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[Introduction](#)

This document describes the total power consumption and the maximum thermal load of the ONS 15454 Multiservice Provisioning Platform (MSPP). It also explains the power consumption levels of the equipment and provides information for planning for possible power outages.

[Prerequisites](#)

[Requirements](#)

There are no specific prerequisites for this document.

[Components Used](#)

The information in this document is based on these hardware versions:

- Cisco ONS 15454 MSPP with a Network Equipment Building Systems (NEBS)3/NEBS3E chassis
- Cisco ONS 15454 MSPP with a American National Standards Institute (ANSI) chassis
- Cisco ONS 15454 Multiservice Transport Platform (MSTP)

ANSI and NEBS chassis can be identified by the label inside the door on the left hand side.

The information presented in this document was sourced from the [Cisco ONS 15454 Reference Manual, Release 4.1 and 4.5](#).

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is

live, make sure that you understand the potential impact of any command.

Conventions

For more information on document conventions, refer to the [Cisco Technical Tips Conventions](#).

Maximum Power Consumption of the ONS15454 MSPP

NEBS3/NEBS3E Chassis

863.85 Watts w/ 2 TCC, 2 XCVT, 1 AIC, 2 OC48 IR
1310 HS, 10 E100T-12

ANSI Chassis

1106.60 Watts w/ 2 TCC2, 2 XC10G, 1 AIC-I, 2 OC192
LR/STM64 LH 1550, 10 E100T-G

Power Consumption per Card

This table provides power consumption information for individual cards in the ONS 15454.

Table 1 – Card power consumption

| Card | Approximate Power Consumption | | Fiber Light Levels | |
|------------------------------------|---------------------------------------|----------|--------------------|----------|
| | Approximate Power Consumption (Watts) | BTU/Hour | Rx Level | Tx Level |
| ANSI: Max. Draw with Cards | 1310.60 | 3775.87 | | |
| NEBS3/NEBS3E: Max. Draw with Cards | 863.85 | 2947.58 | | |
| FAN TRAY: FTA | 151.1 | 187.67 | | |

| | | | |
|-----------------------|------------------|-----------------------|--------|
| | 4 | 0 | |
| FAN TRAY: FTA2 | 1 . 2 1 | 5 8 . 0 0 | 198.00 |
| FAN TRAY: FTA3-T | 1 . 9 8 | 9 5 . 0 0 | 324.00 |
| XC | 0 . 6 0 | 2 9 . 0 0 | 99.00 |
| XCVT | 0 . 7 2 | 3 4 . 4 6 | 117.46 |
| XC10G | 1 . 6 4 | 7 8 . 6 0 | 268.40 |
| TCC | 0 . 2 0 | 9 . 8 2 | 33.53 |
| TCC+ | 0 . 2 0 | 9 . 8 2 | 33.53 |
| TCC2 | 0 . 5 4 | 2 6 . 0 0 | 88.80 |
| AIC | 0 . 1 2 | 6 . 0 1 | 20.52 |
| AIC-I (including AEP) | 0 . 1 7 | 8 . 0 0 | 27.30 |
| DS1-14 and DS1N-14 | 0 . 2 | 1 . 2 | 43.02 |

| | | | | |
|--|-------------|------------------|------------|----------------------|
| | 2 6 0 | | | |
| DS3-12 and DS3N-12 | 0 7 9 | 3 8 2 0 | 130.4 3 | |
| DS3-12E and DS3N-12E | 0 5 6 | 2 6 8 0 | 91.51 | |
| DS3XM-6 | 0 4 2 | 2 0 0 | 68.00 | |
| EC1-12 | 0 7 6 | 3 6 6 0 | 124.9 7 | |
| E100T-12 and E100T-G | 1 3 5 | 6 5 0 0 | 221.9 3 | |
| E1000-2 and E1000-2-G (including GBICs) | 1 1 1 | 5 3 5 0 | 182.6 7 | |
| G1000-4 and G1K4 (including GBICs) | 1 3 1 | 6 3 0 0 | 215.1 1 | |
| ML100T-12 | 1 1 0 | 5 3 0 0 | 181.0 0 | |
| ML1000-2 | 1 0 2 | 4 9 0 0 | 167.3 0 | Max - Min |
| OC3 IR 4/STM1 SH 1310 | 0 9 4 | 1 9 | 65.56 | -8 to -28 |
| | | | | -8 to -15 |

