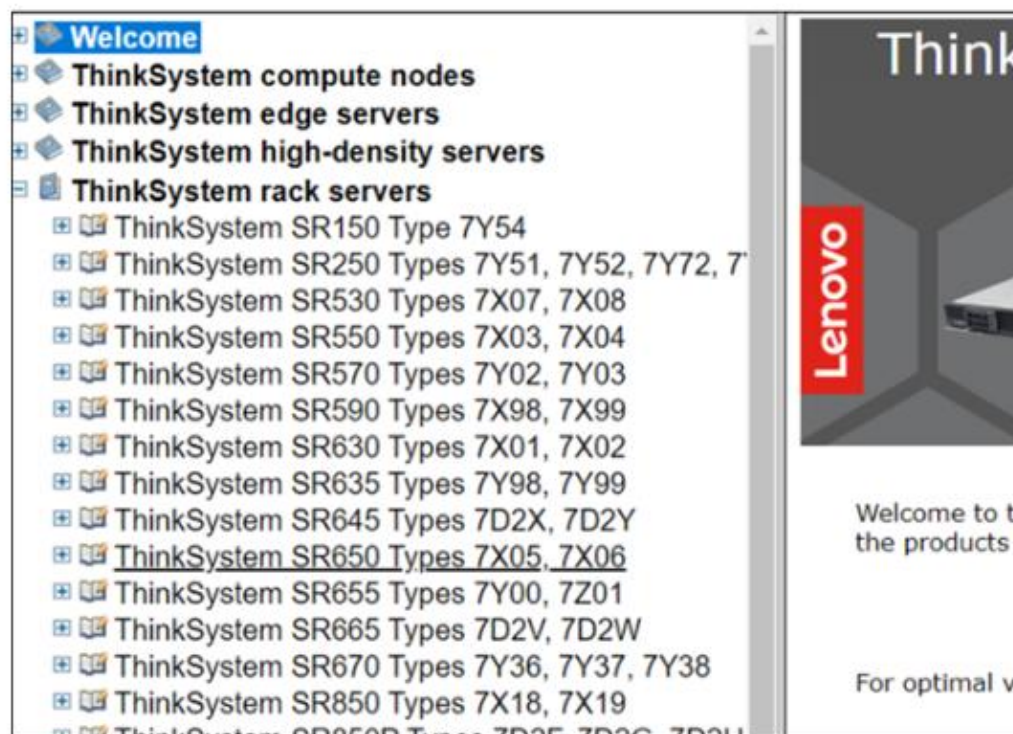


Step



## Light path descriptions

Select a system from the panel on the left. In this example, the ThinkSystem SR650 has been selected.