| | | | | | |
|--------------------------|---|---|-------|-----------|-----------|
| | 0 | 2 | | | |
| | 0 | 2 | | | |
| OC3 IR/STM1SH 1310-8 | 4 | 3 | 78.50 | -8 to -28 | -8 to -15 |
| | 8 | 0 | | | |
| | 0 | 1 | | | |
| OC12 IR/STM4 SH 1310 | 2 | 0 | 37.22 | -8 to -28 | -8 to -15 |
| | 3 | 9 | | | |
| | 0 | 1 | | | |
| OC12 LR/STM4 LH 1310 | 2 | 0 | 41.00 | -8 to -28 | +2 to -3 |
| | 5 | 2 | | | |
| | 0 | 9 | | | |
| OC12 LR/STM4 LH 1550 | 1 | 0 | 31.68 | -8 to -28 | +2 to -3 |
| | 9 | 2 | | | |
| | 0 | 2 | | | |
| OC12 IR/STM4 SH 1310-4 | 5 | 8 | 100.0 | -8 to -30 | -8 to -15 |
| | 8 | 0 | 0 | | |
| | 0 | 3 | | | |
| OC48IR-1310 High Speed | 6 | 2 | 109.9 | 0 to -18 | 0 to -5 |
| | 7 | 4 | | | |
| | 0 | 2 | | | |
| | 0 | 2 | | | |
| OC48LR-1550 High Speed | 5 | 6 | 91.50 | -8 to -28 | +3 to -2 |
| | 6 | 8 | | | |
| | 0 | 3 | | | |
| OC48 IR/STM16 SH AS 1310 | 7 | 7 | 127.0 | 0 to -18 | 0 to -5 |
| | 7 | 1 | | | |
| | 0 | 2 | | | |
| | 0 | 3 | | | |
| OC48 LR/STM16 LH AS 1550 | 7 | 7 | 127.0 | -8 to -28 | +3 to -2 |
| | 7 | 1 | | | |
| | 0 | 2 | | | |
| | 0 | 3 | | | |
| OC48ELR-ITU 100GHz | 6 | 1 | 106.5 | -9 to -27 | 0 to -2 |
| | 5 | 3 | | | |
| | 0 | 2 | | | |
| | 0 | 0 | | | |

| | | | | | |
|----------------------------------|---------|----------------------|------------|--------------------------|--------------|
| OC48ELR-ITU 200GHz | | 03 01 62 50 | 106.5 3 | -8 to -28 | 0 to - 2 |
| OC192 SR/STM64 IO 1310 | | 04 07 90 80 | 160.5 0 | -1 to -11 | -1 to -6 |
| OC192 IR/STM64 SH 1550 | | 15 00 40 | 170.7 0 | -1 to -14 | +2 to -1 |
| OC192 LR/STM64 LH 1550 | | 17 25 02 00 | 246.5 2 | -10 to -19 | +10 to +7 |
| OC192 LR/STM64 LH ITU 15xx.xx | | 12 00 80 | 177.6 0 | -9 to -22 | +6 to +3 |
| TXP_MR_10G | | 03 05 70 30 | 119.5 0 | See Documentati on | |
| MXP_2.5G_10G | | 15 00 40 | 170.7 0 | See Documentati on | |
| TXP_MR_2.5G and TXPP_MR_2.5G | | 03 05 70 30 | 119.5 0 | See Documentati on | |
| OSCM | Nominal | 02 03 40 80 | 78.48 | See Documentati on | |
| | Maximum | 02 06 50 40 | 88.71 | See Documentati on | |
| OSC-CSM | Nominal | 02 | 81.89 | See | |

| | | | | |
|----------|---------|-----------------------|------------|--------------------------|
| | | 4 5 0 | | Documentati on |
| | Maximum | 0 7 5 6 0 | 92.12 | See Documentati on |
| OPT-PRE | Nominal | 0 3 5 6 0 | 102.3 6 | See Documentati on |
| | Maximum | 0 3 8 1 0 | 133.0 7 | See Documentati on |
| OPT-BST | Nominal | 0 3 6 3 0 | 102.3 6 | See Documentati on |
| | Maximum | 0 3 8 1 0 | 133.0 7 | See Documentati on |
| 32 MUX-O | Nominal | 0 1 3 3 0 | 54.59 | See Documentati on |
| | Maximum | 0 2 5 2 0 | 85.30 | See Documentati on |
| 32 DMX-O | Nominal | 0 1 3 3 0 | 54.59 | See Documentati on |
| | Maximum | 0 2 5 2 0 | 85.30 | See Documentati on |
| 4MD-xx.x | Nominal | 0 1 7 | 58.00 | See Documentati |

| | | | | |
|------------|---------|-------------|------------------|--------------------------------|
| | | 3 5 0 | 0 0 | on |
| | Maximum | 0 5 2 | 2 5 0 0 | 85.30 See Documentati on |
| AD-1C-xx.x | Nominal | 0 3 5 | 1 7 0 0 | 58.00 See Documentati on |
| | Maximum | 0 5 2 | 2 5 0 0 | 85.30 See Documentati on |
| AD-2C-xx.x | Nominal | 0 3 5 | 1 7 0 0 | 58.00 See Documentati on |
| | Maximum | 0 5 2 | 2 5 0 0 | 85.30 See Documentati on |
| AD-4C-xx.x | Nominal | 0 3 5 | 1 7 0 0 | 58.00 See Documentati on |
| | Maximum | 0 5 2 | 2 5 0 0 | 85.30 See Documentati on |
| AD-1B-xx.x | Nominal | 0 3 5 | 1 7 0 0 | 58.00 See Documentati on |
| | Maximum | 0 5 2 | 2 5 0 0 | 85.30 See Documentati on |
| AD-4B-xx.x | Nominal | 0 3 | 1 7 58.00 | See Documentati on |

| | | | | |
|--|---------|---|---|-------------------|
| | | 5 | 0 | |
| | | 0 | 2 | |
| | Maximum | 5 | 0 | 85.30 |
| | | 2 | 0 | |
| | | | | See Documentation |

[NEBS3/NEBS3E Chassis](#)

For example, an ONS 15454 equipped with NEBS3/NEBS3E chassis and this configuration, which creates maximum draw:

- Two Timing Communication and Control+ (TCC+) cards.
- Two Cross Connect-Virtual Tributary (XC-VT) cards.
- Ten E100T-12 cards.
- Two Optical Carrier (OC)48 Intermediate Reach (IR) 1310.
- One Alarm Interface Controller (AIC).

According to the normal consumption from Table 1, this configuration would have this power consumption: (2 x 9.82W) + (2 x 34.40W) + (10 x 65.00W) + (2 x 32.20W) + 6.01W = 806.85W + 55W (fan tray) = **863.85W**.

[ANSI Chassis](#)

For example, an ONS 15454 equipped with ANSI chassis and this configuration, which creates maximum draw:

- Two TCC2 cards.
- Two XC10G cards.
- Ten E100T-G cards.
- Two OC192 Long Reach/Synchronous Transfer Mode (LR/STM)64 LH 1550.
- One AIC-I.

According to normal consumption from Table 1, this configuration has this power consumption: (2 x 26.00W) + (2 x 78.60W) + (10 x 65.00W) + (2 x 72.20W) + 8.00W = 1011.60W + 95W (FTA3) = **1106.60W**.

[Maximum Thermal Load](#)

Given that input power eventually ends up as heat, use this formula to determine the maximum thermal load of the ONS 15454 shelf:

$$\text{Watts} = \text{BTUs/hr} \times 0.2930711$$

The thermal load on a fully loaded shelf is dependent on the cards in the shelf and their power requirements.

[NEBS3/NEBS3E Chassis](#)

According to the above specifications, a single ONS 15454 NEBS3 chassis can require up to

863.85 watts of power. With the given formula, the maximum thermal load of a single ONS 15454 NEBS3 chassis is 2947.58 Basic Transmission Units (BTUs) per hour (rounded down to the second place).

[ANSI Chassis](#)

According to the above specifications, a single ONS 15454 ANSI chassis can require up to 1106.60 watts of power. With the given formula, the maximum thermal load of a single ONS 15454 ANSI chassis is 3775.87 BTUs per hour (rounded down to the second place).

[Related Information](#)

- **[Cisco ONS 15454 SDH Multiservice Provisioning Platform](#)**
- **[Cisco ONS 15454 Reference Manual, Release 4.1 and 4.5](#)**
- **[Cisco ONS 15454 Frequently Asked Questions](#)**
- **[Cisco ONS 15400 Series Data Sheets](#)**
- **[Cisco ONS 15400 Series Field Notices](#)**
- **[Optical Networking Support Resources](#)**
- **[Technical Support - Cisco Systems](#)**