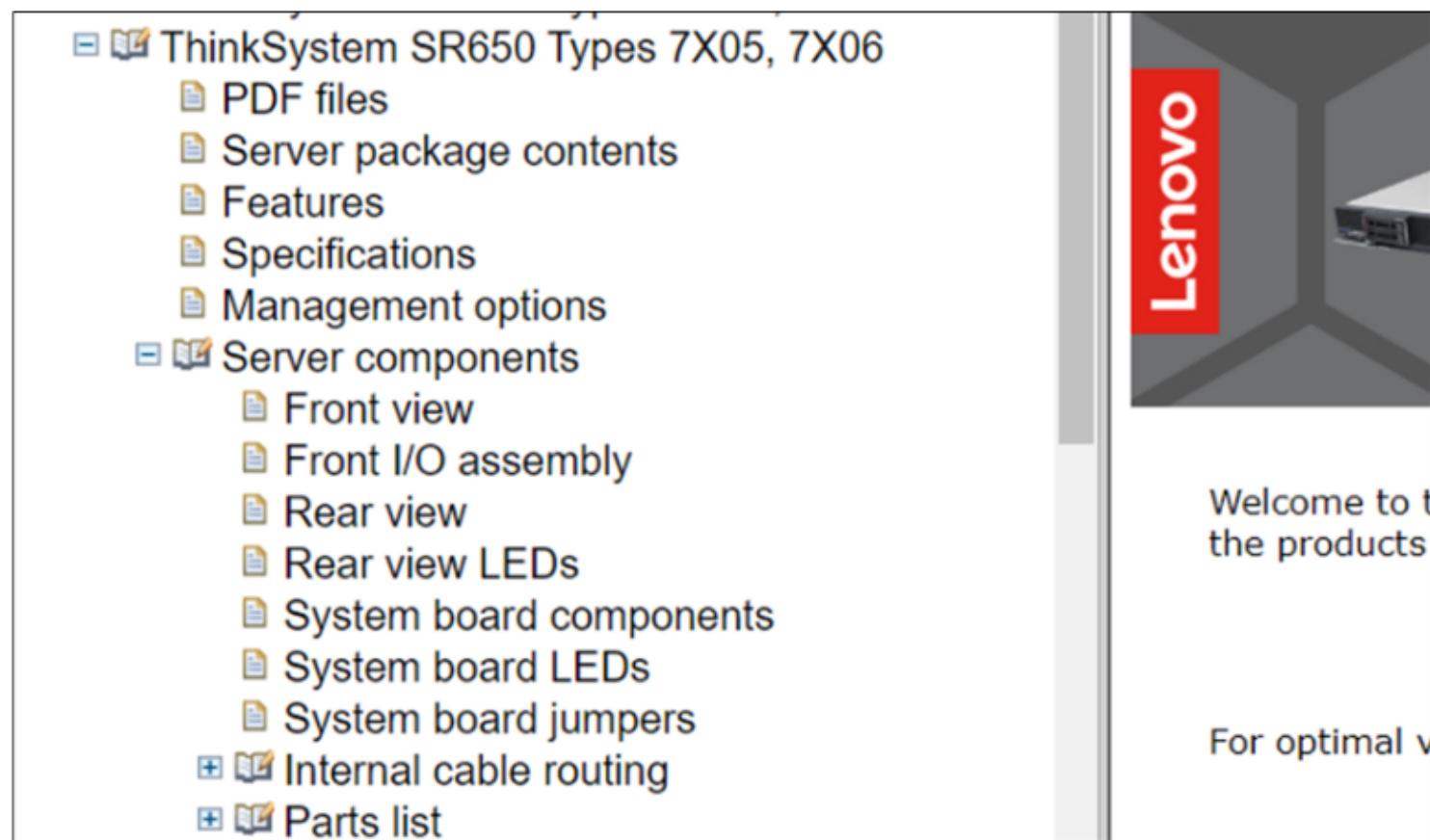
Step



## Light path descriptions

Under the system name, click **Server components** to expand the menu. Click LED-related sections to continue.

**Note:** In this example, **Front view LEDs** is not shown in the menu, but a description of the front LEDs is available in the **Front view** section.



Step



# Light path descriptions

A description of the SR650 rear LEDs from the [ThinkSystem Documentation](#) website

ThinkSystem rack servers

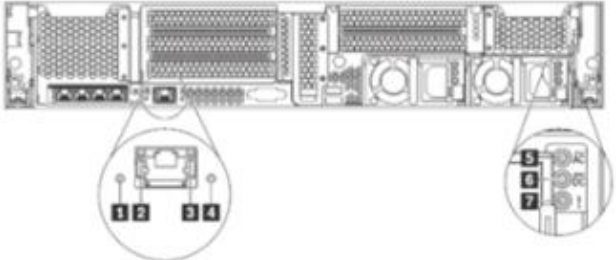
- ThinkSystem SR150 Type 7Y54
- ThinkSystem SR250 Types 7Y51, 7Y52, 7Y72, 7Y73
- ThinkSystem SR530 Types 7X07, 7X08
- ThinkSystem SR550 Types 7X03, 7X04
- ThinkSystem SR570 Types 7Y02, 7Y03
- ThinkSystem SR590 Types 7X98, 7X99
- ThinkSystem SR630 Types 7X01, 7X02
- ThinkSystem SR635 Types 7Y98, 7Y99
- ThinkSystem SR645 Types 7D2X, 7D2Y
- ThinkSystem SR650 Types 7X05, 7X06

- PDF files
- Server package contents
- Features
- Specifications
- Management options
- Server components
  - Front view
  - Front I/O assembly
  - Rear view
  - Rear view LEDs**
  - System board components
  - System board LEDs
  - System board jumpers
- Internal cable routing
- Parts list
- Server hardware setup
- System configuration
- Hardware replacement procedures

## Rear view LEDs

The illustration in this section shows the LEDs on the rear of the server.

Figure 1. Rear view LEDs of the server



Callout	Callout
1 System ID LED	2 Ethernet link LED
3 Ethernet activity LED	4 System error LED
5 Power input LED	6 Power output LED
7 Power supply error LED	

### 1 System ID LED

The blue system ID LED helps you to visually locate the server. A system ID LED is also located on the front of the server. Each time you press the system ID button, the state of both the system ID LEDs changes. The LEDs can be changed to on, blinking, or off. You can also use the Lenovo XClarity Controller or a remote management program to change the state of the system ID LEDs to assist in visually locating the server among other servers.

### 2 Ethernet status LEDs

Step



## LCD diagnostic panel/handset

Selected ThinkSystem servers support the optional integrated LCD diagnostic panel and external LCD diagnostic handset. The panel or handset can be used to quickly access system information such as active errors, system health status, firmware version, network connection status, and health information.



Integrated LCD diagnostic panel



External LCD diagnostic handset

## Demo: LCD diagnostic panel/handset

A demo video is available on the course landing page.



## Key takeaways

- For problem determination and troubleshooting purposes, onsite support personnel should check the system light path and optional LCD diagnostic panel. They should also check the server for irregular smells or noises.
- For descriptions of ThinkSystem light paths, refer to technical documents on the [Lenovo Support](#) website or the [ThinkSystem Documentation](#) website.

## Quiz

**Q: Where can engineers find server LED information?**

**In the service maintenance manual**

**On the sticker on the top cover**

**On the server's pull-out tab**